

This initial evaluation process has been carried out solely as a screening tool in terms of the Wellington City Council's (WCC's) Earthquake-Prone Buildings Policy 2009 (Policy) and the New Zealand Society for Earthquake Engineering document 'Recommendations for the Assessment and Improvement of the Structural Performance of Buildings in Earthquakes'. It should not be relied on by anyone for any other purpose. Detailed inspections and engineering calculations, or engineering judgements based on them, have not been undertaken, and they may lead to a different result or seismic grade.

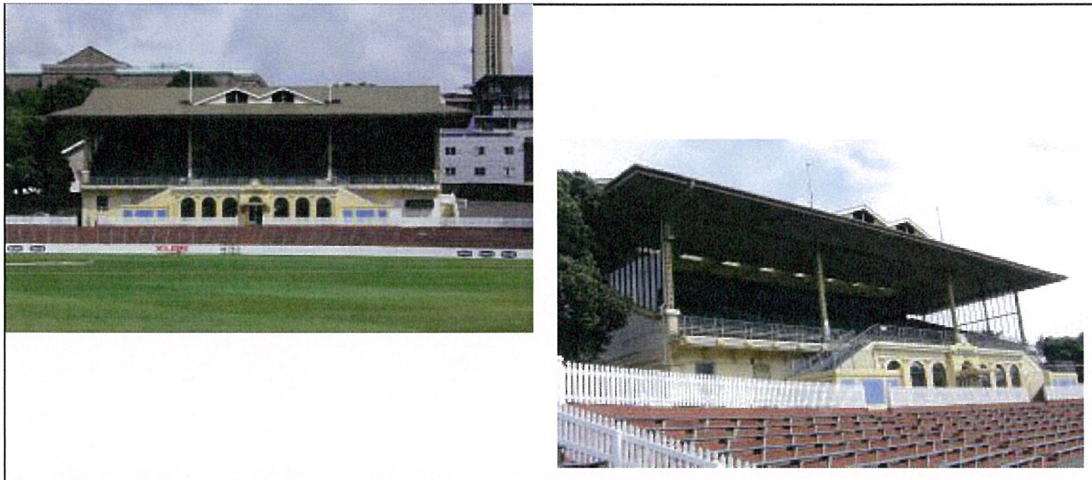
Table IEP-1 Initial Evaluation Procedure Step 1

(Refer Table IEP - 2 for Step 2; Table IEP - 3 for Step 3, Table IEP - 4 for Steps 4, 5 and 6)

Street Number & Name:	2 Rugby Street	Ref:	E061300/0571B
AKA:	Basin Reserve, Cricket Museum Stand	WUFI:	1210624
Name of building:		By:	SHL/JWD
Suburb:	Mt Cook	Date:	12/01/2009

Step 1 - General Information

1.1 Photos (attach sufficient to describe building)



1.2 Sketch of plan



1.3 List relevant features

Grandstand built in 1930s
 Unreinforced masonry construction
 Well maintained

1.4 Note information sources

Visual Inspection of Exterior	<input checked="" type="checkbox"/>
Visual Inspection of Interior	<input type="checkbox"/>
Drawings (note type)	<input type="checkbox"/>
Specifications	<input type="checkbox"/>
Geotechnical Reports	<input type="checkbox"/>
Other (list)	<input checked="" type="checkbox"/>
WCC summary sheet, aerial photomap.	

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Table IEP-2 Initial Evaluation Procedure Step 2

(Refer Table IEP - 1 for Step 1; Table IEP - 3 for Step 3; Table IEP - 4 for Steps 4, 5 and 6)

Street Number & Name:	2 Rugby Street	Ref.	E061300/0571B
AKA:	Basin Reserve, Cricket Museum Stand	By	SHL/JWD
Direction Considered:	a) Longitudinal & b) Transverse	Date:	12/01/2009
<i>(Choose worse case if clear at start. Complete IEP-2 and IEP-3 for each if in doubt)</i>			

