

INITIAL SEISMIC ASSESSMENT REPORT (ISA PLUS) 'Just Incredible' - 36 Tay Street, Invercargill



Client Name: HWCP Management Ltd)

BMC Reference: 1711-2266

Date Issued: 17/03/2018



Quality Statement and Document Control

This Initial Seismic Assessment report has been prepared for HWCP Management Ltd) by Batchelar McDougall Consulting Ltd. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other parties.

This disclaimer shall apply notwithstanding that the documents may be made available to other persons for an application for permission or approval to fulfil a legal requirement.

Issue Register:

Revision	Date	Description		
	17/03/2018	ISA (Plus)		
		Prepared by	Reviewed by	Approved by
	Name	Graham McDougall	Andrew Marriott	Graham McDougall
A	Signature	G. L. M. Douga BE, CPENG, CMEngNZ, IntPE(NZ)	BE, CPEng, CMEngNZ, IntPE(NZ), MICOMOS)	S. L. M. Dougal Director

Revision History:

Rev. No	Date	Issue Description	Prepared by	Reviewed by



Contents:

1	E	Executive Summary
2	S	Scope of Our Engagement4
3	E	Building Description
	3.1	General Overview
	3.2	2 Construction Materials & Configuration5
	3.3	Lateral Load Resisting Structural System7
	3.4	Foundations & Geotechnical
4	E	Building Inspection
	4.1	Documentation8
	4.2	Observations and/or Damage8
5	А	Assessment
	5.1	Specific Calculations / Engineering assessment
	5.2	IEP Spreadsheet Calculations
6	S	Seismic Restraint of Non-Structural Items 12
7	C	Continued Occupancy Recommendations 12
8	C	Conclusions
A	PPE	ENDIX A - NZSEE IEP Spreadsheet(s) & OOP Wall calcA



1 Executive Summary

The following report covers the Initial Seismic Assessment (ISA Plus) of the building at 'Just Incredible' - 36 Tay Street, Invercargill. The two storey building is part of a retail set of buildings facing Tay St and consists of two distinct 2 storey building elements, a new part that was designed in 1975 and the old brick and timber framed part designed circa 1930's. The building is located in the Invercargill CBD which is identified as having a 'medium' seismic risk (Seismic Hazard, Z = 0.17 cf. Christchurch Z=0.3).

Documentation available to BMC for the purposes of this assessment is summarised in Section 4.1. This assessment is based on these documents and site visit observations only.

For the purposes of this evaluation, the above described building has been assessed as a structure of Importance Level 2.

BMC have completed an NZSEE Initial Evaluation Procedure (IEP) spreadsheet. In addition BMC has provided an assessment of the structural drawings related to the 'new' part and, carried out a calculation of the out-of-plane performance of a critical wall in the 'old' part.

Location	Building %NBS (IL2)	Seismic Grade	Limiting performance
New Part	34-67%NBS	С	Capacity of the portal action in the 'across' (E-W) direction and lack of seismic gap to the adjacent buildings.
Old Part	15-20%NBS	E	Out-of-plane capacity of northern most gable end wall above 1 st floor level (facing carpark)

From this assessment the building is considered to have % New Building Standard (IL2) as follows,

A 'Desk Top' geotechnical assessment from nearby sites has been referenced in relation to likely geotechnical conditions for this site. The building has shallow strip footing foundations which will likely be subject to some differential settlement as a result of liquefaction under a significant (ULS) seismic event.

Please note the ISA is considered to provide a relatively quick, high-level and mostly qualitative measure of the building's performance. If a more defined level of performance is required then a Detailed Seismic Assessment (DSA) would need to be carried out.



2 Scope of Our Engagement

As requested by HWCP Management Ltd), we have undertaken a comprehensive Initial Seismic Assessment (ISA Plus) of the seismic capacity of the building at the above noted address.

The seismic assessment and reporting have been undertaken in accordance with the qualitative procedures detailed in "The Seismic Assessment of Existing Buildings, Technical Guidelines for Engineering Assessments" issued by the Ministry of Business, Innovation and Employment (MBIE) and now cited in the Building Act with reference to potentially earthquake prone buildings. BMC have included a simple calculation / assessment of an element of the building form(s) or structure(s) that BMC have assessed as limiting the global seismic capacity of the building.

This structural assessment includes:-

- Review of existing building plans or production of a scale layout plan and review of any prior reports, if available;
- Undertaking interior and exterior visual inspection of exposed elements on-site, where access is available;
- Consideration of the general established geotechnical evidence for the site (from the initial 'Desktop Study' relevant to the CBD block by Geosolve Ltd);
- Completion of an Initial Evaluation Procedure (IEP) spreadsheet(s);
- Engineering assessment and/or calculation of a primary or critical structural element that is considered to limit the global seismic capacity of the building
- Production of a summary report

The assessment is made with regard to Clause B1 – Structure of the New Zealand Building Code. No other Building Code Clauses have been assessed by this report.

This structural assessment is based on the visual evidence and indications present at the time of inspection. No specific invasive investigation work has been carried out (although wall thicknesses and wall/parapet heights may be determined). The findings of this report may therefore be subject to revision pending further and more detailed investigation or assessment and/or deterioration of elements from earthquake or ground settlement. This report does not address any hidden or latent defects that may have been incorporated in the original design and construction.

This assessment has been restricted to structural aspects only. Waterproofing elements, electrical and mechanical equipment, fire protection and safety systems, service connections, water supplies and sanitary fittings have not been reviewed, and secondary elements such as internal fit out have not been reviewed.

The scope of this evaluation is limited to the initial or first stage assessment of the potential performance of the building in an earthquake ONLY. No assessment has been made of other load cases such as wind, snow and gravity. The assessment is made in the context that the building may potentially be affected by the Earthquake Prone Building (EPB) provisions of the Building Act (2004) and the EPB Amendment Bill 2016 related aspects (which has now been integrated into the Building Act).



Our professional services are performed using a degree of care and skill normally exercised, under similar circumstances, by reputable consultants practicing in this field at this time. No other warranty, expressed or implied, is made as to the professional advice presented in this report.

This report is provided solely for use by HWCP Management Ltd) and shall not be relied on by any other parties without written approval from Batchelar McDougall Consulting.

3 Building Description

3.1 General Overview

The building located at 'Just Incredible' - 36 Tay Street, Invercargill is a 2 storey structure. The building is currently fully tenanted.

Building Feature	Description
Building address:	'Just Incredible' - 36 Tay Street, Invercargill
Overall plan dimensions:	28 x 10.5 m (new part); 21 x 6.5 m (original part)
Number of storeys:	2
Gross floor area:	Approximately 430m2
Building history:	There are 2 parts to the building, - new part constructed 1975; - old part (at rear adjacent car park area) constructed circa 1930's
Archive Plan Availability	Yes
Occupancy:	Retail
Importance Classification: (AS/NZS 1170.0:2002: Table 3.2)	2 Normal building
Heritage Classification:	Nil

A full description of the building(s) is provided in Table 1 below.

Table 1: Building Description

3.2 Construction Materials & Configuration

Based on the drawing information obtained (see Fig 1. below for plan information) and visual observations the following structure has been identified.

2 storey New Part (constructed 1975)

The roof structure of the building consists of tray iron roofing on ply sarking on timber purlin / rafters supported on structural steel portals in a standard duo pitch roof form.



The first floor is concrete 355mm deep double tee beams + 75mm topping slab, spanning 'across' the building supported on either 20 series reinforced masonry block walls or on concrete corbels as part of 150mm precast concrete panels. The ground floor is a 150mm reinforced concrete ground bearing slab with strip footings supporting structural elements. The front façade of the building (both levels) is essentially fully glazed.

Gravity loads are transferred to the foundations via concrete masonry walls, precast panels and concrete encased steel UB portal legs.

The strip footing foundations are reinforced concrete up to 450mm deep and up to 600mm wide.

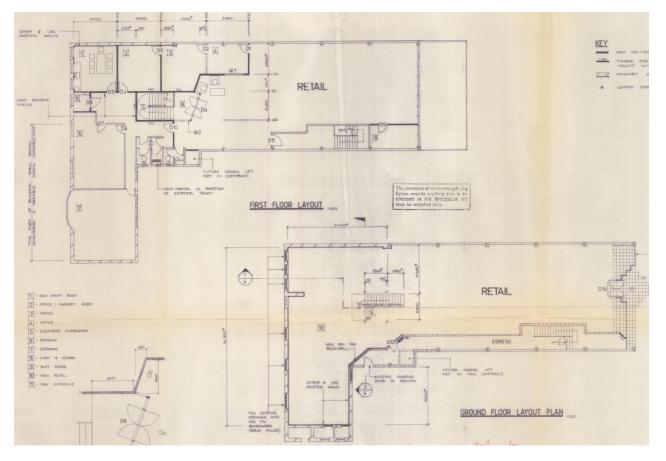
2 storey Old Part (constructed circa 1930's)

The roof is supported on timber trusses and/or timber roof framing which is supported on brick external walls (approx. 240mm thick). There are some concrete lintels over openings in the brick work (see Photo 1 below).

There are some 90x45 internal partitions at 1st floor level.

The mid floor is timber and the ground floor is part slab on grade (constructed with the new part in 1975) and part original timber on piles.

There is an elevated section of roof over part of the old section of the building making the rear wall up to 12m high. It is not known whether this top section of wall is brick or timber framed.





Foundations are typically reinforced concrete strip footings under external walls





Photo 1: Rear of building showing elevated roof section & some tying of timber mid floor to brick walls visible (steel strap & fixings).

3.3 Lateral Load Resisting Structural System

New Part

The lateral load resisting system of this part in the 'across' direction comprises 2 storey steel portal frames at approx. 5.2m c/c and, precast concrete panels or 20 series reinforced concrete block in the 'along' direction. The concrete midfloor provides a stiff diaphragm linking all lateral load resisting elements to a common displacement pattern. Please note that as there is no seismic gap to the neighbouring buildings additional seismic load will be imposed on the building.

Old Part

The lateral load resisting system for this section of the building relies on the in-plane shear capacity of the external brick walls in both the 'across' and 'along' directions. Out-of-plane wall / floor / roof seismic loads or forces are transferred through the mid-floor and roof structure via diaphragm action to orthogonal walls. This diaphragm action is unlikely to be effective particularly at roof level. It is noted that at mid floor level some of the floor structure has been tied to the external brick walls as part of the new part construction in 1975 (noted on drawings and visible in Fig 1. above). There are no connections noted or visible at roof level.

3.4 Foundations & Geotechnical

There are no obvious signs of significant settlement in foundations or wall cracking. Foundations are reasonably well detailed and proportioned in the drawings relating to the 1975 construction. Foundation details for the old rear portion are unknown.

A 'Desk Top' geotechnical study titled Invercargill CBD Project Stage 1 dated February 2018 by Geosolve Ltd (Ref: 171019) has been completed. This study focussed on the likely ground conditions for the Old Government Life & Old Southland Times buildings but does relate generally to the CBD block as a whole.



Key findings from the Geosolve report that are likely to relate to this 36 Tay Street building assessment are,

- Ground / Soil Class D is to be used for the purposes of seismic assessment
- Some Liquefaction induced differential settlement is likely in a significant (ULS) seismic event
- Bearing conditions for typical strip footings are less than 'good ground' as defined by NZS3604 (approx. half). Note BMC has not checked actual foundation bearing pressures for this building.

4 Building Inspection

4.1 Documentation

Documentation received by us that we consider relevant to this report includes:-

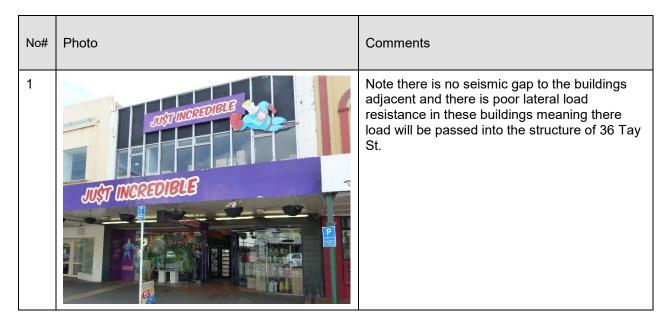
Description	Revision	Issue Date
Structural Plans: Carters Clothing Shop Alterations, Sheets 1-4	N/A	1988
By: Royds Garden		
Structural Plans: Proposed Building for Carters Clothing Tay St, Sheets 1-4 By: G. R. Noller	N/A	Signed as 1975

4.2 Observations and/or Damage

The building was inspected by Graham McDougall of BMC on 08/03/2018. This was a visual inspection only of both the internal and external accessible areas of the building. No invasive inspection works were carried out.

