

# Petone Memorial Park Changing Rooms and Offices 28 Bracken Street, Petone

**Initial Seismic Assessment** 

for Hutt City Council



Project 9772

March 2020



9772

9 March 2020 Private Bag 31912 Lower Hutt 5040

Attention: Aaron Marsh

Dear Aaron,

#### Initial Seismic Assessment Report Petone Memorial Park Changing Rooms and Offices, 28 Bracken Street, Petone

We have now completed an Initial Seismic Assessment (ISA) of the changing rooms and offices at Petone Memorial Park at 28 Bracken Street, Petone using the Initial Evaluation Procedure (IEP) as described in Part B of the guideline document, *The Seismic Assessment of Existing Buildings-Technical Guidelines for Engineering Assessments*, dated August 2017. The assessment was carried out after completing a site visit on Tuesday 25 February 2020.

#### **Executive Summary**

This building has been rated against the new building standard for a normal structure which is regarded as Importance Level 2 (IL2) in accordance with NZS1170.5:2004.

The assessed potential earthquake rating is 80%NBS (IL2) in the longitudinal (NW-SE) direction and 100%NBS (IL2) in the transverse (SW-NE) direction, which gives it a seismic 'Grade A'. Therefore, the potential status of the building is low earthquake risk in terms of life-safety and not Earthquake Prone nor Earthquake Risk.

A "Severe Structural Weakness" (SSW) is a structural weakness for which rupture would lead to a catastrophic collapse. No Severe Structural Weaknesses have been identified.

The Initial Seismic Assessment (ISA) is considered to provide a relatively quick, high-level and qualitative measure of the building's performance. A more reliable result would be obtained from a Detailed Seismic Assessment (DSA). A DSA could find structural aspects of concern that have not been identified from the IEP. Alternatively, a detailed structural assessment may show that structural aspects of potential concern identified in this IEP may have in fact been addressed in the design of the building.



# Introduction

Hutt City Council has engaged Sawrey Consulting Engineers Ltd (SCEL) to carry out an Initial Seismic Assessment (ISA) of the Petone Memorial Park changing rooms and Capital Football offices located at 28 Bracken Street, Petone, Lower Hutt. This ISA is based on the Initial Evaluation Procedure (IEP) as defined in *Technical Guidelines for Engineering Assessments* referenced above.

Earthquake Prone Building (EPB) methodology is used to identify earthquake-prone buildings, and has been produced by the Ministry of Business, Innovation and Employment in accordance with the Building Act 2004. This ISA meets the requirements of an engineering assessment as prescribed in the EPB methodology.

# Background to the IEP and Its Limitations

The IEP procedure was developed in 2006 by the New Zealand Society for Earthquake Engineering (NZSEE) and updated in 2017 to reflect experience with its application and also as a result of experience from the Canterbury earthquakes of 2010/11. It is a tool to assign a percentage of New Building Standard (%NBS) rating and associated grade to a building as part of an Initial Seismic Assessment of existing buildings.

The IEP enables building owners and managers to review their building stock as part of an overall risk management process.

Characteristics and limitations of the IEP include:

- An IEP assessment is primarily concerned with life safety. It does not consider the susceptibility of the building to damage, and therefore to economic losses.
- It tends to be somewhat conservative, identifying some buildings as earthquake prone, or having a lower %NBS score, which subsequent detailed investigation may indicate is less than actual performance. However, there will be exceptions, particularly when potential critical structural weaknesses (CSWs) are present that have not been recognised from the level of investigation employed.
- An IEP can be undertaken with variable levels of available information: e.g. exterior only inspection, structural drawings available or not, interior inspection, etc. The more information available, the more representative the IEP result is likely to be. The IEP records the information that has formed the basis of the assessment and consideration of this is important when determining the likely reliability of the result.
- It is an initial, first-stage review. Buildings or specific issues which the IEP process flags as being problematic or as potentially critical structural weaknesses need further detailed investigation and evaluation. A Detailed Seismic Assessment is recommended if the seismic status of a building is critical to any decision making.
- The IEP assumes that buildings have been designed and built in accordance with the building standard and good practice current at the time. In some instances, a building may include design features ahead of its time, leading to better than predicted performance. Conversely, some unidentified design or construction issues not picked up by the IEP process may result in the building performing not as well as predicted.



