9735

31 October 2019



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CIVIL A STRUCTURAL A FOUNDATION

Hutt City Council Private Bag 31912 Lower Hutt

Attention:

Dear

Initial Seismic Assessment Report Huia Pool Buildings - Huia Street, Lower Hutt

We have now completed an Initial Seismic Assessment (ISA) of the two Huia Pool buildings at Huia Street 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 reviewing original structural drawings and completing a site visit on 17 October 2019.

Separate assessments have been undertaken for each of the two buildings.

Building 1	Original 1979 Building (East side of site.)
Building 2	New 2015 Building (Western side of site.)

Executive Summary

These buildings have been rated as Importance Level 3 (IL3) in accordance with NZS1170.5:2004.

The assessed potential earthquake ratings are

Building 1 40%NBS (IL3); 'Grade C': not potentially earthquake prone, but earthquake risk Building 2 >100%NBS (IL3); 'Grade A+': neither potentially earthquake prone nor earthquake risk

A "Severe Structural Weakness" (SSW) is a structural weakness for which rupture would lead to a catastrophic collapse.

- Building 1 No potential SSWs were identified in this building
- Building 2 No potential SSWs were identified in this building

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 will 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 the IEP may have in fact been addressed in the design of the building.





Introduction

Hutt City Council has engaged Sawrey Consulting Engineers Ltd (SCE) to carry out an Initial Seismic Assessment (ISA) of the two Huia Pool buildings at 16 Huia Street, the north end of the Hutt Recreation Ground. 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 indicative 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.

Each IEP has been based on 1) a review of drawings, 2) an inspection of the exterior and interior, and 3) consideration of the geotechnical report. Therefore, each IEP can be considered to be a moderately comprehensive assessment at the ISA level. The ratings tabulated in the executive summary, if ratified by the Territorial Authority, would lead to Building 3 being designated "earthquake prone" and the other three buildings not being designated "earthquake prone".

Basis for the Assessment

The information we have used for our IEP assessment includes:

- The two buildings were designed/built in 1979 and 2015 respectively.
- Adjustment factors (F) have been adopted for the two buildings:
 - Building 1 F = 1.2. Building 2 F = 1.2



Building Descriptions

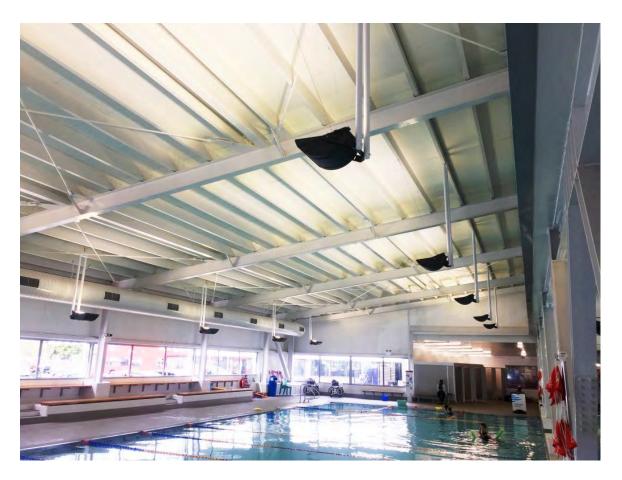
The two buildings are located on the south side of Huia Street in the city of Lower Hutt. They are stand-alone structures.



Building 1 – Original 1979 Huia Pool Building

- There are four areas 1) Main Pool 2) Learners Pool 3) Changing facilities 4) Two storey offices
- The main pool, in the transverse direction, has deep reinforced concrete columns with steel trusses above.
- The main pool, in the longitudinal direction, has steel cross braced frames.
- The main pool has a flat light timber roof everywhere.
- The Learners pool, in both directions, there are half height reinforced concrete columns and glulam timber eccentrically braced frames with a flat light timber roof.
- The downstairs office area, in both directions, is reinforced concrete masonry with a with a reinforced concrete floor above.
- The downstairs office area has a reinforced concrete beam
- The upstairs offices (staff room and activities room) have reinforced concrete stairs leading up to the area, and the floor is reinforced concrete on flange hung precast double T's spanning transversely.
- The upstairs offices, in both directions are reinforced concrete masonry with a steep timber framed roof.
- The upstairs offices have a plant room at one end; there are large unrestrained header tanks in the ceiling space.
- The changing facilities has slender, circular, reinforced concrete columns supporting a light timber roof.
- The external longitudinal wall is reinforced concrete masonry; internal walls are light timber partitions.
- There is a pop-top skylight in the middle of the men's changing area.
- There is a large plant room behind the men's changing area.