No specific / significant items of structural damage were observed.

The following photo images and observations and specific comments relate to the inspection. A complete photo record of the inspection is available on request.





No#	Photo	Comments
2		In the old part of the building there is no apparent fixity of roof framing to upper floor level meaning the upper half of the wall will likely act as a vertical cantilever element from 1 st floor level with low %NBS capacity.
3		Note the side wall to the rear part of the building shares a common wall with the building next door (to the west). Concrete lintels over the alley way opening and in other locations are noted.
4		Alley way under first floor of old part of building. Poor drainage and likely overflow of downpipes will compromise old foundation strip footings.



No#	Photo	Comments
5	<image/>	Note the false (suspended) ceiling to both ground and upper floor levels. Falling of roof tile elements may occur during a significant seismic event.
6		Note double tee floor and supporting reinforced concrete block and precast wall elements all in accordance with plans reviewed.



5 Assessment

5.1 Specific Calculations / Engineering assessment

The following additional items of calculation / consideration have been undertaken as part of this assessment.

New Part

The critical element of consideration in this part of the building is the seismic portal action in the 'across' (E-W) direction. The following drawing excerpt provides detail of the mechanism / portal connections (see Fig 2. below)

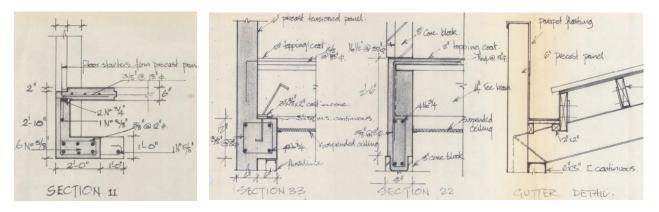


Fig 2. – Some base fixity to UB portal Fig 3. – Double tee connection provides no effective moment connection at 1st floor level.

The effective fixed base connection to the 250UB portal legs provides improved lateral load resistance however there is little moment capacity achieved at the 1st floor level connection. The double tee beams are effectively connected to the short 20 series block walls around the new stair well on the west side and these walls will pick up substantial load and likely to fail in shear or 'rock' / rotate on their foundations. The portal knee at roof level and panel support at eaves level is well detailed. No analysis of this portal mechanism has been carried out but it is expected the global stability of this part of the building **will not be earthquake prone,** that is >34%NBS capacity and may reach 67%NBS capacity through more detailed and in depth investigation/calculation. It is however acknowledged additional load will be imparted from the old (not apparently strengthened) adjacent buildings as there is no seismic gap.

In the 'along' (N-S) direction there is more than adequate seismic capacity (>100%NBS) due to the long shear walls and a stiff diaphragm with adequate connection to walls.

Old Part

As stated in 4.2 Observation Photo 2 above the rear wall element with respect to out-of-plane (OOP) performance, acts as a cantilever from 1st floor level. This is likely to be the critical element from a seismic perspective for this part of the building. Assuming the gable end to the 'pop up' roof level is not brick this means the parameters relating to this vertical cantilever brick wall are, height = 5.5m approx., thickness = 275mm. BMC has carried out an OOP calculation resulting in a 15%NBS performance for this wall (see Appendix A for calc sheet).

The in-plane performance of the brick walls is likely to be adequate (>34%NBS).



5.2 IEP Spreadsheet Calculations

The NZ Society of Earthquake Engineers (NZSEE) have developed an assessment calculation (the IEP Spreadsheet) to be used in a preliminary estimation of the seismic capacity (Percentage of New Build Standard (%NBS)) of a building. This is primarily based on comparing the current seismic design Loadings Code (NZS1170.5) in 2018 with the seismic design load at the time the building was designed. It assumes that the original design was built to at least 100%NBS of the design load at this time. It allows for other 'engineering judgement' and observation factors to be incorporated but the process is at best a preliminary estimation.

We have carried out two IEP assessments for this building relating to the 'new' and 'old' parts of the building with the following results,'

New Part - 55%NBS (limited by portal action capacity in the 'across' direction).

Old Part - 15-20%NBS (limited by out-of-plane performance of the rear gable end upper level wall)

The IEP assessment of this building therefore indicates an overall score of 15-20%NBS (IL2) if the building is taken as a whole, corresponding to a 'Grade E' building as defined by the New Zealand Society for Earthquake Engineering (NZSEE) building grading scheme. This is below the threshold for earthquake prone buildings (34%NBS) and below the threshold for earthquake risk buildings (67%NBS) as recommended by the NZSEE. The IEP Spreadsheets are (for both parts of the building) included as Appendix A.

6 Seismic Restraint of Non-Structural Items

During an earthquake, the safety of people can be put at risk due to non-structural items falling on them. These items should be adequately seismically restrained, where possible, to the NZS 4219:2009 "The Seismic Performance of Engineering Systems in Buildings".

An assessment has not been made of the bracing of the false ceilings, in-ceiling ducting, services and plant or contents. These issues are outside the scope of this initial assessment but could be the subject of another investigation.

False (or suspended) ceilings exist on both ground and 1st floor levels of this building.

7 Continued Occupancy Recommendations

Based on our assessment of the building, BMC consider continued occupancy is appropriate *subject to the conditions of the Earthquake Prone Buildings Act.*

If required a DSA or a more detailed assessment with intrusive investigation work into the nature and capacity of the timber framing connections to the rear brick wall at roof plane and 1st floor levels walls could potentially raise its capacity to above 34 and/or 67%NBS and also enable an understanding of other aspects of its seismic performance.



8 Conclusions

The building comprises two distinct 2 storey building elements, a new part that was designed in 1975 and the old brick and timber framed part designed circa 1930's.

The old part is 'earthquake prone' with a seismic rating < 34%NBS capacity while the new part is likely to be in the range 34-67%NBS capacity.

If a more defined level of performance is required then a Detailed Seismic Assessment (DSA) would need to be carried out.

For more summary comments please refer to the Executive Summary.



APPENDIX A - NZSEE IEP Spreadsheet(s) & OOP Wall calc

WARNING!! This initial evaluation has of Existing Buildings" Technical Guidelines	ure (IEP) Assessment - Comp been carried out solely as an initial seismic asses: for Engineering Assessments, July 2017. This spr party for any other purpose. Detailed inspections different result or seismic grade.	sment of the building following the pr eadsheet must be read in conjunction	ocedureset out in the with the limitations s	et out in the accompanyin
Street Number & Name: AKA: Name of building:	36 Tay Street - New Part 'Just Incredible'		Job No.: By: Date:	1711-2266 GRMcD 17/03/2018
City:	Invercargill		Revision No.:	A
Table IEP-1 Initial Eva	luation Procedure Step 1			
Step 1 - General Information				
1.1 Photos (attach sufficient to	describe building)			
•				
Refer to ISA Plus Report				
	NOTE: THERE ARE MORE PHO	TOS ON PAGE 1a ATTACHED		
4.0 Chatakaa (alana ata, akawa)				
1.2 Sketches (plans etc, show in	ems of interest)			
Refer to ISA Plus Report				
	NOTE: THERE ARE MORE SKETC	CHES ON PAGE 1a ATTACHED		
1.3 List relevant features (Note:	only 10 lines of text will print in this	box. If further text required	l use Page 1a)	
Refer to ISA Plus Report				
1.4 Note information sources	Tick as appropriate			
		Specifications		-
Visual Inspection of Exterior Visual Inspection of Interior		Specifications Geotechnical Reports	- 7	-
Visual Inspection of Exterior				

¹ Just Incredible' Invercargill nitial Evaluation Procedu ation of (%NBS) _b particular building - refer Section B5) nal (%NBS) = (%NBS) _{nom} thening Data is known to have been strengthened in enter percentage of code the buildin strengthening, Building Type and S	ure Step 2 in this direction ng has been strengthened	Longitudinal Longitudinal to N/A Pre 1935 () 1935-1965 () 1965-1976 () 1976-1984 () 1976-1984 () 1984-1992 ()	By: Date: Revision No.:	GRMcD 17/03/2018 A Transverse N/A Pre 1935 0 1935-1965 0 1965-1976 •
Invercargill nitial Evaluation Procedu ation of (%NBS) _b particular building - refer Section B5) nal (%NBS) = (%NBS) _{nom} thening Data s known to have been strengthened in enter percentage of code the buildin	ure Step 2 in this direction ng has been strengthened	□ to N/A Pre 1935 () 1935-1965 () 1965-1976 (e) 1976-1984 ()	•	A Transverse N/A Pre 1935 O 1935-1965 O
nitial Evaluation Procedu ation of (%NBS) _b particular building - refer Section B5) nal (%NBS) = (%NBS) _{nom} thening Data s known to have been strengthened in enter percentage of code the buildin	in this direction	□ to N/A Pre 1935 () 1935-1965 () 1965-1976 (e) 1976-1984 ()		Transverse □ N/A Pre 1935 ○ 1935-1965 ○
particular building - refer Section B5) nal (%NBS) = (%NBS) _{nom} thening Data s known to have been strengthened in enter percentage of code the buildin	in this direction ng has been strengthened	□ to N/A Pre 1935 () 1935-1965 () 1965-1976 (e) 1976-1984 ()		□ N/A Pre 1935 ○ 1935-1965 ○
nal (%NBS) = (%NBS) _{nom} thening Data s known to have been strengthened in enter percentage of code the buildin	in this direction ng has been strengthened	□ to N/A Pre 1935 () 1935-1965 () 1965-1976 (e) 1976-1984 ()		□ N/A Pre 1935 ○ 1935-1965 ○
thening Data s known to have been strengthened in enter percentage of code the buildin	ng has been strengthened	□ to N/A Pre 1935 () 1935-1965 () 1965-1976 (e) 1976-1984 ()		□ N/A Pre 1935 ○ 1935-1965 ○
s known to have been strengthened in enter percentage of code the buildin	ng has been strengthened	to N/A Pre 1935 () 1935-1965 () 1965-1976 (e) 1976-1984 ()		N/A Pre 1935 O 1935-1965 O
enter percentage of code the buildin	ng has been strengthened	to N/A Pre 1935 () 1935-1965 () 1965-1976 (e) 1976-1984 ()		N/A Pre 1935 O 1935-1965 O
		Pre 1935 () 1935-1965 () 1965-1976 () 1976-1984 ()		Pre 1935 O 1935-1965 O
trengthening, Building Type and S	eismic Zone	1935-1965 1965-1976 1976-1984		1935-1965 _O
		1935-1965 1965-1976 1976-1984		1935-1965 _O
		1965-1976 1976-1984 0		÷
		1976-1984 O		1962-1976
				1976-1984 O
				1984-1992 O
		1992-2004		1992-2004
		2004-2011 O Post Aug 2011 O		2004-2011 O Post Aug 2011 O
	Building Type:	Others	▼	Others
	Seismic Zone:	Zone B	•	Zone B
NZS1170.5:2004, CI 3.1.3 :		D Soft Soil	•	D Soft Soil
n NZS4203:1992, CI 4.6.2.2 : 1992 to 2004 and only if known)		Not applical	ble	Not applicable
. T				
		h _n = 5		10 m
		A _c = 1.00		1.00 m ²
g Concrete Frames:	$T = \max\{0.09h_{\rm p}^{0.75}, 0.4\}$	0		0
g Steel Frames:	$T = \max\{0.14h_n^{0.75}, 0.4\}$	õ		۲
ced Steel Frames:		0		0
Walls	$T = \max\{0.09h_n^{0.75}/A_c^{0.5}, 0.4\}$	0		0
Valls:	<i>T</i> ≤ 0.4sec	۲		ō
	f (h (m) (h	0		0
where n_n = neight in metres from the base uppermost seismic weight or mass.	e of the structure to the	T: 0.40]	0.79
	a) above (set to 1.0	Factor A: 1.00	1	1.00
mined from NZSEE Guidelines Figure 3A.1 us	sing	Factor B: 0.05	1	0.06
	n 1976-84 Factor	Factor C: 1.00	1	1.00
		Factor D: 1.00	1	1.00
xCxD		(%NBS) _{nom} 5%]	6%
	h NZS4203:1992, CI 4.6.2.2 : 1992 to 2004 and only if known) , T g Concrete Frames: g Steel Frames: ccd Steel Frames: Structures: Walls Valls Valls valls: put Period): Where $h_n = height in metres from the base uppermost seismic weight or mass. gthening factor determined using result from (strengthened) mined from NZSEE Guidelines Figure 3A.1 us is (a) to (e) above inforced concrete buildings designed between .2, otherwise take as 1.0. uildings designed prior to 1935 Factor D = 0.8. Value (1931-1935) where Factor D may be ta as 1.0.$	The product of the second product of the se	b NZS4203:1992, Cl 4.6.2.2 : Image: Cl 4.6.2.2.2 : Image: Cl 4.6.2.2 : Image: C	b Jord Soli NZS4203:1992, CI 4.6.2.2 : J992 to 2004 and only if known) , 7 h _n = 5 A _c = 1.00 g Concrete Frames: $T = max(0.09h_n^{0.7}, 0.4)$ g Steel Frames: $T = max(0.09h_n^{0.7}, 0.4)$ g Steel Frames: $T = max(0.09h_n^{0.7}, 0.4)$ g Structures: $T = max(0.09h_n^{0.7}, 0.4)$ Structures: $T = max(0.09h_n^{0.7}, 0.4)$ Walls $T = max(0.09h_n^{0.7}, 0.4)$ Valls: $T \le 0.48ec$ put Period): Where $h_n = height in metres from the base of the structure to the uppermost seismic weight or mass. T : 0.40T : 0.40T : 0.40$