- It is a largely qualitative process and should be undertaken or overseen by an experienced engineer. It involves considerable knowledge of the earthquake behaviour of buildings, and judgement as to key attributes and their effect on building performance. Consequently, it is possible that the %NBS derived for a building by independent experienced engineers may differ.
- An IEP may over-penalise some apparently critical features which could have been satisfactorily taken into account in the design.
- An IEP does not take into account the seismic performance of non-structural items such as ceilings, plant, services or general glazing that are not considered to present a significant life safety hazard.

Experience to date is that the IEP is a useful tool to identify potential issues and expected overall performance of a building in an earthquake. However, the process and the associated %NBS rating and grade should be considered as only providing an indication of the building's compliance with current code requirements. A detailed investigation and analysis of the building will typically be required to provide a definitive assessment.

# **Basis for the Assessment**

The information we have used for our IEP assessment includes:

- The building was constructed for Petone Borough Council in 1961. Major alterations and strengthening were carried out in 2005.
- Subsoil class D has been used based on GNS Science's Lower Hutt Valley Site Subsoil Class Map and our engineering judgment.
- The period has been determined as being 0.40 seconds based on the structural steel frames and plywood/shotcrete shear walls.
- A Hazard Scaling Factor of Z = 0.4 has been used based on the location of the site in the Hutt Valley, south of Taita Gorge.
- The building has been assumed to have an Importance Level 2 (normal structures).
- A ductility factor of µ = 1.5 has been assumed in the longitudinal direction based on a combination of the structural steel CBF braces and sheet lined timber framed walls, and µ = 3.0 has been assumed in the transverse direction based on the plywood and shotcrete shear walls.

The key assumptions made during our assessment are shown in Table 1 that follows.



# Table 1: IEP Assumptions

IEP Item	Assumption	Justification
Date of Building Design	1961 (Strengthened	This is the date on the drawings
Soil Type	2005) D	GNS Science's Lower Hutt Valley Site Subsoil Class Map
Building Importance Level	2	AS/NZS1170.0
Ductility of Structure	1.5 longitudinal direction	Structural steel CBF braces and sheet lined timber framed walls
	3.0 transverse direction	Plywood and shotcrete shear walls
Plan Irregularity Factor, A	1.0	Insignificant
Vertical Irregularity Factor, B	1.0	Insignificant
Short Columns Factor, C	1.0	Insignificant
Pounding Factor, D	1.0	Insignificant
Site Characteristics	1.0	Insignificant – Liquefaction unlikely to cause collapse of building for following reasons: Compacted hardfill under building acting as dense crust; building relatively stiff and well tied together (including foundations tied together with reinforced concrete slab
Factor F	0.8 longitudinal direction	Ductility used in design for cold-formed structural steel CBF braces is higher than current recommendations. However, this is partially offset by taking the strength of the original building structure into account.
	1.0 transverse direction	



# **Building Description**

The building was originally constructed in 1961 as a pavilion with grandstand on top of changing rooms and toilets.

Major alterations and strengthening were carried out in 2005. This involved removing the grandstand seating (and replacing with precast concrete bleachers in front of the building from ground level), building offices above the changing rooms and toilets, and strengthening the existing lower level.

The building is two storeys with a light roof. The lower floor of the building is constructed with reinforced masonry block external walls and timber framed internal walls. It has a series of structural steel CBF braces in the longitudinal direction, and plywood and shotcrete shear walls in the transverse direction. The top level is made up of timber framing with universal steel beams supporting the roof structure.

The foundations generally consist of shallow footings tied together with a reinforced concrete slab. Foundation columns with pads go down to natural ground. Some driven timber piles were installed as part of the 2005 strengthening works. There is compacted hardfill directly under the building.

# IEP Assessment Result

Our IEP assessment of this building indicates the building achieves 80%NBS (IL2) in the longitudinal direction and 100%NBS (IL2) in the transverse direction. The IEP assessment of this building therefore indicates an overall earthquake rating of 80%NBS (IL2), corresponding to a 'Grade A' building as defined by the New Zealand Society for Earthquake Engineering (NZSEE) building grading scheme. This is above the thresholds for both Earthquake Prone Buildings (34%NBS) and Earthquake Risk Buildings (67%NBS) as defined by the NZSEE and the New Zealand Building Code.

The key assumptions made during our assessment are shown in Table 1 above. Refer also to the attached IEP assessment and ISA technical summary report.