Step 2 - Determination of (%NBS)_b

2.1 Determine nominal (%NBS) = (%NBS)_{nom}

(Baseline (%NBS) for particular building - refer Section B5)

a) Date of Design and Seismic Zone

- Date of Design:** Pre 1935
 (or date of code strengthened to)
 1935-1965
 1965-1976
 1976-1992
 1992-2004

Strengthening

Tick if building has been strengthened

If strengthened enter original design date: _____

See Note 4 below also

Building Category: Others - Wellington

Seismic Zone:

b) Soil Type

- From NZS1170.5:2004, CI 3.1.3 :
- NZS1170.5:2004
- A or B Rock
 C Shallow Soil
 D Soft Soil
 E Very Soft Soil

- From NZS4203:1992, CI 4.6.2.2 :
 (for 1992 to 2004 only and only if known)
- NZS4203:1992
- Rigid
 Intermediate or Not Known

c) Estimate Period, T

Comment: _____

- Moment Resisting Concrete Frames: $T = 0.09h_n^{0.75}$
 Moment Resisting Steel Frames: $T = 0.14h_n^{0.75}$
 Eccentrically Braced Steel Frames: $T = 0.08h_n^{0.75}$
 All Other Frame Structures: $T = 0.06h_n^{0.75}$
 Concrete Shear Walls: $T = 0.09h_n^{0.75} / A_c^{0.5}$
 Masonry Shear Walls: $T \leq 0.4\text{sec}$
 User Defined (input Period):

Where h_n = height in m from the base of the structure to the uppermost seismic weight or mass.

Longitudinal Transverse

$h_n =$ 6 6 m
 $A_c =$ 1.00 1.00 m²

- MRCF MRCF
 MRSF MRSF
 EBSF EBSF
 Others Others
 CW CW
 MSW MSW
 Defined Defined

0.40 0.40 Seconds

d) (%NBS)_{nom} determined from Figure 3.3

Longitudinal: 3.63%
Transverse: 3.63%

Note 1: For buildings designed prior to 1965 and known to be designed as public buildings in accordance with the code of the time, multiply (%NBS)_{nom} by 1.25. N/A

For buildings designed 1965 - 1976 and known to be designed as public buildings in accordance with the code of the time, multiply (%NBS)_{nom} by 1.33 - Zone A, or by 1.2 - Zone B

Note 2: For reinforced concrete buildings designed between 1976-84 multiply (%NBS)_{nom} by 1.2 N/A

Note 3: For buildings designed prior to 1935 multiply (%NBS)_{nom} by 0.8 except for Wellington where the factor may be taken as 1. 1.00

Note 4: If the building is known to have been strengthened, enter the percentage of the code selected in 2.1 a) that the building has been strengthened to for each direction. Longitudinal Direction
 Transverse Direction

(%NBS)_{nom}
Longitudinal: 3.63%
Transverse: 3.63%
(Scaled as per Notes 1 to 4)

Continued over page.....

Table IEP-2 Initial Evaluation Procedure Step 2 continued

2.2 Near Fault Scaling Factor, Factor A

If $T \leq 1.5\text{sec}$, Factor A = 1

a) Near Fault Factor, $N(T,D)$
(from NZS1170.5:2004, Cl 3.1.6)

Longitudinal: 1
Transverse: 1

b) Near Fault Scaling Factor = $1/N(T,D)$

Factor A
Longitudinal: 1.00
Transverse: 1.00

2.3 Hazard Scaling Factor, Factor B

a) Hazard Factor, Z , for site
(from NZS1170.5:2004, Table 3.3)

Site Area : Wellington
 $Z = 0.4$
 $Z_{1992} =$

b) Hazard Scaling Factor

For pre 1992 = $1/Z$
For 1992 onwards = Z_{1992}/Z

(Where Z_{1992} is the NZS4203:1992 Zone Factor from accompanying Figure 3.5(b))

Factor B
2.50

2.4 Return Period Scaling Factor, Factor C

a) Building Importance Level

(from NZS1170.0:2004, Table 3.1 and 3.2)