may lead to a different result or seismic grade.

	36 Tay Street	- New Part	Job No.	
KA: ame of building:	'Just Incredib	le'	By: Date:	GRMcD 17/03/2018
ity:	Invercargill		Revisio	
able IEP-2 Initial Ev	aluation Proce	dure Step 2	continued	
2 Near Fault Scaling Factor,	Factor E	·		
If $T \leq 1.5$ sec, Factor E = 1	I		Longitudinal	Transverse
a) Near Fault Factor, N(T,D) (from NZS1170.5:2004, Cl 3.1.6)			N(T,D): 1	1
b) Factor E		= 1/N(T,D)	Factor E: 1.00	1.00
3 Hazard Scaling Factor, Fac a) Hazard Factor, Z, for site	ctor F			
Location	n: Invercargill	•	Refer right for user-defined locations	
	Z = 0.17	(from NZS1170	5:2004, Table 3.3)	
Z ₁₉₉			Zone Factor from accompanying Figure 3.5(b))	
Z ₂₀₀	0.17	(from NZS1170	5:2004, Table 3.3)	
b) Factor F For pre 1992	=	1/Z		
For 1992-2011	=	Z_{1992}/Z		
For post 2011	=	Z_{2004}/Z		
			Factor F: 5.88	5.88
c) Return Period Factor, R (from NZS1170.0:2004 Building Imp	vortance Level)	<u>Choose Imp</u>	R _o = <u>1</u> <u>ortance Level</u> O1 ●2 O3 O4 R = <u>1.0</u>	1 01 @2 03 04 1.0
d) Factor G	=	IR _o /R	Factor G: 1.00	1.00
5 Ductility Scaling Factor, Fa a) Available Displacement Duc Comment:		Structure	$\mu = \frac{1.25}{1.25}$	1.50
b) Factor H				κ_{μ}
	For pre 1976 (ma For 1976 onwards		= 1.14 = 1	1.50
(where kμ is NZS1170.5:2004 Inelas			Factor H: 1.14	1.50
6 Structural Performance Sc a) Structural Performance Fact		or I		
(from accompanying Figure 3.4) Tick if light timber-framed cons		on		
			S _p = 0.93	0.85
	-	= $1/S_p$ 0.67 to account for S	Factor I: 1.08 Sp in this period	1.18
b) Structural Performance Scal Note Factor B values for 1992 to 20	,			

reet Number & Name:	36 Tay Street - New Part		Job No.:	1711-2266
<a: ame of building:</a: 	'Just Incredible'		By: Date:	GRMcD 17/03/2018
ity:	Invercargill		Revision No.:	Α
able IEP-3 Initial Eva	Iuation Procedure Step 3			
ep 3 - Assessment of Perfo	rmance Achievement Ratio (PAR)			
Longitudinal Direction				
potential CSWs		tural Performance		Facto
1 Plan Irregularity		Do not interpolate)		
Effect on Structural Performance	e O Severe O S	ignificant	Insignificant	Factor A 1.0
2 Vertical Irregularity Effect on Structural Performanc		imiliaant	Incignificant	Factor B 1.0
Comment	C Severe C S	iqnificant	Insignificant	
3 Short Columns				Eactor C
Effect on Structural Performance	U Severe O S	ignificant	Insignificant	Factor C 1.0
may be reduced by taking t	he coefficient to the right of the value appl	icable to frame buildings	ne effect of pounding S.	
may be reduced by taking t			s]
Table for Selection o	f Factor D1	tor D1 For Longitudina Severe Signific	al Direction: 1.0	
Table for Selection o	Fac	tor D1 For Longitudina	al Direction: 1.0	
Table for Selection o Ali <u>c</u> Alignm	Factor D1 Separation	tor D1 For Longitudina Severe Signific 0 <sep<.005h .005<sep<br="">O1 O1</sep<.005h>	al Direction: 1.0 ant Insignificant <.01H Sep>.01H ⊛1	
Table for Selection of Alig Alignm Comment	Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height	tor D1 For Longitudina Severe Signific 0 <sep<.005h .005<sep<br="">O1 O1</sep<.005h>	al Direction: 1.0 ant Insignificant <.01H Sep>.01H ⊛1	
Table for Selection o Ali <u>c</u> Alignm	Fact of Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height Difference Effect	tor D1 For Longitudina Severe Signific 0 <sep<.005h .005<sep<br="">O1 O1 O0.4 O0.7</sep<.005h>	al Direction: 1.0 ant Insignificant <.01H Sep>.01H ©1 O0.8	
Table for Selection of Alig Alignm Comment	Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height bifference Effect Fact	tor D1 For Longitudina Severe Signific 0 <sep<.005h .005<sep<br="">O1 O1 00.4 O0.7 tor D2 For Longitudina Severe Signific</sep<.005h>	Al Direction: 1.0 ant Insignificant <.01H Sep>.01H ©1 O0.8 Al Direction: 1.0 pant Insignificant	
Table for Selection of Align Comment b) Factor D2: - Height D	Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height Difference Effect Factor D2	tor D1 For Longitudina Severe Signific 0 <sep<.005h .005<sep<br="">O1 O1 O0.4 O0.7 tor D2 For Longitudina Severe Signific 0<sep<.005h .005<sep<="" td=""><td>Al Direction: 1.0 tant Insignificant (.01H Sep>.01H (.01H Sep>.01H (.01H Sep>.01H (.01H Sep>.01H (.01H Sep>.01H</td><td></td></sep<.005h></sep<.005h>	Al Direction: 1.0 tant Insignificant (.01H Sep>.01H (.01H Sep>.01H (.01H Sep>.01H (.01H Sep>.01H (.01H Sep>.01H	
Table for Selection of Align Comment b) Factor D2: - Height D	Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height Difference Effect Factor D2 Height Difference > 4 Storeys Height Difference 2 to 4 Storeys	tor D1 For Longitudina Severe Signific 0 <sep<.005h< td=""> .005<sep< td=""> O1 O1 C0.4 C0.7 tor D2 For Longitudina Severe Severe Signific 0<sep<.005h< td=""> .005<sep< td=""> 0.04 C0.7 C0.4 C0.7</sep<></sep<.005h<></sep<></sep<.005h<>	Al Direction: 1.0 ant Insignificant <.01H Sep>.01H ©1 O0.8 Al Direction: 1.0 ant Insignificant <.01H Sep>.01H O1 ©1	
Table for Selection of Align Comment b) Factor D2: - Height D	Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height Difference Effect Factor D2 Height Difference > 4 Storeys	tor D1 For Longitudina Severe Signific 0 <sep<.005h .005<sep<br="">O1 O1 O0.4 O0.7 tor D2 For Longitudina Severe Signific 0<sep<.005h .005<sep<br="">O0.4 O0.7</sep<.005h></sep<.005h>	Al Direction: 1.0 ant Insignificant (.01H Sep>.01H ©1 O0.8 Al Direction: 1.0 ant Insignificant (.01H Sep>.01H O1	
Table for Selection of Align Comment b) Factor D2: - Height D Table for Selection of	Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height Difference Effect Factor D2 Height Difference > 4 Storeys Height Difference 2 to 4 Storeys	tor D1 For Longitudina Severe Signific 0 <sep<.005h< td=""> .005<sep< td=""> O1 O1 C0.4 C0.7 tor D2 For Longitudina Severe Severe Signific 0<sep<.005h< td=""> .005<sep< td=""> 0.04 C0.7 C0.4 C0.7</sep<></sep<.005h<></sep<></sep<.005h<>	Al Direction: 1.0 ant Insignificant <.01H Sep>.01H ©1 O0.8 Al Direction: 1.0 ant Insignificant <.01H Sep>.01H O1 ©1	
Table for Selection of Align Comment b) Factor D2: - Height D Table for Selection of Comment Comment	Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height Difference Effect Factor D2 Height Difference > 4 Storeys Height Difference 2 to 4 Storeys	tor D1 For Longitudina Severe Signific 0 <sep<.005h< td=""> .005<sep< td=""> 01 01 C0.4 C0.7 tor D2 For Longitudina Severe Severe Signific 0<sep<.005h< td=""> .005<sep< td=""> 0.04 C0.7 C0.4 C0.7 C0.7 C0.9 Q1 Q1</sep<></sep<.005h<></sep<></sep<.005h<>	Al Direction: 1.0 ant Insignificant <.01H Sep>.01H ©1 O0.8 Al Direction: 1.0 cant Insignificant <.01H Sep>.01H O1 ©1 O1	Factor D 1.0
Table for Selection of Align Comment b) Factor D2: - Height D Table for Selection of Comment Comment	Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height bifference Effect Factor D2 Height Difference > 4 Storeys Height Difference > 4 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys	tor D1 For Longitudina Severe Signific 0 <sep<.005h< td=""> .005<sep< td=""> 01 01 C0.4 C0.7 tor D2 For Longitudina Severe Severe Signific 0<sep<.005h< td=""> .005<sep< td=""> 0.04 C0.7 C0.4 C0.7 C0.7 C0.9 Q1 Q1</sep<></sep<.005h<></sep<></sep<.005h<>	Al Direction: 1.0 ant Insignificant <.01H Sep>.01H ©1 O0.8 Al Direction: 1.0 cant Insignificant <.01H Sep>.01H O1 ©1 O1	Factor D 1.0
Table for Selection of Alig Alignm Comment b) Factor D2: - Height D Table for Selection of Comment Site Characteristics - Stability Effect on Structural Performance Comment 6 Other Factors - for allowance Record rationale for choice	Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height bifference Effect Factor of Factor D2 Height Difference 2 to 4 Storeys Height Difference 2 to 4 Storeys Height Difference < 2 Storeys Height Difference < 0 S (ty, landslide threat, liquefaction etc as it affect ce Severe S of all other relevant characterstics of the build ce of Factor F:	tor D1 For Longitudina Severe Signific 0 <sep<.005h .005<sep<br="">O1 O1 O0.4 O0.7 Control O1 O0.4 O0.7 Control O1 O0.5 Severe Signific 0<sep<.005h .005<sep<br="">O0.4 O0.7 O0.7 O0.9 O1 O1 Significant Significant</sep<.005h></sep<.005h>	Al Direction: 1.0 ant Insignificant .01H Sep>.01H O0.8 Al Direction: 1.0 cant Insignificant .01H Sep>.01H O1 ©1 O1 ©1 O1 C1 O1 C1 O1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C	Factor D 1.0 pective Factor E 1.0
Table for Selection of Alig Alignm Comment b) Factor D2: - Height D Table for Selection of Comment Site Characteristics - Stabili Effect on Structural Performant Comment 6 Other Factors - for allowance	Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height bifference Effect Factor of Factor D2 Height Difference 2 to 4 Storeys Height Difference 2 to 4 Storeys Height Difference < 2 Storeys Height Difference < 0 S (ty, landslide threat, liquefaction etc as it affect ce Severe S of all other relevant characterstics of the build ce of Factor F:	tor D1 For Longitudina Severe Signific 0 <sep<.005h .005<sep<br="">O1 O1 O0.4 O0.7 Control O1 O0.4 O0.7 Control O1 O0.5 Severe Signific 0<sep<.005h .005<sep<br="">O0.4 O0.7 O0.7 O0.9 O1 O1 Significant Significant</sep<.005h></sep<.005h>	Al Direction: 1.0 ant Insignificant (.01H Sep>.01H (.01H Sep>.01H (.01B Sep>.01H (.01B Sep>.01H (.01H Sep>.01H Sep>.01H (.01H Sep>.01H Sep>.01H (.01H Sep>.01H Sep>.01H (.01H Sep>.01H Sep>.01H (.01H Sep>.01H Sep>.01H (.01H Sep>.01H Sep>.01H Sep>.01H (.01H Sep>.01H Sep>.01H Sep>.01H (.01H Sep>.01H S	Factor D 1.0 pective Factor E 1.0
Table for Selection of Alig Alignm Comment b) Factor D2: - Height D Table for Selection of Comment Site Characteristics - Stability Effect on Structural Performance Comment 6 Other Factors - for allowance Record rationale for choice	Factor D1 Separation gnment of Floors within 20% of Storey Height ent of Floors not within 20% of Storey Height bifference Effect Factor f Factor D2 Height Difference > 4 Storeys Height Difference > 4 Storeys Height Difference < 2 Storeys ty, landslide threat, liquefaction etc as it affect ce Severe S of all other relevant characterstics of the build ce of Factor F: well tied in diaphragm Ratio (PAR)	tor D1 For Longitudina Severe Signific 0 <sep<.005h .005<sep<br="">O1 O1 O0.4 O0.7 Control O1 O0.4 O0.7 Control O1 O0.5 Severe Signific 0<sep<.005h .005<sep<br="">O0.4 O0.7 O0.7 O0.9 O1 O1 Significant Significant</sep<.005h></sep<.005h>	Al Direction: 1.0 ant Insignificant (.01H Sep>.01H (.01H Sep>.01H (.00.8 Al Direction: 1.0 (.01H Sep>.01H (.01H Sep>.01H Sep>.01H Sep>.01H (.01H Sep>.01H Sep>.01	Factor D 1.0 pective Factor E 1.0