# **IEP Grades and Relative Risk**

NZSEE (which provides authoritative advice to the legislation makers and should be considered to represent the consensus view of New Zealand structural engineers) classifies buildings achieving greater than 67%NBS as "Low or medium risk" and having "Acceptable (improvement may be desirable)" building structural performance.

Table 2 taken from the Technical Guidelines referred to earlier provides the basis for a proposed grading system for existing buildings, as one way of interpreting the %NBS earthquake rating.

This building has been classified by the IEP as a 'Grade A' building and is therefore considered to be a low life-safety risk.



Building Grade	Percentage of New Building Strength (%NBS)	Approx. Risk Relative to a New Building	Life-safety Risk Description
A+	>100	<1	low risk
А	80 to 100	1 to 2 times	low risk
В	67 to 79	2 to 5 times	low or medium risk
С	34 to 66	5 to 10 times	medium risk
D	20 to 33	10 to 25 times	high risk
E	<20	more than 25 times	very high risk

# Table 2: Relative Earthquake Risk

# 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 bracing of the ceilings, services and plant. We have also not checked whether tall or heavy furniture has been seismically restrained or not. These issues are outside the scope of this initial assessment but could be the subject of another investigation.

# Conclusion

Our ISA assessment for this building, carried out using the IEP indicates an overall score of 80%NBS (IL2), which corresponds to a 'Grade A' building, as defined by the NZSEE building grading scheme. This is *above* the thresholds for both Earthquake Prone Buildings (34%NBS) and Earthquake Risk Buildings (67%NBS) as defined by the NZSEE and the New Zealand Building Code.

The ISA is considered to provide a relatively quick, high-level and qualitative measure of the building's performance. In order to confirm the seismic performance of this building with more reliability you may wish to request a Detailed Seismic Assessment (DSA).

A DSA would also investigate other potential weaknesses that may not have been considered in the initial seismic assessment.

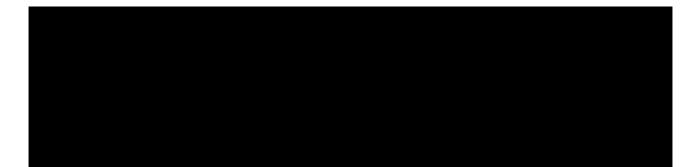
We note that a geotechnical desktop study would be required as part of the DSA.

We trust this letter and initial seismic assessment meets your current requirements. We would be pleased to discuss further with you any issues raised in this report. Please do not hesitate to contact us if you would like clarification of any aspect of this letter.



Yours faithfully

# SAWREY CONSULTING ENGINEERS LTD



Appendix A: ISA Technical Summary Report Appendix B: IEP Form

1. Building Information	
Building Name/ Description	Petone Memorial Park changing rooms and Capital Football offices
Street Address	28 Bracken Street, Petone
Territorial Authority	Hutt City Council
No. of Storeys	Тwo
Area of Typical Floor (approx.)	290m <sup>2</sup>
	1961 The original building was constructed at Memorial Park.
Year of Design (approx.)	2005 Major alterations and strengthening were carried out.
NZ Standards designed to	NZSS 95:1939; AS/NZS 1170:2002
Structural System including Foundations	Sheet lined, timber framed walls in upper level. Structural steel braces (CBFs), sheet lined timber framed walls and reinforced concrete frames (with masonry blockwork infill) in longitudinal direction of lower level. Plywood and shotcrete shear walls in transverse direction of lower level.
Does the building comprise a shared structural form or shares structural elements with any other adjacent titles?	No
Key features of ground profile and identified geohazards	High liquefaction potential
Previous strengthening and/ or significant alteration	Major alterations and strengthening in 2005
Heritage Issues/ Status	None
Other Relevant Information	N/A

2. Assessment Information	
Consulting Practice	Sawrey Consulting Engineers Ltd
<ul> <li>CPEng Responsible, including:</li> <li>Name</li> <li>CPEng number</li> <li>A statement of suitable skills and experience in the seismic assessment of existing buildings [1]</li> </ul>	
<ul> <li>Documentation reviewed, including:</li> <li>date/version of drawings/ calculations [2]</li> <li>previous seismic assessments</li> </ul>	<ul> <li>Structural drawings for original 1961 design</li> <li>Structural drawings, specifications and calculations for 2005 design of alterations and strengthening</li> </ul>
Geotechnical Report(s)	None
Date(s) Building Inspected and extent of inspection	• On-site inspection completed on Tuesday 25th February 2020
Description of any structural testing undertaken and results summary	None
Previous Assessment Reports	N/A
Other Relevant Information	N/A