Choose Importance Level

1 2 4

Comment: Grandstand

b) Return Period Scaling Factor from accompanying Table 3.1

Factor C
0.80

2.5 Ductility Scaling Factor, D

a) Assessed Ductility of Existing Structure, μ

(shall be less than maximum given in accompanying Table 3.2)

$\mu = 1.50$ Longitudinal Direction
 $\mu = 1.50$ Transverse Direction
max = 2

Comment: URM

b) Ductility Scaling Factor

	Longitudinal	Transverse
For pre 1976	k_{μ}	k_{μ}
	1.29	1.29
For 1976 onwards	1	1

(where k_{μ} is NZS1170.5:2004 Ductility Factor, from accompanying Table 3.3)

Factor D
Longitudinal: 1.29
Transverse: 1.29

2.6 Structural Performance Scaling Factor, Factor E

a) Structural Performance Factor, S_p
from accompanying Figure 3.4

$S_p = 0.85$ Longitudinal Direction
 $S_p = 0.85$ Transverse Direction

b) Structural Performance Scaling Factor
= $1/S_p$

Factor E
Longitudinal: 1.18
Transverse: 1.18

2.7 Baseline %NBS for Building, (%NBS)_b
(equals (%NSB)_{nom} x A x B x C x D x E)

Longitudinal : 11%
Transverse : 11%

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Table IEP-3 Initial Evaluation Procedure Step 3

(Refer Table IEP - 1 for Step 1; Table IEP - 2 for Step 2; Table IEP - 4 for Steps 4, 5 and 6)

Street Number & Name:	2 Rugby Street	Ref: E061300/0571B
AKA:	Basin Reserve, Cricket Museum Stand	By: SHL/JWD
Direction Considered:	a) Longitudinal & b) Transverse	Date: 12/01/2009
<i>(Choose worse case if clear at start. Complete IEP-2 and IEP-3 for each if in doubt)</i>		

a) Longitudinal Direction

Step 3 - Assessment of Performance Achievement Ratio (PAR)

(Refer Appendix B - Section B3.2)

Critical Structural Weakness	Effect on Structural Performance (Choose a value - Do not interpolate)	Building Score
3.1 Plan Irregularity <i>Effect on Structural Performance</i>	<input type="checkbox"/> Severe <input type="checkbox"/> Significant <input checked="" type="checkbox"/> Insignificant Comment:	Factor A: 1.0
3.2 Vertical Irregularity <i>Effect on Structural Performance</i>	<input type="checkbox"/> Severe <input type="checkbox"/> Significant <input checked="" type="checkbox"/> Insignificant Comment:	Factor B: 1.0
3.3 Short Columns <i>Effect on Structural Performance</i>	<input type="checkbox"/> Severe <input type="checkbox"/> Significant <input checked="" type="checkbox"/> Insignificant Comment:	Factor C: 1.0
3.4 Pounding Potential <i>(Estimate D1 and D2 and set D = the lower of the two, or =1.0 if no potential for pounding)</i>		

a) Factor D1: - Pounding Effect
Select appropriate value from Table

Note:
Values given assume the building has a frame structure. For stiff buildings (eg with shear walls), the effect of pounding may be reduced by taking the co-efficient to the right of the value applicable to frame buildings.

Factor D1 For Longitudinal Direction:		1.0		
Table for Selection of Factor D1		Severe	Significant	Insignificant
		0 < Sep < .005H	.005 < Sep < .01H	Sep > .01H
Alignment of Floors within 20% of Storey Height	<input type="checkbox"/> 0.7	<input type="checkbox"/> 0.8	<input checked="" type="checkbox"/> 1	
Alignment of Floors not within 20% of Storey Height	<input type="checkbox"/> 0.4	<input type="checkbox"/> 0.7	<input type="checkbox"/> 0.8	
Comment:				

b) Factor D2: - Height Difference Effect
Select appropriate value from Table

Factor D2 For Longitudinal Direction:		1.0		
Table for Selection of Factor D2		Severe	Significant	Insignificant
		0 < Sep < .005H	.005 < Sep < .01H	Sep > .01H
Height Difference > 4 Storeys	<input type="checkbox"/> 0.4	<input type="checkbox"/> 0.7	<input checked="" type="checkbox"/> 1	
Height Difference 2 to 4 Storeys	<input type="checkbox"/> 0.7	<input type="checkbox"/> 0.9	<input checked="" type="checkbox"/> 1	
Height Difference < 2 Storeys	<input checked="" type="checkbox"/> 1	<input checked="" type="checkbox"/> 1	<input checked="" type="checkbox"/> 1	
Comment:				