eet Number & Name:	36 Tay Street - New Part			b No.:	1711-2266
Ά: me of building:	'Just Incredible'		By	r: ite:	GRMcD 17/03/2018
y:	Invercargill		•••• ••••• ••••• ••••• •••••	vision No.:	A
	untion Dropodumo Ston 2				
ble IEP-3 Initial Evalu	ation Procedure Step 3				
ep 3 - Assessment of Perform fer Appendix B - Section B3.2)	mance Achievement Ratio (PAR)				
Transverse Direction potential CSWs		uctural Perform le - Do not interpo			Facto
Plan Irregularity			,		
Effect on Structural Performance Comment	° O Severe O	Significant		Insignificant	Factor A 1.0
Vertical Irregularity					
Effect on Structural Performance Comment	O Severe O	Significant		Insignificant	Factor B 1.0
Short Columns					
Effect on Structural Performance Comment	O Severe O	Significant		Insignificant	Factor C 1.0
	lding has a frame structure. For stiff bui coefficient to the right of the value app			ct of pounding]
Values given assume the bui	e coefficient to the right of the value app Factor D1	licable to frame b actor D1 For Tra Severe	uildings. nsverse Dire Significant I	ction: 1.0 nsignificant]
Values given assume the bui may be reduced by taking the Table for Selection of	e coefficient to the right of the value app	actor D1 For Tra Severe 0 <sep<.005h< td=""><td>uildings. nsverse Dire</td><td>ction: 1.0</td><td></td></sep<.005h<>	uildings. nsverse Dire	ction: 1.0	
Values given assume the bui may be reduced by taking the Table for Selection of Align	e coefficient to the right of the value app Factor D1 Separation	actor D1 For Tra Severe 0 <sep<.005h .(<br="">O1</sep<.005h>	uildings. nsverse Dire Significant I 005 <sep<.01h< td=""><td>ction: 1.0 nsignificant Sep>.01H</td><td></td></sep<.01h<>	ction: 1.0 nsignificant Sep>.01H	
Values given assume the bui may be reduced by taking the Table for Selection of Align	e coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height	actor D1 For Tra Severe 0 <sep<.005h .(<br="">O1</sep<.005h>	uildings. nsverse Diree Significant I 005 <sep<.01h O1</sep<.01h 	ction: 1.0 nsignificant Sep>.01H ©1	
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignmen	e coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height nt of Floors not within 20% of Storey Height	actor D1 For Tra Severe 0 <sep<.005h .(<br="">O1</sep<.005h>	uildings. nsverse Diree Significant I 005 <sep<.01h O1</sep<.01h 	ction: 1.0 nsignificant Sep>.01H ©1	
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignmen Comment b) Factor D2: - Height Dif	e coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height nt of Floors not within 20% of Storey Height ference Effect	Actor D1 For Tra Severe 0 <sep<.005h .(<br="">01 00.4 00.4 Actor D2 For Tra</sep<.005h>	nsverse Diree Significant I 005 <sep<.01h O1 00.7</sep<.01h 	ction: 1.0 nsignificant Sep>.01H ©1 C0.8 Ction: 1.0	
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignmen Comment	e coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height nt of Floors not within 20% of Storey Height ference Effect	Actor D1 For Tra Severe 0 <sep<.005h O1 00.4 Actor D2 For Tra Severe</sep<.005h 	uildings. nsverse Diree Significant I 005 <sep<.01h O1 00.7 00.7 nsverse Diree</sep<.01h 	ction: 1.0 nsignificant Sep>.01H ©1 C0.8	
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignmen Comment b) Factor D2: - Height Dif	e coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height at of Floors not within 20% of Storey Height ference Effect Factor D2 Height Difference > 4 Storeys	Actor D1 For Tra Severe 0 <sep<.005h .(<br="">O1 00.4 Actor D2 For Tra Severe 0<sep<.005h .(<br="">O0.4</sep<.005h></sep<.005h>	nsverse Diree Significant I 005 <sep<.01h O1 O0.7 nsverse Diree Significant I 005<sep<.01h O0.7</sep<.01h </sep<.01h 	ttion: 1.0 nsignificant Sep>.01H €1 O0.8 Ction: 1.0 nsignificant Sep>.01H O1	
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignmen Comment b) Factor D2: - Height Dif	e coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height nt of Floors not within 20% of Storey Height ference Effect Factor D2	Actor D1 For Tra Severe 0 <sep<.005h .(<br="">01 00.4 Actor D2 For Tra Severe 0<sep<.005h .(<br="">00.4 00.4 00.4 00.7</sep<.005h></sep<.005h>	uildings. nsverse Diree Significant I 005 <sep<.01h 01 00.7 nsverse Diree Significant I 005<sep<.01h< td=""><td>ction: 1.0 nsignificant Sep>.01H ©1 C0.8 Ction: 1.0 nsignificant Sep>.01H</td><td></td></sep<.01h<></sep<.01h 	ction: 1.0 nsignificant Sep>.01H ©1 C0.8 Ction: 1.0 nsignificant Sep>.01H	
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignmen Comment b) Factor D2: - Height Dif	e coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height to f Floors not within 20% of Storey Height ference Effect Factor D2 Height Difference > 4 Storeys Height Difference 2 to 4 Storeys	Actor D1 For Tra Severe 0 <sep<.005h .(<br="">01 00.4 Actor D2 For Tra Severe 0<sep<.005h .(<br="">0.4 0.4 0.2 0.4 0.2 0.4</sep<.005h></sep<.005h>	nsverse Diree Significant I 005 <sep<.01h 01 00.7 00.7 nsverse Diree Significant I 005<sep<.01h 00.7 00.9</sep<.01h </sep<.01h 	ction: 1.0 nsignificant Sep>.01H ©1 O0.8 Ction: 1.0 nsignificant Sep>.01H O1 ©1	
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignmen Comment b) Factor D2: - Height Dif	e coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height to f Floors not within 20% of Storey Height ference Effect Factor D2 Height Difference > 4 Storeys Height Difference 2 to 4 Storeys	Actor D1 For Tra Severe 0 <sep<.005h .(<br="">01 00.4 Actor D2 For Tra Severe 0<sep<.005h .(<br="">0.4 0.4 0.2 0.4 0.2 0.4</sep<.005h></sep<.005h>	nsverse Diree Significant I 005 <sep<.01h 01 00.7 00.7 nsverse Diree Significant I 005<sep<.01h 00.7 00.9</sep<.01h </sep<.01h 	ction: 1.0 nsignificant Sep>.01H ©1 O0.8 Ction: 1.0 nsignificant Sep>.01H O1 ©1	
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignmen Comment b) Factor D2: - Height Dif Table for Selection of Comment	e coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height to f Floors not within 20% of Storey Height ference Effect Factor D2 Height Difference > 4 Storeys Height Difference 2 to 4 Storeys	licable to frame b actor D1 For Tra Severe 0 <sep<.005h< td=""> 01 00.4 actor D2 For Tra Severe 0<sep<.005h< td=""> 00.4 00.4</sep<.005h<></sep<.005h<>	uildings. isignificant I 005 <sep<.01h 01 00.7 00.7 nsverse Direc Significant I 005<sep<.01h 00.7 0.9 01</sep<.01h </sep<.01h 	ction: 1.0 nsignificant Sep>.01H ©1 O0.8 ction: 1.0 nsignificant Sep>.01H O1 ©1 O1 ©1	Factor D 1.0
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignmen Comment b) Factor D2: - Height Dif Table for Selection of Comment	a coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height at of Floors not within 20% of Storey Height ference Effect Factor D2 Height Difference 2 to 4 Storeys Height Difference 2 to 4 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys Height Difference < 3 Storeys Height Difference < 4 Storeys Height Difference < 3 Stor	licable to frame b actor D1 For Tra Severe 0 <sep<.005h< td=""> 01 00.4 actor D2 For Tra Severe 0<sep<.005h< td=""> 00.4 00.4</sep<.005h<></sep<.005h<>	uildings. isignificant I 005 <sep<.01h 01 00.7 00.7 nsverse Direc Significant I 005<sep<.01h 00.7 0.9 01</sep<.01h </sep<.01h 	ction: 1.0 nsignificant Sep>.01H ©1 O0.8 ction: 1.0 nsignificant Sep>.01H O1 ©1 O1 ©1	Factor D 1.0
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignment b) Factor D2: - Height Dif Table for Selection of Comment Site Characteristics - Stability	a coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height at of Floors not within 20% of Storey Height ference Effect Factor D2 Height Difference 2 to 4 Storeys Height Difference 2 to 4 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys Height Difference < 3 Storeys Height Difference < 4 Storeys Height Difference < 3 Stor	licable to frame b actor D1 For Tra Severe 0 <sep<.005h .0<br="">O1 O0.4 actor D2 For Tra Severe 0<sep<.005h .0<br="">O0.4 O.Sep<.005H .0 O0.4 O.Sep<.005H .0 O.Sep<.005H .0 O.Sep<.005H .0 O.Sep 1.0 0.0 O.Sep 1.0 O.S</sep<.005h></sep<.005h>	uildings. isignificant I 005 <sep<.01h 01 00.7 00.7 nsverse Direc Significant I 005<sep<.01h 00.7 0.9 01</sep<.01h </sep<.01h 	ction: 1.0 nsignificant Sep>.01H ©1 C0.8 Ction: 1.0 nsignificant Sep>.01H O1 ©1 O1 ©1 a life-safety pers	Factor D 1.0
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignment b) Factor D2: - Height Dif Table for Selection of Comment Site Characteristics - Stability Effect on Structural Performance Comment Other Factors - for allowance o Record rationale for choi	a coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height at of Floors not within 20% of Storey Height ference Effect Factor D2 Height Difference > 4 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys Height Difference < 0 Severe 0 f all other relevant characterstics of the buil	licable to frame b actor D1 For Tra Severe 0 <sep<.005h O1 O0.4 actor D2 For Tra Severe 0<sep<.005h O4 actor D2 For Tra Severe 0<sep<.005h O4 O O1 ts the structural pe Significant ding For ≤ 3 ot</sep<.005h </sep<.005h </sep<.005h 	uildings. nsverse Direr Significant I 005 <sep<.01h 01 00.7 00.7 nsverse Direr Significant I 005<sep<.01h 00.7 0.9 01 rformance from a storeys - Maxir herwise - Maxir</sep<.01h </sep<.01h 	ction: 1.0 nsignificant Sep>.01H ●1 0.8 Color 1.0 nsignificant Sep>.01H O1 01 ●1 01	Factor D 1.0 pective Factor E 1.0
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignment b) Factor D2: - Height Dif Table for Selection of Comment Site Characteristics - Stability Effect on Structural Performance Comment Other Factors - for allowance o Record rationale for choi	a coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height at of Floors not within 20% of Storey Height ference Effect Factor D2 Height Difference 2 to 4 Storeys Height Difference 2 to 4 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys (andslide threat, liquefaction etc as it affect (a) Severe (b) f all other relevant characterstics of the built ce of Factor F:	licable to frame b actor D1 For Tra Severe 0 <sep<.005h O1 O0.4 actor D2 For Tra Severe 0<sep<.005h O4 actor D2 For Tra Severe 0<sep<.005h O4 O O1 ts the structural pe Significant ding For ≤ 3 ot</sep<.005h </sep<.005h </sep<.005h 	uildings. nsverse Direr Significant I 005 <sep<.01h 01 00.7 00.7 nsverse Direr Significant I 005<sep<.01h 00.7 0.9 01 rformance from a storeys - Maxir herwise - Maxir</sep<.01h </sep<.01h 	ction: 1.0 nsignificant Sep>.01H ©1 O0.8 ction: 1.0 nsignificant Sep>.01H O1 ©1 O1 ©1 O1 ©1 O1 ©1 O1 ©1 O1 ©1 O1 ©1 O1 ©1 O1 ©1 O1 ©1 O1 ©1 O1 ©1 O1 ©1 O1 ©1 O1 O1 O1 O1 O1 O1 O1 O1 O1 O	Factor D 1.0 pective Factor E 1.0 Factor F 0.9
Values given assume the bui may be reduced by taking the Table for Selection of Align Alignment b) Factor D2: - Height Dif Table for Selection of Comment Site Characteristics - Stability Effect on Structural Performance Comment Other Factors - for allowance o Record rationale for choi	a coefficient to the right of the value app Factor D1 Separation ment of Floors within 20% of Storey Height at of Floors not within 20% of Storey Height ference Effect Factor D2 Height Difference > 4 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys (andslide threat, liquefaction etc as it affect (a) Severe (b) Severe (c) Sev	licable to frame b actor D1 For Tra Severe 0 < Sep < .005H .0 O1 O0.4 actor D2 For Tra Severe 0 < Sep < .005H .0 O0.4 actor D2 For Tra Severe 0 < Sep < .005H .0 O0.4 D1 actor D2 For Tra Severe 0 < Sep < .005H .0 O1 actor D2 For Tra Severe 0 < Sep < .005H .0 O2 Contactor D2 For Tra Severe 0 < Sep < .005H .0 O1 actor D2 For Tra Severe 0 < Sep < .005H .0 O1 Contactor D2 For Tra Severe 0 < Sep < .005H .0 O1 actor D2 For Tra Severe 0 < Sep < .005H .0 actor D2 For Tra Severe 0 < Sep < .005H .0 actor D2 For Tra Severe 0 < Sep < .005H .0 actor D2 For Tra actor D2 For Tra act	uildings. nsverse Direr Significant I 005 <sep<.01h 01 00.7 00.7 nsverse Direr Significant I 005<sep<.01h 00.7 0.9 01 rformance from a storeys - Maxir herwise - Maxir</sep<.01h </sep<.01h 	ction: 1.0 nsignificant Sep>.01H ●1 0.8 Cols 0.8 ction: 1.0 nsignificant Sep>.01H O1 ●1 O1 ●1 <tr< td=""><td>Factor D 1.0 pective Factor E 1.0</td></tr<>	Factor D 1.0 pective Factor E 1.0