<sup>1</sup> This should include reference to the engineer's Practice Field being in Structural Engineering, and commentary on experience in seismic assessment and recent relevant training

<sup>2</sup> Or justification of assumptions if no drawings were able to be obtained

Initial Seismic Assessment Report – Petone Memorial Park Changing Rooms and Offices, 28 Bracken Street, Petone: 44402-1

3. Summary of Engineering Assess	ment Methodology and Key Parameters Used
Occupancy Type(s) and Importance Level	IL2
Site Subsoil Class	D
For an ISA:	
<ul> <li>Summary of how Part B was applied, including:</li> <li>Key parameters such as μ, S<sub>p</sub> and F factors</li> <li>Any supplementary specific calculations</li> </ul>	<ul> <li>μ of 1.5 used in longitudinal direction and 3.0 in transverse direction</li> <li>S<sub>p</sub> of 0.85 used in longitudinal direction and 0.7 in transverse direction</li> <li>F factor of 0.8 used longitudinal direction and 1.0 in transverse direction</li> </ul>
For a DSA:	
<ul> <li>Summary of how Part C was applied, including:</li> <li>the analysis methodology(s) used from C2</li> <li>other sections of Part C applied</li> </ul>	N/A
Other Relevant Information	N/A

4. Assessment Outcomes		
Assessment Status (Draft or Final)	Final	
Assessed %NBS Rating	80% NBS (IL3)	
Seismic Grade and Relative Risk (from Table A3.1)	A	
For an ISA:		
Describe the Potential Critical Structural Weaknesses	N/A	
Does the result reflect the building's expected behaviour, or is more information/ analysis required?	Yes – the ISA is sufficient <del>Or</del> <del>No - a DSA is recommended</del> [3]	1
If the results of this ISA are being used for earthquake prone decision purposes, <u>and</u> elements rating <34%NBS have been identified:	Engineering Statement of Structural Weaknesses and Location	Mode of Failure and Physical Consequence Statement(s)
For a DSA:		
Comment on the nature of Secondary Structural and Non-structural elements/ parts identified and assessed	N/A	
Describe the Governing Critical Structural Weakness	N/A	
If the results of this DSA are being used for earthquake prone decision purposes, <u>and</u> elements rating <34%NBS have been identified	Engineering Statement of Structural Weaknesses and Location	Mode of Failure and Physical Consequence Statement(s)
(including Parts) [4]:	N/A	N/A
Recommendations (optional for EPB purposes)	N/A	

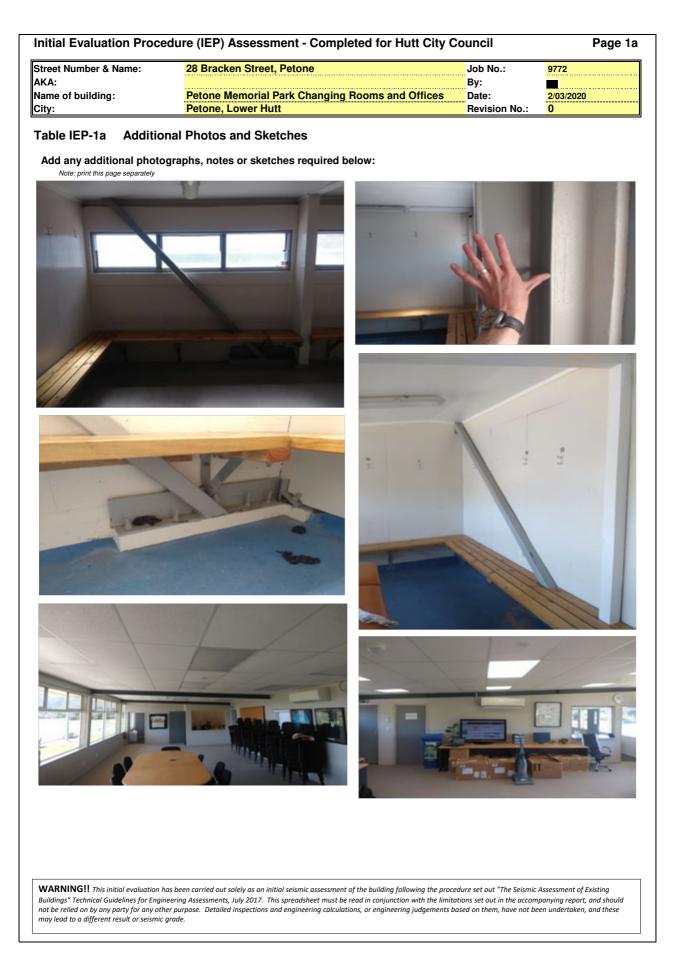
<sup>3</sup> Indicate what form should the DSA take/ what the specific areas to focus on are