Building 2 – Additional 2015 Building with Hydrotherapy Pool, Programme Pool & Gymnasium.

- Downstairs offices, staff room and changing facilities at the east end.
- Downstairs are two swimming pools; and a plant room at the west end.
- Access to the upstairs is via stairs and lift at the east end, and stairs at the west end.
- Upstairs there are offices and toilet facilities at the east end. Upstairs is a weights gym; and a plant room at the west end. Roof bracing is tension only cross braced frames.
- Upstairs floor is rib and infill with 90mm topping concrete.
- Stairs appear to be pre-cast reinforced concrete with a low friction bearing strip at the bottom and 100mm seating at the top.
- Reinforced concrete masonry walls around the ground floor offices, staff room, changing facilities at the east end.
- Reinforced concrete masonry walls around the plant room and storage room at the west end.
- Transverse direction is moment frames.
- Longitudinal direction upstairs is cross braced frames.
- These are a mix of tension only systems and tension-compression systems.
- Longitudinal direction downstairs is eccentrically braced frames.
- There are large lights and fully glazed wall over one of the swimming pools.
- A moment frame beam is welded into the centre of a cross braced frame.
- The foundations for steel posts are reinforced concrete plinths on a 500mm thick slab on a 2m deep subgrade.



Building 1 IEP Assessment Result

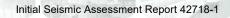
Our IEP assessment of this older building indicates the building can achieve 40%NBS (IL3) in the transverse direction and 60% NBS in the longitudinal direction. The IEP assessment of this building therefore indicates an overall earthquake rating of 40%NBS (IL3), corresponding to a 'Grade C' building as defined by the New Zealand Society for Earthquake Engineering (NZSEE) building grading scheme. This is above 34%NBS, but below the threshold for earthquake risk buildings (67%NBS) as recommended by the NZSEE. The key assumptions made during our assessment are shown in Table 1 that follows. Refer also to the attached IEP assessment and engineering assessment technical summary.







Building 1 IEP Item	Assumption	Justification	
Date of Building Design	1979	Original drawings	
Soil Type	D	Ref: Greater Wellington Regional Council Map.	
		2014 Geotechnical Report by Opus.	
Building Importance	3	AS/NZS1170.0	
Ductility of Structure	2	The Guideline section C6.5 and C6.6. Reinforced concrete columns and reinforces masonry walls.	
Plan Irregularity Factor, A		<i>The Seismic Assessment of Existing Buildings -Technical Guidelines for Engineering Assessments</i> , August 2017, Part B, Appendix BA, Figure BA.5	
Longitudinal	Significant	Apparent grouping of reinforced masonry walls and a cross braced frame around the amenities and changing area. No roof bracing observed over main pool. Centre of mass closer to the 2 storey amenities than the centre of the plan area.	
Transverse	Significant	The amenities block has more transverse reinforced concrete masonry walls around the showers and therapeutic pool then around the reception. So the CoM is $> 0.3xW$ from the COR; Wall spacing is $> 2D$.	
Vertical Irregularity Factor, B	Insignificant	<i>The Seismic Assessment of Existing Buildings-Technical Guidelines for Engineering Assessments</i> , August 2017, Part B, Appendix BA, Figure BA.5.	
		Reinforced concrete (RC) columns & RC masonry are continuous for the full height of the 2-storey building. At the learners pool the RC columns terminate at 2.3m and there is an LVL eccentrically braced frame above. Largely single storey.	
Short Columns Factor, C	No	Short columns were not observed.	
Pounding Factor, D	1	Gap between buildings. No pounding issue.	
Site Characteristics		<i>The Seismic Assessment of Existing Buildings-Technical Guidelines for Engineering Assessments</i> , August 2017, Part B, section B4.2. Opus Geotechnical Report 2014.	
		Greater Wellington Regional Council Flex Map Viewer, moderate liquefaction potential, low slope failure potential.	
Longitudinal	Insignificant	Longitudinally, the heavy concrete structure appears to be well tied together.	
Transverse	Significant	Seating of precast double tee beams for the upstairs floor are a potential life-safety risk. Affected by potential liquefaction etc.	
Factor F	1.2	Various structural systems:	
		1) Reinforced concrete (RC) frame; 2) RC masonry;	
		3) RC short precast walls; 4) Steel cross braced frames;	
		5) Timber eccentrically braced frames; 6) Precast floor units	
		7) RC cantilever columns.	
		Connections between the systems to be checked in DSA. Seems well built with structural robustness. Structure is visible.	