nitial Evaluation Proced	ure (IEP) Assessment - Complete		Page
treet Number & Name:	36 Tay Street - New Part	Job No.:	1711-2266
KA:		By:	GRMcD
lame of building:	'Just Incredible'	Date:	17/03/2018
ity:	Invercargill	Revision No.:	A
able IEP-4 Initial Eva	Iluation Procedure Steps 4, 5, 6 a	nd 7	
tep 4 - Percentage of New I	Building Standard (%NBS)	Longitudinal	Transverse
.1 Assessed Baseline %NBS (from Table IEP - 1)	S (%NBS) _b	36%	60%
2 Performance Achievemer (from Table IEP - 2)	nt Ratio (PAR)	2.00	0.90
3 PAR x Baseline (%NBS) _b		75%	55%
.4 Percentage New Building (Use lower of two values f	Standard (%NBS) - Seismic Rating rom Step 4.3)		55%
tep 5 - Is <i>%NBS <</i> 34?			NO
itep 6 - Potentially Earthqua	ke Risk (is <i>%NBS <</i> 67)?		YES
tep 7 - Provisional Grading	for Seismic Risk based on IEP	Seismic Grade	C
Relationship betwee	en Grade and <i>%NBS</i> :		
Buildings" Technical Guidelines for Engine	been carried out solely as an initial seismic assessment of th ering Assessments, July 2017. This spreadsheet must be read purpose. Detailed inspections and engineering calculations,	I in conjunction with the limitations set out in the accord	npanying report, and should

treet Number & Name: KA: ame of building: ity:		36 Tay Street - New I 'Just Incredible' Invercargill	Part	Job No.: By: Date: Revision No.:	1711-2266 GRMcD 17/03/2018 A
	o 8 - Identification of po	aluation Procedure S tential Severe Structural significant number of o	Weaknesses (SSWs)	that could result in	
	Number of storeys abov	e ground level			2
	Presence of heavy conc	rete floors and/or concrete	e roof? (Y/N)		Y
	Potential Severe	Structural Weakn	esses (SSWs):		
	Note: Options that are greye	d out are not applicable and ne	ed not be considered.		
	Occupancy not consid	lered to be significant -	no further considerati	on required	
	Risk not considered to	be significant - no furt	her consideration requ	uired	
		Il Severe Structural Wea			
	1. None identified				
	2. Weak or soft storey	(except top storey)			
		/or beam-column joints other structural element		hich are	
	4. Flat slab buildings v connections	with lateral capacity relia	nt on low ductility sla	b-to-column	
	5. No identifiable conr	ection between primary	structure and diaphra	agms	
	6. Ledge and gap stair	-			
			0		
	IEP Assessme	ent Confirmed by	G. R. M. Douga	Ø Signature	
			G R McDougall	Name	
			70007	CPEng. No	

WARNING!! This initial evaluation has of Existing Buildings" Technical Guidelines	ure (IEP) Assessment - Comp been carried out solely as an initial seismic asses for Engineering Assessments, July 2017. This sp party for any other purpose. Detailed inspection different result or seismic grade.	ssment of the building following the readsheet must be read in conjuncti	procedureset out in the on with the limitations	set out in the accompanyin
Street Number & Name: AKA:	36 Tay Street - Old Part 'Just Incredible'		Job No.: By: Date:	1711-2266 GRMcD
Name of building: City:	Invercargill		Revision No.:	17/03/2018 A
Table IEP-1 Initial Eva	luation Procedure Step 1			
Step 1 - General Information				
1.1 Photos (attach sufficient to	describe building)			
•				
Refer to ISA Plus Report				
	NOTE: THERE ARE MORE PHO	TOS ON PAGE 1a ATTACHED)	
1.2 Sketches (plans etc, show it	(amo of interact)			
x				
Refer to ISA Plus Report				
	NOTE, THERE ARE MORE SKET		D	
	NOTE: THERE ARE MORE SKET			
	only 10 lines of text will print in this	s box. If further text require	ed use Page 1a)	
Refer to ISA Plus Report				
	Tick as appropriate			
1.4 Note information sources				
Visual Inspection of Exterior		Specifications		
Visual Inspection of Exterior Visual Inspection of Interior		Geotechnical Reports		

treet Number a	& Name:	36 Tay Street - Old Pa	art			Job No.:	1711-2266	
KA:						By:	GRMcD	
lame of buildin ity:	g:	'Just Incredible' Invercargill				Date: Revision No.	17/03/2018 A	
ity.		Invercargin				Revision No.	. <mark>A</mark>	
able IEP-2	Initial Eva	luation Procedure S	Step 2					
on 2 - Dotorr	nination of (%	NRS)						
•	•	ding - refer Section B5)						
, ,	ominal (%NBS)	•			ongitudinal		Transverse	
				-				
	engthening Data						_	
Tick if build	ing is known to ha	we been strengthened in this of	direction					
If strengthe	ened, enter percen	tage of code the building has	been strengthened	to	N/A		N/A	
			_					
b) Year of Desi	gn/Strengthening	g, Building Type and Seismic	c Zone	_	1005		D (005	
					e 1935 O 5-1965 O		Pre 1935 1935-1965	-
					5-1905 ()		1965-1976	•
					6-1984 O		1976-1984	-
					4-1992 O		1984-1992	-
					2-2004 O		1992-2004	-
					4-2011 O		2004-2011 Post Aug 2011	-
				Post Au	g 2011 O		Post Aug 2011	0
			Building Type:			•		•
			Seismic Zone:		Not applicab	le	Not applical	ble
c) Soil Type								_
I	From NZS1170.5:	2004, CI 3.1.3 :		D Soft Soil		•	D Soft Soil	•
	From NZS4203:19 for 1992 to 2004	992, Cl 4.6.2.2 : and only if known)			Not applicab	le	Not applical	ble
d) Estimate Pe	riod. T							
Comment:	·			h _n =	10		10	m
				A _c =	1.00		1.00	m²
Momont Ro	sisting Concrete F	romoo:	ax{0.09 <i>h</i> _n ^{0.75} , 0.4}		0		0	
	sisting Steel Fram		$ax\{0.09h_n^{0.75}, 0.4\}$		0		0	
	Braced Steel Fra		ax{0.08 <i>h</i> _n ^{0.75} , 0.4}		õ		õ	
	ame Structures:		ax{0.06 <i>h</i> ^{0.75} , 0.4}		0		0	
Concrete Sh			ax{0.09 <i>h</i> n ^{0.75} / Ac ^{0.5} , 0.4}		0		0	
Masonry Sh	ear Walls: d (input Period):	<i>T</i> <u>≤</u> 0	4sec				۲	
User Denne		neight in metres from the base of the s	structure to the		0		0	
		ismic weight or mass.		T:	0.40		0.40	
e) Factor A:	Strengthening factor d	letermined using result from (a) above	e (set to 1.0	Factor A:	1.00		1.00	l
f) Factor B:	if not strengthened)	EE Guidelines Figure 3A.1 using		Factor B:	0.03			l I
	results (a) to (e) above		d Exater				0.03	l I
g) Factor C:	For reinforced concret C = 1.2, otherwise tak	e buildings designed between 1976-8 e as 1.0.	4 Factor	Factor C:	1.00		1.00	
h) Factor D:		d prior to 1935 Factor D = 0.8 except : 5) where Factor D may be taken as 1		Factor D:	1.00		1.00	
<i>(%NBS)</i> _{nom} =	AxBxCxD			(% NBS) _{nom}	3%		3%	
				L. L				

may lead to a different result or seismic grade.