<sup>4</sup> If a building comprises a shared structural form or shares structural elements with other adjacent titles, information about the extent to which the low scoring elements affect, or do not affect the structure.

Initial Seismic Assessment Report – Petone Memorial Park Changing Rooms and Offices, 28 Bracken Street, Petone: 44402-1

Appendix B – Initial Evaluation Procedure (IEP)

VARNING!! This initial evaluation xisting Buildings" Technical Guideline eport, and should not be relied on by	edure (IEP) Assessment - Comp has been carried out solely as an initial seismic assess es for Engineering Assessments, July 2017. This spread any party for any other purpose. Detailed inspections to a different result or seismic grade.	ment of the building following the pr dsheet must be read in conjunction w	rocedure set out in the rith the limitations set	out in the accompanying
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ity:	Petone, Lower Hutt		Revision No.:	0
	valuation Procedure Step 1			
tep 1 - General Informatio				
1 Photos (attach sufficient	t to describe building)			
				1984
	NOTE: THERE ARE MORE PHO	TOS ON PAGE 1a ATTACHED		
2 Sketches (plans etc, show	w items of interest)			
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•	ote: only 10 lines of text will print in this	•	d use Page 1a)	
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4 Note information sources	Tick as appropriate			



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a) Hazard Factor, Z, for tails Location: Heat Valuey search of Table Garge  Refer right for user-defined locations $Z_{inc} = \frac{0.4}{0.4}$ (gram NZ31170.5.2004, Table 3.3) Por pro 1992. 2011 = 1/2 For pro 1992. 2011 = 2/200/2 For post 2011	a) Hazard Factor, 2, for site	.,					
Location: Locat	Location:       Mark Yahay south of Take Gamp       Refer right for user-defined locations $2_{you} = \frac{1}{12}$ $\frac{1}{12}$		tor F				
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		7			-		
$ \int_{2 \text{ for pr}} = 0.4  \text{from N231170 5.2004, Table 3.3}, \\ for pre 1992 = 1/2 \\ Por 1992.2011 = 2 \\ Z_{1092}/2 \\ Por 1992.2011 = 2 \\ Z_{1092}/2 \\ Por 1992.2011 = 2 \\ Z_{109}/2 \\ Z_{100}/2 \\ Por 1992.2011 = 2 \\ Z_{109}/2 \\ Z_{100}/2 \\ Por 1992.2011 = 2 \\ Por 1992.2$	$ \begin{array}{c} Z_{200} = 0.4  \text{from K2S1170.52004, Table 3.3)} \\ \begin{array}{c} \text{For pre 1992} \\ \text{For pre 1992}  & 1 & Z_{199}/Z \\ \text{For post 2011}  & Z_{199}/Z \\ \text{For post 2011}  & Z_{199}/Z \\ \text{For post 2011}  & Z_{200}/Z \\ \end{array} \end{array}$						
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2.4 Return Period Scaling Factor, Factor G         a) Design importance Level, I         b) Design reportance from the fibre and moves the bid designed as a public building set to 1.38 for Zone A or 12 for Zone B. For 1976-1984 set 1 value.)         b) Design Risk Factor, R,         (lext to 1.01 other than 1976-2004, or not known)         c) Return Period Factor, R,         (lext to 1.01 other than 1976-2004, or not known)         c) Return Period Factor, R,         (lext to 1.01 other than 1976-2004, or not known)         c) Return Period Factor, R         (Iform NZ351170.02004 Building Importance Level)         c) Pactor G         c) The Comment:         Structural Period Scaling Factor, Factor H         a) Available Displacement Ducility Within Existing Structure         Comment:         Structural Performance Scaling Factor, Factor I         B) Factor H         For prior 1976 (maximum of 2)         for 1976 onwards         for 1976 onwards         for 1976 onwards         for 1976 onwards         for 1976 maxer Scaling Factor, Factor I         1.00         1.00         three ku is NZ51170.5.2004 heidestic Spectrum Scaling Factor, for account for Sp in this pariod         (from accompanying Fagers A)         Tick if light timber-framed construction in this direc	4. Return Period Scaling Factor, Factor G         9. Design Importance Level, I         (B) End is 1 for borons. For building singured roles 1956-1978 and known to be designed as a public building set 1-33 for Zone & rol 12 for Zone B. For 1975-1984 set 1 value.)       1 = 1         9. Design Risk Factor, R, (set 0-101 other than 1575-2004, or not known) $R_0 = 1$ 1         9. Design Risk Factor, R, (rem N2S11700.2004 Building importance Level) $R_0 = 1$ 1         9. Pactor G       = $R_0/R$ 1         9. Pactor G       =       1.00         9. Pactor H       For pro 1976 (maximum of 2)       =       1.29         9. Pactor H       For pro 1976 (maximum of 2)       =       1.20         9. Pactor H       For pro 1976 (maximum of 2)       =       1.20         9. Pactor H       For pro 1976 (maximum of 2)       =       1.20         9. Structural Performance Scaling Factor, Factor I       3.00       .00         9. Structural Performance Scaling Factor, Factor I       .00       .00         9. Structural Performance Scaling Factor, Factor I       .00       .00         9. Structural Performance Scaling Fac			2004	Factor F: 1.00	1	1.00