Factor D: 1.0
(Set D = lesser of D1 and D2 or..
set D = 1.0 if no prospect of pounding)

3.5 Site Characteristics - (Stability, landslide threat, liquefaction etc)

Severe Significant Insignificant
 0.5max 0.7 1 Factor E: 1.0

Comment:

3.6 Other Factors

For ≤ 3 storeys - Maximum value 2.5,
otherwise - Maximum value 1.5. No minimum. Factor F: 2.0

Record rationale for choice of Factor F:

Significant walls along

3.7 Performance Achievement Ratio (PAR)
(equals A x B x C x D x E x F) PAR (Longitudinal): 2.00

b) Transverse Direction

Step 3 - Assessment of Performance Achievement Ratio (PAR)

(Refer Appendix B - Section B3.2)

Critical Structural Weakness **Effect on Structural Performance** **Building Score**
(Choose a value - Do not interpolate)

3.1 Plan Irregularity Severe Significant Insignificant **Factor A**
Effect on Structural Performance
Comment: _____

3.2 Vertical Irregularity Severe Significant Insignificant **Factor B**
Effect on Structural Performance
Comment: _____

3.3 Short Columns Severe Significant Insignificant **Factor C**
Effect on Structural Performance
Comment: _____

3.4 Pounding Potential
(Estimate D1 and D2 and set D = the lower of the two, or =1.0 if no potential for pounding)

a) Factor D1: - Pounding Effect
Select appropriate value from Table

Note:
Values given assume the building has a frame structure. For stiff buildings (eg with shear walls), the effect of pounding may be reduced by taking the co-efficient to the right of the value applicable to frame buildings.

Factor D1 For Transverse Direction:

	Severe	Significant	Insignificant
<i>Separation</i>	0 < Sep < .005H	.005 < Sep < .01H	Sep > .01H
<i>Alignment of Floors within 20% of Storey Height</i>	<input type="checkbox"/> 0.7	<input type="checkbox"/> 0.8	<input type="checkbox"/> 1
<i>Alignment of Floors not within 20% of Storey Height</i>	<input type="checkbox"/> 0.4	<input type="checkbox"/> 0.7	<input type="checkbox"/> 0.8

Comment: _____

b) Factor D2: - Height Difference Effect
Select appropriate value from Table

Factor D2 For Transverse Direction:

	Severe	Significant	Insignificant
	0 < Sep < .005H	.005 < Sep < .01H	Sep > .01H
<i>Height Difference > 4 Storeys</i>	<input type="checkbox"/> 0.4	<input type="checkbox"/> 0.7	<input type="checkbox"/> 1
<i>Height Difference 2 to 4 Storeys</i>	<input type="checkbox"/> 0.7	<input type="checkbox"/> 0.9	<input type="checkbox"/> 1
<i>Height Difference < 2 Storeys</i>	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1

Comment: _____

Factor D
(Set D = lesser of D1 and D2 or...
set D = 1.0 if no prospect of pounding)

3.5 Site Characteristics - (Stability, landslide threat, liquefaction etc)
Severe Significant Insignificant
 0.5max 0.7 1 **Factor E**
Comment: _____

3.6 Other Factors
For ≤ 3 storeys - Maximum value 2.5,
otherwise - Maximum value 1.5. No minimum. **Factor F**

Record rationale for choice of Factor F:
No reason to improve

3.7 Performance Achievement Ratio (PAR)
(equals A x B x C x D x E x F) **PAR (Transverse):**