reet Number & Name:	36 Tay Street	- Old Part	Job No.:	1711-2266
KA: ame of building:	'Just Incredib	le'	By: Date:	GRMcD 17/03/2018
ity:	Invercargill		Revision	····· ·····
able IEP-2 Initial Ev	valuation Proce	dure Step 2	continued	
2 Near Fault Scaling Factor, If $T < 1.5$ sec, Factor E = 1				
$117 \leq 1.55ec, 1 actor E = 1$			Longitudinal	Transverse
a) Near Fault Factor, <i>N(T,D)</i>			N(T,D): 1	1
(from NZS1170.5:2004, CI 3.1.6) b) Factor E		= 1/N(T,D)	Factor E: 1.00	1.00
3 Hazard Scaling Factor, Fac a) Hazard Factor, Z, for site	ctor F			
	n: Invercargill	•	Refer right for user-defined locations	
	Z = 0.17	(from NZS1170	5:2004, Table 3.3)	
Z ₁₉₉			Zone Factor from accompanying Figure 3.5(b))	
Z ₂₀₀ b) Factor F	0.17	(trom NZS1170	5:2004, Table 3.3)	
For pre 1992	=	_1/Z		
For 1992-2011 For post 2011	=	Z ₁₉₉₂ /Z Z ₂₀₀₄ /Z		
101 000 2011	-	- 2004 -	Factor F: 5.88	5.88
b) Design Risk Factor R		5-1984 set I value.)		
 b) Design Risk Factor, R_o (set to 1.0 if other than 1976-2004, d) c) Return Period Factor, R (from NZS1170.0:2004 Building Imp) d) Factor G 5 Ductility Scaling Factor, Fr a) Available Displacement Duc Comment: 	actor H	<u>Choose Imp</u> IR _o /R	$R_{o} = 1$ $respective for the second seco$	1 01 @2 03 0 1.0 1.25
(set to 1.0 if other than 1976-2004, o c) Return Period Factor, R (from NZS1170.0:2004 Building Imp d) Factor G 5 Ductility Scaling Factor, F a) Available Displacement Duc <i>Comment:</i>	actor H	<u>Choose Imp</u> IR _o /R	$\frac{\text{ortance Level}}{\text{R}} = \frac{1.0}{1.00}$ Factor G: 1.00 $\mu = \frac{1.25}{1.00}$	Q1 €2 Q3 C 1.0 1.00 1.25
(set to 1.0 if other than 1976-2004, o c) Return Period Factor, R (from NZS1170.0:2004 Building Imp d) Factor G 5 Ductility Scaling Factor, F a) Available Displacement Duc	For pre 1976 (ma	<u>Choose Imp</u> IR _o /R Structure ximum of 2)	$\mu = \underbrace{1.0}_{k_{\mu}}$	01 ©2 O3 C <u>1.0</u> <u>1.00</u> <u>1.25</u> <u>k_μ</u> 1.14
(set to 1.0 if other than 1976-2004, o c) Return Period Factor, R (from NZS1170.0:2004 Building Imp d) Factor G 5 Ductility Scaling Factor, Fa a) Available Displacement Duc <i>Comment:</i> b) Factor H	For pre 1976 (ma For 1976 onwards	<u>Choose Imp</u> IR _o /R Structure ximum of 2)	Factor G: 1.00 $\mu = 1.25$ $\mu = 1.14$ $\mu = 1.14$ $\mu = 1.14$	 Q1 ●2 Q3 C 1.0 1.00 1.25 k_µ
(set to 1.0 if other than 1976-2004, o c) Return Period Factor, R (from NZS1170.0:2004 Building Imp d) Factor G 5 Ductility Scaling Factor, F a) Available Displacement Duc <i>Comment:</i> b) Factor H (where kµ is NZS1170.5:2004 Inelat	For pre 1976 (ma For 1976 onwards	Choose Imp IR _o /R Structure ximum of 2) s	Factor G: 1.00 $\mu = 1.25$ $\mu = 1.14$ $\mu = 1.14$ $\mu = 1.14$	O1 ©2 O3 C <u>1.0</u> <u>1.00</u> <u>1.25</u> <u>k_μ</u> 1.14 <u>1</u>
(set to 1.0 if other than 1976-2004, of c) Return Period Factor, R (from NZS1170.0:2004 Building Imp d) Factor G 5 Ductility Scaling Factor, Fr a) Available Displacement Duc <i>Comment:</i> b) Factor H (where kµ is NZS1170.5:2004 Inelat 6 Structural Performance Sc a) Structural Performance Fac (from accompanying Figure 3.4)	For pre 1976 (ma For 1976 onwards stic Spectrum Scaling Factor, Caling Factor, Factor tor, S _p	Choose Imp IR _o /R Structure ximum of 2) s yr, from accompanyin or I	$\mu = 1.25$ Factor G: 1.00 $\mu = 1.25$ $\mu = 1.14$	$\begin{array}{c cccc} 01 & \textcircled{0}2 & 03 & C \\ \hline 1.0 \\ \hline 1.00 \\ \hline 1.25 \\ \hline k_{\mu} \\ 1.14 \\ 1 \\ \hline 1.14 \\ \hline 1.14 \\ \hline 1.14 \\ \end{array}$
 (set to 1.0 if other than 1976-2004, d c) Return Period Factor, R (from NZS1170.0:2004 Building Imp d) Factor G 5 Ductility Scaling Factor, Fr a) Available Displacement Duc Comment: b) Factor H (where kµ is NZS1170.5:2004 Inelate 6 Structural Performance Sc a) Structural Performance Fac 	For pre 1976 (ma For 1976 onwards stic Spectrum Scaling Factor, Caling Factor, Factor tor, S _p	Choose Imp IR _o /R Structure ximum of 2) s yr, from accompanyin or I	Factor G: 1.00 $\mu = 1.25$ $\mu = 1.14$ $\mu = 1.14$ $\mu = 1.14$	O1 ©2 O3 C <u>1.0</u> <u>1.00</u> <u>1.25</u> <u>k_μ</u> 1.14 <u>1</u>
(set to 1.0 if other than 1976-2004, of c) Return Period Factor, R (from NZS1170.0:2004 Building Imp d) Factor G 5 Ductility Scaling Factor, Fr a) Available Displacement Duc <i>Comment:</i> b) Factor H (where kµ is NZS1170.5:2004 Inelat 6 Structural Performance Sc a) Structural Performance Fac (from accompanying Figure 3.4)	For pre 1976 (ma For pre 1976 (ma For 1976 onwards stic Spectrum Scaling Factor caling Factor, Factor tor, S _p struction in this direction	Choose Imp IR _o /R Structure ximum of 2) s yr, from accompanyin or I	$\mu = 1.25$ Factor G: 1.00 $\mu = 1.25$ $\mu = 1.14$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
 (set to 1.0 if other than 1976-2004, d c) Return Period Factor, R (from NZS1170.0:2004 Building Imp d) Factor G 5 Ductility Scaling Factor, F. a) Available Displacement Ducc Comment: b) Factor H (where kµ is NZS1170.5:2004 Inelate 6 Structural Performance Scale (from accompanying Figure 3.4) Tick if light timber-framed control 	For pre 1976 (ma For pre 1976 (ma For 1976 onwards stic Spectrum Scaling Factor caling Factor, Factor tor, S _p struction in this direction	Choose Imp IR _o /R Structure ximum of 2) s vr, from accompanyin or I on = 1/S _p	$\mu = 1.25$ Factor G: 1.00 $\mu = 1.25$ $\mu = 1.14$ $= 1.14$ Factor H: 1.14 $g \text{ Table 3.3}$ Factor I: 1.08	$\bigcirc 1 \textcircled{0}2 \bigcirc 3 \bigcirc 1.0 \\ \hline 1.00 \\ \hline 1.25 \\ \hline k_{\mu} \\ 1.14 \\ 1 \\ \hline 1.14 \\ 1 \\ \hline 1.14 \\ \hline 0.93 \\ \hline \bigcirc 0.93 \\ \hline \bigcirc$