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$ \begin{bmatrix} 1 & \text{if Indi Known. For building designed prior to 1965 and known to be designed as a public building set to 1.33 for Zune A or 1.2 for Zone B. For 1976-1984 set 1 value.)  b) Design Risk Factor, R, (set to 1.01 other than 1976-2004, or not known)   \begin{bmatrix} \text{Ret In Period Factor, R} \\ (from NZS1170.02004 Building Importance Level)  c) Return Period Factor, R (torm NZS1170.02004 Building Importance Level)  c) Return Period Factor, R (torm NZS1170.02004 Building Importance Level)  c) Factor G = IR2/R  factor G = 1.00  100$	Cett to 1 Incl. known. For building designed pairs 1985 and known to be designed as a public building set to 1.33 for Zane A or 1.2 for Zane B. For 1975-1984 set 1 value.)       I = 1         J) Design Risk Factor, R, (set to 1.01 other than 1975-2004, or not known) $R_o = 1$ 1         c) Return Period Factor, R       I = 0       1         (from NZS11700-2004 Building importance Level)       Choose Importance Level       1 $0 \ge 2 \xrightarrow{3} 0.4$ o) Factor G       =       IR <sub>o</sub> /R       100         5 Ductility Scaling Factor, Factor H       100       100         a) Available Displacement Ductility Within Existing Structure $\mu = 1.50$ 100         Comment:       Structural steel CBFs and sheet lined timber framed walls longitudinal, plywood and shotrate shear walls transverse. $\lambda = 1$ $\lambda = 1$ b) Factor H       For pro 1976 (maximum of 2)       =       1.29 $\lambda = 10$ Toxic Termed: $k_{\mu}$ $2.00$ (where kµ is NZS1170.52004 Inelastic Spectrum Scaling Factor, Factor I       1.00 $0.70$ (where kµ is NZS1170.52004 Inelastic Spectrum Scaling Factor, Factor I $0.70$ $0.70$ (where kµ is NZS1170.52004 Inelastic Spectrum Scaling Factor, Factor I $0.70$ $0.70$ (where kµ is NZS1170.52004 Inelastic Spectrum Scaling Factor, Factor I $0.70$	.4 Return Period Scaling Factor	or, Factor G				
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b) Design Risk Factor, R, (let b 1.0 if other than 1976-2004, or not known) Choose Importance Level $R_{e} = 1$ if nom NZS1170.02004 Building importance Scaling Factor, Factor H $R_{e} = 1$ if nom NZS1170.02004 Building factor, from accompanying Table 3.3) if Structural Performance Scaling Factor, Factor I $R_{e} = 1$ if not in this direction $R_{e} = 0.85$ if not in this direction $R_{e} = 1/S_{P}$ is factor I: 1.00 Note Factor B values for 1992 to 2004 have been multiplied by 0.87 to account for Sp in this period if nom NZS for Building, $(\% NBS)_{b}$ (equals ( $\% NBS$ ) for Building, $(\% NBS)_{b}$ (equals ( $\% NBS$ ) for Building, $(\% NBS)_{b}$ (equals ( $\% NBS$ ) for Building, $(\% NBS)_{b}$ (for nom in the sector B to account for Sp in this period in this direction $R_{e} = 1/S_{e}$ is the factor	b) Design Risk Factor, R, (let to 1.0 if other than 1976-2004, or not known) c) Return Period Factor, R (from N2S1170.02004 Building Importance Level) c) Return Period Factor, R (from N2S1170.02004 Building Importance Level) c) Return Period Factor, R (from N2S1170.02004 Building Importance Level) c) Factor G = IR <sub>0</sub> /R 5. Ductility Scaling Factor, Factor H a) Available Displacement Ductility Within Existing Structure Comment: Structural Self CBFs and sheet lined timber framed walls longitudinal, plywood and shotorete shear walls transverse. b) Factor H For pre 1976 (maximum of 2) = 1.29 For 1976 onwards = 1 Factor H: 1.00 (where k <sub>1</sub> is N2S1170.52004 Inelastic Spectrum Scaling Factor, Factor I 3. Structural Performance Factor, S <sub>p</sub> (from accompanying Figure 3.4) Tick if light timber-framed construction in this direction S <sub>p</sub> = 0.85 b) Structural Performance Scaling Factor = 1/S <sub>p</sub> Retor F = 1/S <sub>p</sub> (from accompanying Figure 3.4) Tick if light timber-framed construction in this direction Taector B values for 1992 to 2004 have been multipled by 0.67 to account for Sp in this period 7. Baseline %/NBS for Building, (%NBS) <sub>b</sub> (equals (%MBS) from XE x F x G x H x I) MARNINGEI This initial evaluation has been carried out solely as an initial seismic assessment of the building following the procedure set out in "The Spectral Assessment of Desting	building set to 1.25. For buildings designed	ed 1965-1976 and known to	be designed as a p		1	1