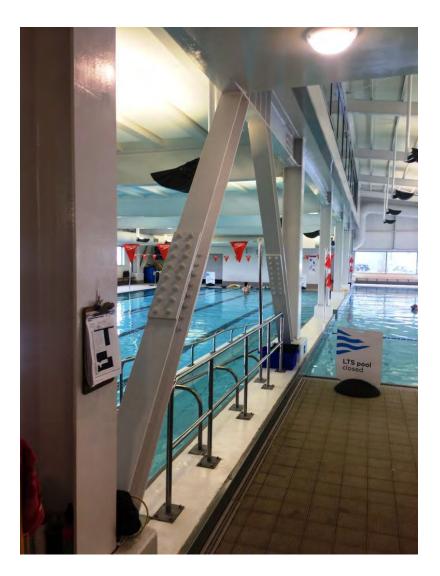




Building 2 IEP Assessment Result

Our IEP assessment of this building indicates the building can achieve >100%NBS (IL3) in each orthogonal direction. The IEP assessment of this building therefore indicates an overall earthquake rating of >100%NBS (IL3), corresponding to a 'Grade A+' building as defined by the New Zealand Society for Earthquake Engineering (NZSEE) building grading scheme. This is above 34%NBS, and above the threshold for earthquake risk buildings (67%NBS) as recommended by the NZSEE.

The key assumptions made during our assessment are shown in Table 2 that follows. Refer also to the attached IEP assessment and engineering assessment technical summary.







Building 2; IEP Item	Assumption	Justification
Date of Building Design	2015	Original drawings
Soil Type	D	Greater Wellington Regional Council Flex Map Viewer, moderate liquefaction potential, low slope failure potential. Opus geotechnical report.
Building Importance Level	3	AS/NZS1170.0
Ductility of Structure	3	The Guideline section C6.5 and C6.6. Recently constructed reinforced masonry and structural steel.
Plan Irregularity Factor, A		<i>The Seismic Assessment of Existing Buildings -Technical Guidelines for Engineering Assessments</i> , August 2017, Part B, Appendix BA, Figure BA.5.
	Not Significant	2 pairs of eccentrically braced frames at ground along either side of the upstairs slab. Cross braced frames above and along the north external wall. Similar elastic stiffness expected, therefore centre of mass and rigidity are probably similar locations.
Vertical Irregularity Factor, B	Not Significant	<i>The Seismic Assessment of Existing Buildings-Technical Guidelines for Engineering Assessments</i> , August 2017, Part B, Appendix BA, Figure BA.5. No vertical irregularity observed.
Short Columns Factor, C	No	Short columns were not observed.
Pounding Factor, D	1	Seismic gap appears to be greater than 100mm.
Site Characteristics	Significant	<i>The Seismic Assessment of Existing Buildings-Technical Guidelines for Engineering Assessments</i> , August 2017, Part B, section B4.2.
		Greater Wellington Regional Council Flex Map Viewer, moderate liquefaction potential, low slope failure potential. 500mm thick slab on 2m subgrade. Geotechnical report shows a small area of liquefiable lenses at foundation depth.
Factor F	1.2	The structure is visible and apparently well built.





IEP Grades and Relative Risk

Table 3 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.