Street Number & Name:	36 Tay Street - Old Part		J	ob No.:	1711-2266
KA:				y:	GRMcD
lame of building:	'Just Incredible'			ate: evision No.:	17/03/2018
City:		Invercargill			Α
able IEP-3 Initial	Evaluation Procedure Step	3			
Step 3 - Assessment of I Refer Appendix B - Section B3	Performance Achievement Ratio	(PAR)			
) Longitudinal Direction	n				
potential CSWs		on Structural Perform a value - Do not interpo			Factor
.1 Plan Irregularity	-				Factor A 10
Effect on Structural Perfo. Comment	mance O Severe	O Significant		Insignificant	Factor A 1.0
2 Vertical Irregularity Effect on Structural Perfo. Comment	mance 🔿 Severe	O Significant		Insignificant	Factor B 1.0
.3 Short Columns					
Effect on Structural Perfo	mance 🔿 Severe	O Significant		Insignificant	Factor C 1.0
	the building has a frame structure. For king the coefficient to the right of the v			ect of pounding	
			e buildings.]
may be reduced by ta	king the coefficient to the right of the vi	alue applicable to frame Factor D1 For Lo Severe	e buildings. ongitudinal Dire Significant	ection: 1.0]
may be reduced by ta	king the coefficient to the right of the vi	alue applicable to frame Factor D1 For Lo Severe eparation 0 <sep<.005h< td=""><td>e buildings. ongitudinal Dire</td><td>ection: 1.0</td><td></td></sep<.005h<>	e buildings. ongitudinal Dire	ection: 1.0	
Table for Selec	king the coefficient to the right of the vi tion of Factor D1	Factor D1 For Lo Severe aparation 0 <sep<.005h O1</sep<.005h 	e <i>buildings.</i> ongitudinal Dire Significant .005 <sep<.01h< td=""><td>ection: 1.0 Insignificant Sep>.01H</td><td></td></sep<.01h<>	ection: 1.0 Insignificant Sep>.01H	
may be reduced by ta	king the coefficient to the right of the va tion of Factor D1 Se Alignment of Floors within 20% of Store	Factor D1 For Lo Severe aparation 0 <sep<.005h O1</sep<.005h 	e buildings. ongitudinal Dire Significant .005 <sep<.01h Q1</sep<.01h 	ection: 1.0 Insignificant Sep>.01H ©1	
Table for Select	king the coefficient to the right of the va tion of Factor D1 Se Alignment of Floors within 20% of Store	Factor D1 For Lo Severe aparation 0 <sep<.005h O1</sep<.005h 	e buildings. ongitudinal Dire Significant .005 <sep<.01h Q1</sep<.01h 	ection: 1.0 Insignificant Sep>.01H ©1	
Table for Select	king the coefficient to the right of the va tion of Factor D1 Se Alignment of Floors within 20% of Store Nignment of Floors not within 20% of Store	Factor D1 For Lo Severe aparation 0 <sep<.005h O1 ay Height O14 Factor D2 For Lo</sep<.005h 	e buildings.	ection: 1.0 Insignificant Sep>.01H ©1 O0.8 ection: 1.0	
Table for Select	king the coefficient to the right of the va tion of Factor D1 Se Alignment of Floors within 20% of Store Alignment of Floors not within 20% of Store	Factor D1 For Lo Severe oparation 0 <sep<.005h< td=""> by Height O1 by Height C0.4</sep<.005h<>	e buildings. ongitudinal Dir Significant .005 <sep<.01h O1 O0.7 Ongitudinal Dir Significant</sep<.01h 	ection: 1.0 Insignificant Seps.01H ©1 Q0.8	
Table for Select Comment b) Factor D2: - He	king the coefficient to the right of the va tion of Factor D1 Se Alignment of Floors within 20% of Store Nignment of Floors not within 20% of Store ight Difference Effect tion of Factor D2 Height Difference > 4	alue applicable to frame Factor D1 For Lo Severe aparation 0 <sep<.005h< td=""> ay Height O1 ay Height O0.4 Factor D2 For Lo Severe Severe 0<sep<.005h< td=""> Severe 0<severe< td=""> 0<severe< td=""> 0<severe< td=""> <t< td=""><td>e buildings. ongitudinal Dir Significant .005<sep<.01h O1 O0.7 O0.7 Ongitudinal Dir Significant .005<sep<.01h O0.7</sep<.01h </sep<.01h </td><td>ection: 1.0 Insignificant Sep>.01H ©1 O0.8 ection: 1.0 Insignificant</td><td></td></t<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></severe<></sep<.005h<></sep<.005h<>	e buildings. ongitudinal Dir Significant .005 <sep<.01h O1 O0.7 O0.7 Ongitudinal Dir Significant .005<sep<.01h O0.7</sep<.01h </sep<.01h 	ection: 1.0 Insignificant Sep>.01H ©1 O0.8 ection: 1.0 Insignificant	
Table for Select	king the coefficient to the right of the va tion of Factor D1 Se Alignment of Floors within 20% of Store Alignment of Floors not within 20% of Store ight Difference Effect tion of Factor D2 Height Difference 2 to 4	alue applicable to frame Factor D1 For Lo Severe aparation 0 <sep<.005h< td=""> ay Height O1 ay Height O0.4 Factor D2 For Lo Severe Severe 0<sep<.005h< td=""> 4 Storeys O0.4</sep<.005h<></sep<.005h<>	e buildings. ngitudinal Dir Significant .005 <sep<.01h O1 O0.7 O0.7 Digitudinal Dir Significant .005<sep<.01h O0.7 O0.7 O0.9</sep<.01h </sep<.01h 	ection: 1.0 Insignificant Sep>.01H ©1 O0.8 ection: 1.0 Insignificant Sep>.01H O1 ©1	
Table for Select	king the coefficient to the right of the va tion of Factor D1 Se Alignment of Floors within 20% of Store Nignment of Floors not within 20% of Store ight Difference Effect tion of Factor D2 Height Difference > 4	alue applicable to frame Factor D1 For Lo Severe aparation 0 <sep<.005h< td=""> ay Height O1 ay Height O0.4 Factor D2 For Lo Severe Severe 0<sep<.005h< td=""> 4 Storeys O0.4</sep<.005h<></sep<.005h<>	e buildings. ongitudinal Dir Significant .005 <sep<.01h O1 O0.7 O0.7 Ongitudinal Dir Significant .005<sep<.01h O0.7</sep<.01h </sep<.01h 	ection: 1.0 Insignificant Sep>.01H ©1 O0.8 ection: 1.0 Insignificant Sep>.01H O1	
Table for Select	king the coefficient to the right of the values of Factor D1 Se Alignment of Floors within 20% of Store Nignment of Floors not within 20% of Store ight Difference Effect tion of Factor D2 Height Difference 2 to 4 Height Difference 2 to 4 Height Difference 2 to 4	alue applicable to frame Factor D1 For Lo Severe aparation 0 <sep<.005h< td=""> ay Height O1 O0.4 Factor D2 For Lo Severe 0<sep<.005h< td=""> 4 Storeys O0.4 4 Storeys O0.7 2 Storeys O1</sep<.005h<></sep<.005h<>	e buildings.	ection: 1.0 Insignificant Sep>.01H ©1 O0.8 ection: 1.0 Insignificant Sep>.01H O1 ©1 O1 ©1 O1	Factor D 1.0
Table for Select	king the coefficient to the right of the va tion of Factor D1 Se Alignment of Floors within 20% of Store Alignment of Floors not within 20% of Store ight Difference Effect tion of Factor D2 Height Difference 2 to 4	alue applicable to frame Factor D1 For Lo Severe aparation 0 <sep<.005h< td=""> ay Height O1 O0.4 Factor D2 For Lo Severe 0<sep<.005h< td=""> 4 Storeys O0.4 4 Storeys O0.7 2 Storeys O1</sep<.005h<></sep<.005h<>	e buildings.	ection: 1.0 Insignificant Sep>.01H ©1 O0.8 ection: 1.0 Insignificant Sep>.01H O1 ©1 O1 ©1 O1	Factor D 1.0
Table for Select	king the coefficient to the right of the va tion of Factor D1 Se Alignment of Floors within 20% of Store Alignment of Floors not within 20% of Store and Stability, landslide threat, liquefaction etc and Stability, landslide threat, liquefactin etc and Stability, landslide threat, liquefaction etc and St	alue applicable to frame Factor D1 For Lo Severe aparation 0 <sep<.005h< td=""> ay Height O1 O0.4 Factor D2 For Lo Severe 0<sep<.005h< td=""> 4 Storeys O0.4 4 Storeys O0.7 2 Storeys O1</sep<.005h<></sep<.005h<>	e buildings.	ection: 1.0 Insignificant Sep>.01H ©1 O0.8 ection: 1.0 Insignificant Sep>.01H O1 ©1 O1 ©1 O1	Factor D 1.0
may be reduced by ta Table for Select Comment b) Factor D2: - He Table for Select Comment Site Characteristics - Effect on Structural Perfor Comment	king the coefficient to the right of the values of the val	alue applicable to frame Factor D1 For Lo Severe oy Height oy Height Oo.4 Factor D2 For Lo Severe Oseps.005H 4 Storeys Oo.4 4 Storeys Oo.4 2 Storeys Oo.1 oy Height 0 Severe 0 Severe 0 Significant	e buildings.	ection: 1.0 Insignificant Sep>.01H ©1 O0.8 ection: 1.0 Insignificant Sep>.01H O1 ©1 O1 ©1 O1	Factor D 1.0
may be reduced by ta Table for Select Comment b) Factor D2: - He Table for Select Comment Site Characteristics - Effect on Structural Perfor Comment .6 Other Factors - for allow Record rationale for	king the coefficient to the right of the values of the val	alue applicable to frame Factor D1 For Lo Severe oy Height oy Height Oo.4 Factor D2 For Lo Severe Oseps.005H 4 Storeys Oo.4 4 Storeys Oo.4 2 Storeys Oo.1 oy Height 0 Severe 0 Severe 0 Significant	e buildings.	ection: 1.0 Insignificant Sep>.01H ©1 O0.8 ection: 1.0 Insignificant Sep01H O1 ©1 O1 ©1 n a life-safety pers © Insignificant (inum value 2.5 cimum value 1.5. minimum.	Factor D 1.0 pective Factor E 1.0 Factor F 1.0 PAR
may be reduced by ta Table for Select Comment b) Factor D2: - He Table for Select Comment Site Characteristics - Effect on Structural Perfor Comment 6 Other Factors - for allow Record rationale for 7 Performance Achiever (equals A x B x C x D allow)	king the coefficient to the right of the values of the val	alue applicable to frame Factor D1 For Lo Severe applicable to frame Severe opplicable to frame Opplicable to frame Severe Opplicable to frame Opplicable to frame Severe Opplicable to frame Opplicable to frame Severe <	e buildings.	ection: 1.0 Insignificant Sep>.01H ©1 O0.8 ection: 1.0 Insignificant Sep>.01H O1 ©1 O1 ©1 n a life-safety pers © Insignificant significant timum value 2.5 cimum value 1.5. minimum.	Factor D 1.0 pective Factor E 1.0 Factor F 1.0 Factor F 1.0 PAR ngitudinal 1.00