$R_{p} = 1$ $R_{p$	$P_{0} = 1$ $P_{0$	-	Lone B. For 1976-1984 Set	I value.)		-	
$R_{p} = 1$ $R_{p$	$R_{0} = 1$ (rom NZS1170.0.2004 Building Importance Level) (rom NZS1170.0.2004 Building Importance Im		nt known)				
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A: ne of building: /:	Petone Memorial Park Changing Petone, Lower Hutt	Rooms and Of			2/03/2020 0
ble IEP-3 Initial Evalu	uation Procedure Step 3				
<b>p 3 - Assessment of Perfor</b> fer Appendix B - Section B3.2)	mance Achievement Ratio (PAR)				
ongitudinal Direction					
potential CSWs	Effect on Struc (Choose a value -				Fac
Plan Irregularity Effect on Structural Performance	O Severe OS	Significant		Insignificant	Factor A 1.
Vertical Irregularity					
Effect on Structural Performance	O Severe OS	Significant		Insignificant	Factor B 1.
Short Columns Effect on Structural Performance	⊖ Severe ∩s	Significant		Insignificant	Factor C 1.
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eet Number & Name:	28 Bracken Street	, Petone			ob No.:	9772
A: ne of building: y:	Petone Memorial I Petone, Lower Hu		Rooms and	*****	/: ate: evision No.:	2/03/2020 0
ble IEP-3 Initial E	Evaluation Procedure	e Step 3				
<b>p 3 - Assessment of P</b> fer Appendix B - Section B3.2	erformance Achievemer	nt Ratio (PAR)				
Transverse Direction						
potential CSWs		Effect on Stru (Choose a value				Fac
Plan Irregularity Effect on Structural Perfor	mance OSevere	08	Significant		Insignificant	Factor A 1.
Vertical Irregularity						
Effect on Structural Perfor	mance OSevere	0	Significant		Insignificant	Factor B 1.0
Short Columns Effect on Structural Perform	mance OSevere	05	Significant		Insignificant	Factor C 1.
		Ū			0	
may be reduced by taki	ing the coefficient to the rigi				ct of pounding	
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		ht of the value appl Fa Separation	icable to frame ctor D1 For 1 Severe	e buildings. Fransverse Dire	ction: 1.0	
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Table for Selection         Al         b) Factor D2: - Height         Table for Selection         Site Characteristics - Si         Effect on Structural Perfor         Liquefaction unlikely to car	of Factor D1 Alignment of Floors within 20 ignment of Floors not within 20 t Difference Effect of Factor D2 Height Differ Height Differ Height Differ	ht of the value appl Fa Separation 0% of Storey Height 0% of Storey Height 1% of Storey Height Fa erence > 4 Storeys ference > 4 Storeys ference < 2 Storeys ference < 2 Storeys ference < 2 Storeys	ctor D1 For 1       Severe       0 <sep<.005h< td="">       1       0.4       0<severe< td="">       0<sep<.005h< td="">       0.4       0.7       0.1</sep<.005h<></severe<></sep<.005h<>	e buildings.	a life-safety persp a life-safety persp a life-safety persp	Factor D 1.
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treet Number & Na	ime: 2	8 Bracken Stree	et, Petone		Job No.:	9772
KA:			l Dauls Ohan sin a Daa		By:	
ame of building: ity:		Petone Memorial Petone, Lower H	l Park Changing Roo utt	ms and Offices	Date: Revision No.:	2/03/2020 <mark>0</mark>
able IEP-4	nitial Evalua	ation Procedu	re Steps 4, 5, 6 an	nd 7		
tep 4 - Percentag	e of New Buil	ding Standard (	%NBS)			
				Longitud	inal	Transverse
.1 Assessed Bas (from Table IE	eline %NBS (% EP - 1)	6 <b>NBS</b> ) <sub>b</sub>		100%		100%
.2 Performance / (from Table IE	Achievement R EP - 2)	atio (PAR)		0.80		1.00
.3 PAR x Baselin	e (% <b>NBS</b> ) <sub>b</sub>			80%		100%
	ew Building Sta f two values from	andard <i>(%NBS)</i> - 9 Step 4.3)	Seismic Rating			80%
Step 5 - Is <i>%NBS</i> -	< 34?					NO
Step 6 - Potentially	y Earthquake	Risk (is <i>%NBS</i> <	< 67)?			NO
Step 7 - Provision	al Grading for	Seismic Risk ba	ased on IEP			A
					Seismic Grade	A
Additional Com	ments (items of	note affecting IEP b	ased seismic rating)		Seismic Grade	
Additional Com	ments (items of I	note affecting IEP b	ased seismic rating)		Seismic Grade	
Additional Com	ments (items of i	note affecting IEP b	ased seismic rating)		Seismic Grade	A
Additional Com	ments (items of i	note affecting IEP b	ased seismic rating)		Seismic Grade	A
Additional Com	ments (items of i	note affecting IEP b	ased seismic rating)		Seismic Grade	A
					Seismic Grade	A
	ip between (	Grade and %A	IBS :			
	ip between ( Grade:	Grade and %A	<i>IBS</i> : В	<u>C</u> 66 to 34 < 3	DE	
	ip between (	Grade and %A	IBS :			
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	ip between ( Grade:	Grade and %A	<i>IBS</i> : В		D E	