Building Grade	Percentage of New Building Strength (%NBS)	Approx. Risk Relative to a New Building	Life-safety Risk Description
A+	>100	<1	low risk
A	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 3: Relative Earthquake Risk

Building 1 has been classified by the IEP as a 'Grade *C*' building and is therefore considered to be a medium life-safety risk.

Building 2 has been classified by the IEP as a 'Grade A+' building and is therefore considered to be a low life-safety 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.



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".

We have 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.

Other Issues

Other issues pertaining to the gravity support of the structures have not been identified.

Conclusion

Our ISA assessment for these buildings, carried out using the IEP indicates overall scores of:

- Building 1 40%NBS (IL3 50yr), which corresponds to a 'Grade C' building, as defined by the NZSEE building grading scheme. This is *above* the threshold for Earthquake Prone Buildings (34%NBS) and *below* the threshold for Earthquake Risk Buildings (67%NBS) as defined by the NZSEE and the New Zealand Building Code.
- Building 2 >100%NBS (IL3 50yr), which corresponds to a 'Grade A+' building, as defined by the NZSEE building grading scheme. This is *above* the threshold for Earthquake Prone Buildings (34%NBS) and *above* the threshold for 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 likely focus on issues such as roof diaphragms, the stability of longitudinal block walls and the seismic bracing of non-structural elements.

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

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





Initial Seismic Assessment Appendix 1 – Technical Summary Appendix 2 – IEPs [Initial Evaluation Procedures] Huia Pool 6 Huia Street

For Hutt City Council



Project 9735 October 2019

Appendix A – Engineering Assessment Technical Summary

Old Building - [located to the east, built in 1979]

Building Information		
Building Name/Description	Huia Pool – Main pool, learners pool, toilet facilities, therapeutic	
	pool, changing facilities, reception, staff room.	
Street Address	6 Huia Street	
Territorial Authority	Hutt City Council	
No. of Storeys	Two storeys plus a mezzanine in the plant room.	
Area of Typical Floor (approx.)	Ground floor: 2328m ² ; Upstairs:200.4m ² ;Plant Mezzanine:42m ²	
Year of Design (approx.)	1979	
NZ Standard Designed to	NZS Standard (NZSS 4203:1976)	
Structural System including Foundations	Various structural systems: 1) reinforced concrete (RC) frame 2) RC masonry 3) RC short precast walls 4) steel cross braced frames 5) timber eccentrically braced frames 6) precast floor units 7) RC cantilever columns. No roof bracing. Foundation is slab on grade with 600 deep strip footings below RC masonry walls. The slab at the bottom of the pool is 350mm thick and approximately 3.3m deep.	
Key Features of Ground Profile and Identified Geohazards	Relatively flat site and away from slopes. Greater Wellington Regional Council hazard mapping indicates the liquefaction hazard at the site is "moderate". The Opus Geotechnical report states "a 1m thick localised lens of liquefaction potential at 2m depth although there is some potential for liquefaction in this layer it is relatively low (less than 10mm of settlement)."	
Previous Strengthening	None	
Heritage Issues/Status	None	
Other	N/A	

Assessment Information		
Consulting Practice	Sawrey Consulting Engineers Ltd	
CPEng Responsible		
Date/Version of Drawings Reviewed	Architectural by Burwell Hunt in 1979 have been seen. Structural drawings for design by Bill Lovell - Smith & Associates in 1979	
Geotechnical Report(s)	Opus January 2014 for the adjacent new building.	
Date Building Inspected	17 October 2019	
Previous Assessment Reports	None	
Other Relevant Information	None	