eet Number & Name:	36 Tay Street - Old Part		Job	No.:	1711-2266
A: mo of huilding:	'Just Incredible'		By: Date		GRMcD
me of building: :y:	Invercargill			s: ision No.:	17/03/2018 A
able IEP-3 Initial Ev	valuation Brooduro Stop 2				
	valuation Procedure Step 3				
ep 3 - Assessment of Per efer Appendix B - Section B3.2)	rformance Achievement Ratio (PAR)				
Transverse Direction					
potential CSWs		uctural Performa e - Do not interpol			Fact
Plan Irregularity Effect on Structural Perform		Significant		Insignificant	Factor A 1.0
Comment		Signinoant			
Vertical Irregularity					
Effect on Structural Perform Comment	nance O Severe O	Significant		Insignificant	Factor B 1.0
Short Columns Effect on Structural Perform	nance O Severe	Significant		Insignificant	Factor C 1.0
Comment					
	e building has a frame structure. For stiff buil g the coefficient to the right of the value app			of pounding	
Values given assume the may be reduced by takin	g the coefficient to the right of the value app	ctor D1 For Tran	sverse <u>D</u> irect	ion: 1.0	
Values given assume the may be reduced by takin Table for Selectio	g the coefficient to the right of the value app Fa n of Factor D1 Separation	ctor D1 For Tran Severe 3 0 <sep<.005h .00<="" td=""><td>sverse Direct Significant Ins 55<sep<.01h< td=""><td>ion: 1.0 significant Sep>.01H</td><td></td></sep<.01h<></td></sep<.005h>	sverse Direct Significant Ins 55 <sep<.01h< td=""><td>ion: 1.0 significant Sep>.01H</td><td></td></sep<.01h<>	ion: 1.0 significant Sep>.01H	
Values given assume the may be reduced by takin Table for Selectio	g the coefficient to the right of the value app Fa n of Factor D1 Alignment of Floors within 20% of Storey Height	to frame but <u>ctor D1 For Tran</u> Severe 0 <sep<.005h .00<br="">O1</sep<.005h>	sverse Direct Significant Ins 55Sep<.01H O1	ion: 1.0 significant Sep>.01H ©1	
Values given assume the may be reduced by takin Table for Selectio	g the coefficient to the right of the value app Fa n of Factor D1 Separation	ctor D1 For Tran Severe 3 0 <sep<.005h .00<="" td=""><td>sverse Direct Significant Ins 55<sep<.01h< td=""><td>ion: 1.0 significant Sep>.01H</td><td></td></sep<.01h<></td></sep<.005h>	sverse Direct Significant Ins 55 <sep<.01h< td=""><td>ion: 1.0 significant Sep>.01H</td><td></td></sep<.01h<>	ion: 1.0 significant Sep>.01H	
Values given assume the may be reduced by takin Table for Selectio Alig	g the coefficient to the right of the value app Fa n of Factor D1 Alignment of Floors within 20% of Storey Height nment of Floors not within 20% of Storey Height	to frame but <u>ctor D1 For Tran</u> Severe 0 <sep<.005h .00<br="">O1</sep<.005h>	sverse Direct Significant Ins 55Sep<.01H O1	ion: 1.0 significant Sep>.01H ©1	
Values given assume the may be reduced by takin Table for Selectio Alig Comment	g the coefficient to the right of the value app Fa n of Factor D1 Separation Alignment of Floors within 20% of Storey Height nment of Floors not within 20% of Storey Height t Difference Effect	Severe Severe 0 <sep<.005h< td=""> .00 O1 O1</sep<.005h<>	sverse Direct Significant Ins 55Sepc.01H O1 O0.7	ion: 1.0 significant Sep>.01H ©1 O0.8	
Values given assume the may be reduced by takin Table for Selectio Alig Comment	g the coefficient to the right of the value app Fa n of Factor D1 Separation Alignment of Floors within 20% of Storey Height nment of Floors not within 20% of Storey Height t Difference Effect Fa	Ctor D1 For Trans Severe 0 <sep<.005h< td=""> 01 00.4</sep<.005h<>	ildings. isverse Direct Significant Ins 15 <sep<.01h 01 00.7 O0.7 Sverse Direct Significant Ins</sep<.01h 	ion: 1.0 significant Sep>.01H ©1 O0.8 ion: 1.0	
Values given assume the may be reduced by takin Table for Selectio Alig Comment b) Factor D2: - Heigh	g the coefficient to the right of the value app Fa n of Factor D1 Separation Alignment of Floors within 20% of Storey Height nment of Floors not within 20% of Storey Height t Difference Effect Fa	Ctor D1 For Trans Severe 0 <sep<.005h< td=""> 01 00.4</sep<.005h<>	ildings. sverse Direct Significant Ins 5 <sep<.01h 01 00.7 Sverse Direct</sep<.01h 	ion: 1.0 significant Sep>.01H ©1 O0.8 ion: 1.0	
Values given assume the may be reduced by takin Table for Selectio Alig Comment b) Factor D2: - Heigh	g the coefficient to the right of the value app Fa n of Factor D1 Separation Alignment of Floors within 20% of Storey Height mment of Floors not within 20% of Storey Height at Difference Effect n of Factor D2 Height Difference > 4 Storeys Height Difference 2 to 4 Storeys	Ctor D1 For Trans Severe 3 0 <sep<.005h< td=""> .00 O1 00.4 Ctor D2 For Trans Severe 0<sep<.005h< td=""> .00 O1 00.4 0<sep<.005h< td=""> .00 0.04 .00 0<sep<.005h< td=""> .00 0<sep<.005h< td=""> .00 0.02 .00 0.03 .00</sep<.005h<></sep<.005h<></sep<.005h<></sep<.005h<></sep<.005h<>	sverse Direct Significant Ins 15 <sep<.01h O1 O0.7 Significant Ins 55Sep<.01H 00.7 0.7 0.9</sep<.01h 	ion: 1.0 significant Sep>.01H ©1 O0.8 ion: 1.0 significant Sep>.01H O1 ©1 ©1	
Values given assume the may be reduced by takin Table for Selectio Alig Comment b) Factor D2: - Heigh	g the coefficient to the right of the value app Fa n of Factor D1 Separation Alignment of Floors within 20% of Storey Height mment of Floors not within 20% of Storey Height the Difference Effect n of Factor D2 Height Difference > 4 Storeys	Ctor D1 For Trans Severe 0 <sep<.005h< td=""> 01 00.4 Ctor D2 For Trans Severe 0<sep<.005h< td=""> 0.0</sep<.005h<></sep<.005h<>	sverse Direct Significant Ins 15 <sep<.01h 01 00.7 Significant Ins 55<sep<.01h 00.7</sep<.01h </sep<.01h 	ion: 1.0 significant Sep>.01H ©1 O0.8 ion: 1.0 significant Sep>.01H O1	
Values given assume the may be reduced by takin Table for Selectio Alig Comment b) Factor D2: - Heigh Table for Selectio	g the coefficient to the right of the value app Fa n of Factor D1 Separation Alignment of Floors within 20% of Storey Height mment of Floors not within 20% of Storey Height at Difference Effect n of Factor D2 Height Difference > 4 Storeys Height Difference 2 to 4 Storeys	Ctor D1 For Trans Severe 3 0 <sep<.005h< td=""> .00 O1 00.4 Ctor D2 For Trans Severe 0<sep<.005h< td=""> .00 O1 00.4 0<sep<.005h< td=""> .00 0.04 .00 0<sep<.005h< td=""> .00 0<sep<.005h< td=""> .00 0.02 .00 0.03 .00</sep<.005h<></sep<.005h<></sep<.005h<></sep<.005h<></sep<.005h<>	sverse Direct Significant Ins 15 <sep<.01h O1 O0.7 Significant Ins 55Sep<.01H 00.7 0.7 0.9</sep<.01h 	ion: 1.0 significant Sep>.01H ©1 O0.8 ion: 1.0 significant Sep>.01H O1 ©1 ©1	
Values given assume the may be reduced by takin Table for Selectio Alig Comment b) Factor D2: - Heigh Table for Selectio Comment	g the coefficient to the right of the value app Fa n of Factor D1 Separation Alignment of Floors within 20% of Storey Height mment of Floors not within 20% of Storey Height the Difference Effect Fa n of Factor D2 Height Difference > 4 Storeys Height Difference 2 to 4 Storeys Height Difference < 2 Storeys	Ctor D1 For Trans Severe 3 0 <sep<.005h< td=""> .00 Q1 0 Q0.4 0 Severe 3 0<sep<.005h< td=""> .00 Q0.4 0 Q0.4 .00 Q0.4 .00</sep<.005h<></sep<.005h<>	sverse Direct Significant Ins 15 <sep<.01h 01 00.7 Significant Ins 5<sep<.01h 00.7 0.7 0.9 01</sep<.01h </sep<.01h 	ion: 1.0 significant Sep>.01H ①1 O0.8 ion: 1.0 significant Sep>.01H O1 ①1 ①1 ①1 ①1	Factor D 1.0
Values given assume the may be reduced by takin Table for Selectio Alig Comment b) Factor D2: - Heigh Table for Selectio Comment Site Characteristics - Sta	g the coefficient to the right of the value app Fa n of Factor D1 Separation Alignment of Floors within 20% of Storey Height ment of Floors not within 20% of Storey Height the Difference Effect Fa n of Factor D2 Height Difference > 4 Storeys Height Difference < 2 Storeys	ctor D1 For Trans Severe 0 <sep<:005h< td=""> 01 00.4 Ctor D2 For Trans Severe 0<sep<:005h< td=""> 00.4 00.4 00.4 00.4 00.4 00.4 00.4 00.4 0.5 0.6 0.7 01</sep<:005h<></sep<:005h<>	ildings. isverse Direct Significant Ins 55 <sep<.01h 01 00.7 Significant Ins 55<sep<.01h 00.7 00.9 01 Corrmance from a</sep<.01h </sep<.01h 	ion: 1.0 significant Sep>.01H ©1 O0.8 ion: 1.0 significant Sep>.01H O1 ©1 O1 ©1 U1 O1 ©1 O1 O1 O1 O1 O1 O1 O1 O1 O1 O	Factor D 1.0
Values given assume the may be reduced by takin Table for Selectio Alig Comment b) Factor D2: - Heigh Table for Selectio Comment	g the coefficient to the right of the value app Fa n of Factor D1 Separation Alignment of Floors within 20% of Storey Height ment of Floors not within 20% of Storey Height the Difference Effect Fa n of Factor D2 Height Difference > 4 Storeys Height Difference < 2 Storeys	Ctor D1 For Trans Severe 3 0 <sep<.005h< td=""> .00 Q1 0 Q0.4 0 Severe 3 0<sep<.005h< td=""> .00 Q0.4 0 Q0.4 .00 Q0.4 .00</sep<.005h<></sep<.005h<>	ildings. isverse Direct Significant Ins 55 <sep<.01h 01 00.7 Significant Ins 55<sep<.01h 00.7 00.9 01 Corrmance from a</sep<.01h </sep<.01h 	ion: 1.0 significant Sep>.01H ①1 O0.8 ion: 1.0 significant Sep>.01H O1 ①1 ①1 ①1 ①1	Factor D 1.0
Values given assume the may be reduced by takin Table for Selectio Alig Comment b) Factor D2: - Heigh Table for Selectio Comment Site Characteristics - Sta Effect on Structural Perform Comment	g the coefficient to the right of the value app Fa n of Factor D1 Separation Alignment of Floors within 20% of Storey Height mment of Floors not within 20% of Storey Height the Difference Effect Height Difference > 4 Storeys Height Difference < 2 Storeys Height Difference < 0 Severe 0 here of all other relevant characterstics of the build	iccable to frame but ctor D1 For Tran Severe 0 <sep<.005h< td=""> 01 00.4 0<sep<.005h< td=""> 0<sep<.005h< td=""> 0<0.4</sep<.005h<></sep<.005h<></sep<.005h<>	ildings. isverse Direct Significant Ins 55 <sep<.01h 01 00.7 Significant Ins 55<sep<.01h 00.7 00.9 01 Corrmance from a</sep<.01h </sep<.01h 	ion: 1.0 significant Sep>.01H ©1 O0.8 ion: 1.0 significant Sep>.01H O1 ©1 O1 ©1 O1 ©1 U1 ©1 O1 ©1 O1 ©1 U1 ©1 U1 O1 O1 O1 O1 O1 O1 O1 O1 O1 O	Factor D 1.0
Values given assume the may be reduced by takin Table for Selectio Alig Comment b) Factor D2: - Heigh Table for Selectio Comment Site Characteristics - Sta Effect on Structural Perform Comment Other Factors - for allowar	g the coefficient to the right of the value app Fa n of Factor D1 Separation Alignment of Floors within 20% of Storey Height ment of Floors not within 20% of Storey Height the Difference Effect Height Difference > 4 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys Height Difference < 2 Storeys Height Difference < 3 Storeys Height Difference < 4 Storeys Height Difference < 2 Storeys Height Difference < 3 Storeys Height Difference < 4 Storeys Height Difference < 2 Storeys Height Difference < 3 Storeys Height Difference < 4 Storeys Height Difference < 5 Storeys Height Difference < 6 Storeys Height Difference < 6 Storeys Height Difference < 6 Storeys Height Difference < 7 Storeys Height Difference < 8 Storeys Height Difference < 8 Storeys Height Difference < 9 Storeys Height Differenc	iccable to frame but ctor D1 For Tran Severe 0 <sep<.005h< td=""> 01 00.4 0<sep<.005h< td=""> 0<sep<.005h< td=""> 0<0.4</sep<.005h<></sep<.005h<></sep<.005h<>	Isverse Direct Significant Ins 15 <sep<.01h 01 00.7 Isverse Direct Significant Ins 15<sep<.01h 00.7 0.9 01 iormance from a storeys - Maximu</sep<.01h </sep<.01h 	ion: 1.0 significant Sep>.01H ©1 O0.8 ion: 1.0 significant Sep>.01H O1 ©1 O1 ©1 Iffe-safety persp © Insignificant um value 2.5 um value 2.5 um value 1.5. imum.	Factor D 1.0 pective Factor E 1.0

nitial Evaluation Proced	ure (IEP) Assessment - Complete	d for HWCP Mgmt Ltd	Page
treet Number & Name:	36 Tay Street - Old Part	Job No.:	1711-2266
KA:		By:	GRMcD
lame of building:	'Just Incredible'	Date:	17/03/2018
ity:	Invercargill	Revision No.:	A
able IEP-4 Initial Eva	Iluation Procedure Steps 4, 5, 6 a	nd 7	
tep 4 - Percentage of New E	Building Standard (%NBS)	Longitudinal	Transverse
.1 Assessed Baseline %NBS (from Table IEP - 1)	S (%NBS) _b	21%	21%
2 Performance Achievemer (from Table IEP - 2)	nt Ratio (PAR)	1.00	1.00
3 PAR x Baseline (%NBS) _b		20%	20%
.4 Percentage New Building (Use lower of two values fi	Standard (%NBS) - Seismic Rating rom Step 4.3)		20%
tep 5 - Is <i>%NB</i> S < 34?			YES
itep 6 - Potentially Earthqua	ke Risk (is <i>%NBS</i> < 67)?		YES
tep 7 - Provisional Grading	for Seismic Risk based on IEP	Seismic Grade	D
Relationship betwee	en Grade and <i>%NBS</i> :		
Buildings" Technical Guidelines for Enginee	been carried out solely as an initial seismic assessment of th ering Assessments, July 2017. This spreadsheet must be read purpose. Detailed inspections and engineering calculations, ade.	in conjunction with the limitations set out in the accord	npanying report, and should

treet Number & Name: KA: ame of building: ity:		36 Tay Street - Old F 'Just Incredible' Invercargill		Job No.: By: Date: Revision No	1711-2266 GRMcD 17/03/2018 A
	8 - Identification of po	aluation Procedure S tential Severe Structura significant number of c	l Weaknesses (SSWs)	that could result in	
	Number of storeys abov	e ground level			2
	Presence of heavy conc	rete floors and/or concret	e roof? (Y/N)		N
		Structural Weakn			
	Note. Options that are greyer	d out are not applicable and ne	ed not be considered.		
	Occupancy not consid	lered to be significant -	no further considerati	ion required	
	Risk not considered to	be significant - no furt	her consideration req	uired	
	01	l Severe Structural Wea uld result in significant			
	1. None identified				
	2. Weak or soft storey	(except top storey)			
		/or beam-column joints other structural element		/hich are	
	4. Flat slab buildings v connections	vith lateral capacity relia	ant on low ductility sla	ab-to-column	
	5. No identifiable conn	ection between primary	v structure and diaphra	agms	
	6. Ledge and gap stair	5			
			S. R. M. Douga	Ø	
	IEP Assessme	ent Confirmed by 🧷	U	orginataro	
			G R McDougall	Name	
			70007	CPEng. No	
_					