Init	tial Evaluation Proced	ure (IEP) Assessment - Completed for Hutt City C	ouncil	Page 7	
Street Number & Name: AKA: Name of building:		28 Bracken Street, Petone Petone Memorial Park Changing Rooms and Offices	Job No.: By: Date:	977 <b>2</b> 2/03/2020	
City	/:	Petone, Lower Hutt	Revision No.:	0	
Tal	ble IEP-5 Initial Eva	luation Procedure Step 8			
Ste		ential Severe Structural Weaknesses (SSWs) that could re significant number of occupants	sult in		
8.1	Number of storeys above	ground level		2	
8.2	Presence of heavy concr	ete floors and/or concrete roof? (Y/N)		N	
	Potential Severe	Potential Severe Structural Weaknesses (SSWs):			
	Note: Options that are greyed out are not applicable and need not be considered.				
	Occupancy not conside	Occupancy not considered to be significant - no further consideration required			
	Risk not considered to be significant - no further consideration required				
	The following potential Severe Structural Weaknesses (SSWs) have been identified in the building that could result in significant risk to a significant number of occupants:				
	1. None identified				
	2. Weak or soft storey (except top storey)				
	3. Brittle columns and/or beam-column joints the deformations of which are not constrained by other structural elements				
	4. Flat slab buildings with lateral capacity reliant on low ductility slab-to-column connections				
	5. No identifiable connection between primary structure and diaphragms				
	6. Ledge and gap stairs				
	IFP Assassma	nt Confirmed by			
		been carried out solely as an initial seismic assessment of the building following the proce			