Summary of Engineering Assessment Methodology and Key Parameters Used		
Occupancy Type(s) and Importance Level	Swimming pool, Importance Level IL3.	
Site Subsoil Class	D	
Summary of Assessment Methodology Used	Initial Evaluation Procedure (IEP) in accordance with <i>The Seismic</i> Assessment of Existing Buildings-Technical Guidelines for Engineering Assessments, dated August 2017 (The Guidelines) Part B – Initial Seismic Assessment.	
Other Relevant Information	None	
Assessment Outcomes		
Assessment Status	Final	
Assessed Seismic Rating	40%NBS (IL3)	
Seismic Grade	С	
Describe the Governing Critical Structural Weakness and Likely Mode of Failure	No CSWs. Modes/locations of potential failure as follows: Axial strength of the longitudinal cross braced frame along the north wall of the main pool. Bending strength of the cantilever columns over the learner's pool under transverse actions. Shear strength of transverse reinforced concrete masonry shear walls supporting upstairs floor.	
Comment on Parts Identified and Assessed	A number of parts have been identified for further assessment: Seating of the precast floor units. Stability and strength of cantilever columns supporting reinforced concrete masonry walls in/outwards (longitudinal wall to the rear of the changing facilities and transverse wall to the rear of the main pool area). Strength of the upstairs reinforced concrete masonry walls outwards (or inwards). Strength of structure supporting the header tanks at the level 3 mezzanine (upstairs attic space). Seismic restraint of the header tanks.	
Recommendations	NZSEE recommends upgrading to as near as reasonably practicable to new building standard (i.e. 100%NBS), and considers 80%NBS to be the minimum seismic rating for an existing building to be considered "low risk". A DSA would likely focus on issues identified above, and would supersede the results of this ISA. The detailed seismic assessment	
	would likely include a description of one or two strengthening concepts where required to improve the building strength to a nominated %NBS.	

New Building [located to the west, built in 2015]

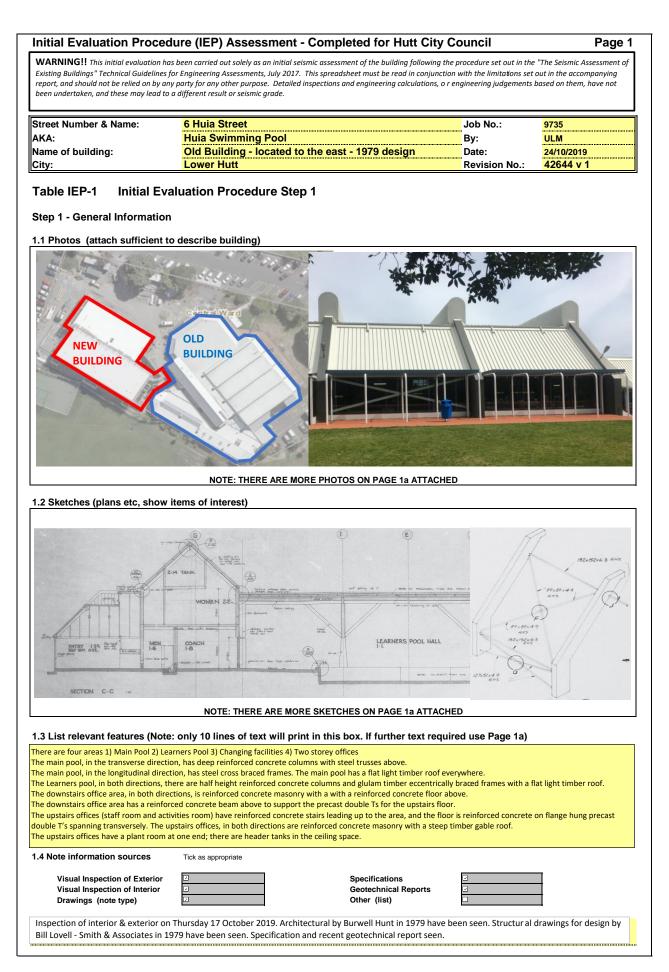
Building Information		
Building Name/Description	Huia Pool and Fitness – Two pools, changing facilities, offices, staff	
	room, plant room. Upper level weights gymnasium over one pool.	
Street Address	6 Huia Street	
Territorial Authority	Hutt City Council	
No. of Storeys	Two storeys. One storey over the pools.	
Area of Typical Floor (approx.)	Ground floor: 1300m ² ; Upper Level: 500m ²	
Year of Design (approx.)	2015	
NZ Standard Designed to	AS/NZS 1170 [Parts 0 to 3]:2002. NZS 1170.5:2004)	
Structural System including Foundations	Building layout is a main two storey building housing one pool with associated facilities & offices at one end and the plant room at the other end. The second pool is housed in a large single storey lean-to structure to one side of the main building. The lean-to structure is slightly offset from the main building. Thus there are three longitudinal frames, and a series of transverse frames.	
	EQ resisting elementsLvl G MainLvl 1 MainLean-toLongitudinal framesEBFsX braces, CBFsCBFs	
	Transverse framesMRFsMRFsMRFsGym floor 150 interspan with 90 topping on 530UB82 beams. Secondary surrounding structures are constructed of reinforced blockwork, structural steel MRFs etc.The foundation below pool level appears to be a "raft", 1.5 m below ground level.	
Key Features of Ground Profile and Identified Geohazards	Relatively flat site and away from slopes. Greater Wellington Regional Council hazard mapping indicates the liquefaction hazard at the site is "moderate". The Opus Geotechnical report states "a 1m thick localised lens of liquefaction potential at 2m depth although there is some potential for liquefaction in this layer it is relatively low (less than 10mm of settlement)."	
Previous Strengthening	None	
Heritage Issues/Status	None	
Other	N/A	

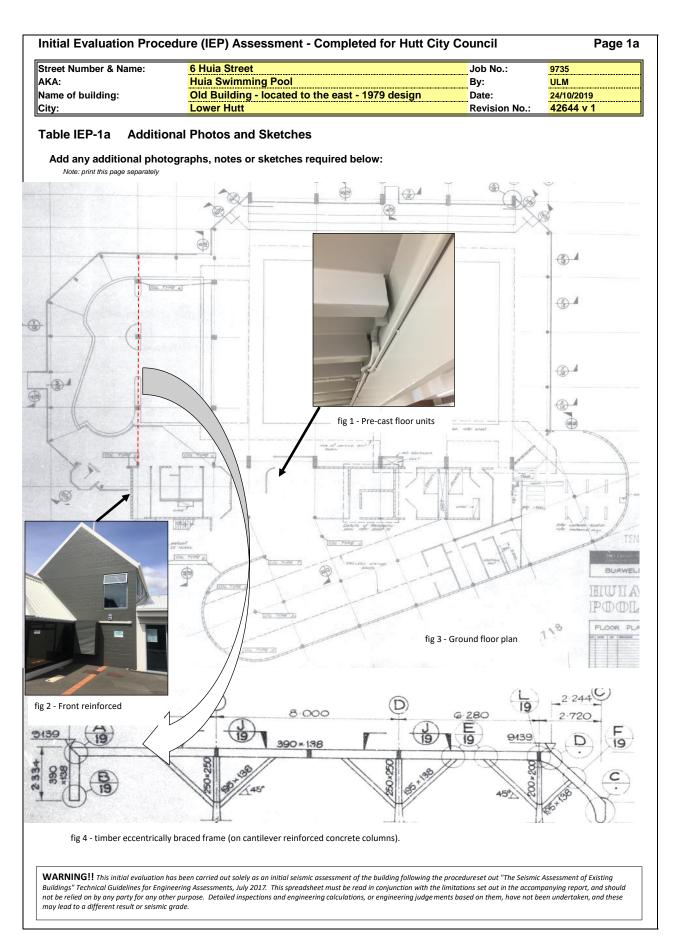
Assessment Information	
Consulting Practice	Sawrey Consulting Engineers Ltd
CPEng Responsible	
Date/Version of Drawings Reviewed	Architectural and Structural drawings by WSP Opus in 2015
Geotechnical Report(s)	Opus January 2014 for the adjacent new building.
Date Building Inspected	17 October 2019
Previous Assessment Reports	None
Other Relevant Information	None

Summary of Engineering Assessment Methodology and Key Parameters Used		
Occupancy Type(s) and	Swimming pool, Importance Level IL3.	
Importance Level		
Site Subsoil Class	D	
Summary of Assessment	Initial Evaluation Procedure (IEP) in accordance with The Seismic	
Methodology Used	Assessment of Existing Buildings-Technical Guidelines for Engineering Assessments, dated August 2017 (The Guidelines) Part B – Initial Seismic Assessment.	
Other Relevant Information	None	
Assessment Outcomes		
Assessment Status	Final	
Assessed Seismic Rating	100%NBS (IL3)	
Seismic Grade	A+	
Describe the Governing Critical	No CSWs.	
Structural Weakness and Likely	Yielding at selected locations in accordance with capacity design	
Mode of Failure	principles.	
Comment on Parts Identified	Items including stairs, lights over pool, glazed wall were seen.	
and Assessed	No immediate concerns.	
Recommendations	Nil. A DSA would supersede the results of this ISA.	

Appendix B – Initial Evaluation Procedure (IEP)

IEP for Original Building (East) IEP for Additional Building (West)





reet Number KA: ame of buildi ity:		6 Huia Street Huia Swimming Old Building - Io Lower Hutt	Pool cated to the east - ²	1979 desi	gn	Job No.: By: Date: Revision No.:	9735 ULM 24/10/2019 42644 v 1	
able IEP-2	Initial Eva	Iuation Procedu	ire Step 2					
•	mination of (%	, 5						
) for particular build nominal (%NBS)	ing - refer Section B5) = (%NBS) _{nom}			Longitudinal		Transverse	
a) Building S	trengthening Data							
		ve been strengthened i	n this direction					
If strength	ened, enter percent	tage of code the buildin	g has been strengthened	to	N/A		N/A	
b) Year of Des	sign/Strengthening	, Building Type and S	eismic Zone					
				1	Pre 1935 O		Pre 1935 1935-1965	
					935-1965 O 965-1976 O		1965-1965	
					976-1984 💿		1976-1984	-
					984-1992 O 992-2004 O		1984-1992 1992-2004	-
					004-2011 O Aug 2011 O		2004-2011 Post Aug 2011	
								~
			Building Type:	RC Building 1976	84		RC Building 1976-84	
			Seismic Zone:	Zone A		•	Zone A	
c) Soil Type	From NZS1170.5:2	2004 CI313					D Soft Soil	-
				D Soft Soil		•	J Soft Soli	
	From NZS4203:199 (for 1992 to 2004 a				Not applical	ble	Not applica	ble
d) Estimate P	Period, T							
Comment: Two storey	steel moment frame	e and steel portal frame	ł.	h _n = A _c =	8.1 1.00		8.1 1.00	m m²
				- 10	1.00	1	1.00	1
	esisting Concrete Fra esisting Steel Frame		$T = \max\{0.09h_n^{0.75}, 0.4\}$ $T = \max\{0.14h_n^{0.75}, 0.4\}$		0 0		0	
Eccentrica	lly Braced Steel Fran		$T = \max\{0.08h_n^{0.75}, 0.4\}$		0		õ	
	rame Structures: Shear Walls		$T = \max\{0.06h_n^{0.75}, 0.4\}$ $T = \max\{0.09h_n^{0.75}/A_c^{0.5}, 0.4\}$	L	0 0		0	
Masonry S	hear Walls:		$T \leq 0.4 \text{sec}$	1	۲		۲	
User Defin	ed (input Period):	- interior and the former that the second	f. de		0		0	
		neight in metres from the base eismic weight or mass.	e of the structure to the	I	0.40	1	0.40]
e) Factor A:	Strengthening factor d if not strengthened)	letermined using result from (a) above (set to 1.0	Factor A	: 1.00]	1.00	
f) Factor B:		EE Guidelines Figure 3A.1 us	ing	Factor B	0.20]	0.20]
g) Factor C:	For reinforced concrete C = 1.2, otherwise tak	e buildings designed betweer e as 1.0.	1976-84 Factor	Factor C	1.00]	1.00]
h) Factor D:	For buildings designed and Napier (1931-1938 take as 1.0.	d prior to 1935 Factor D = 0.8 5) where Factor D may be tal	except for Wellington ken as 1.0, otherwise	Factor D	1.00]	1.00	
(%NBS) _{nom} =	AxBxCxD			(%NBS) _{nor}	n 20%		20%	

Buildings" Technical Guidelines for Engineering Assessments, July 2017. This spreadsheet must be read in conjunction with the limitations set out in the accompanying report, and should not be relied on by any party for any other purpose. Detailed inspections and engineering calculations, or engineering judgements based on them, have not been undertaken, and these may lead to a different result or seismic grade.

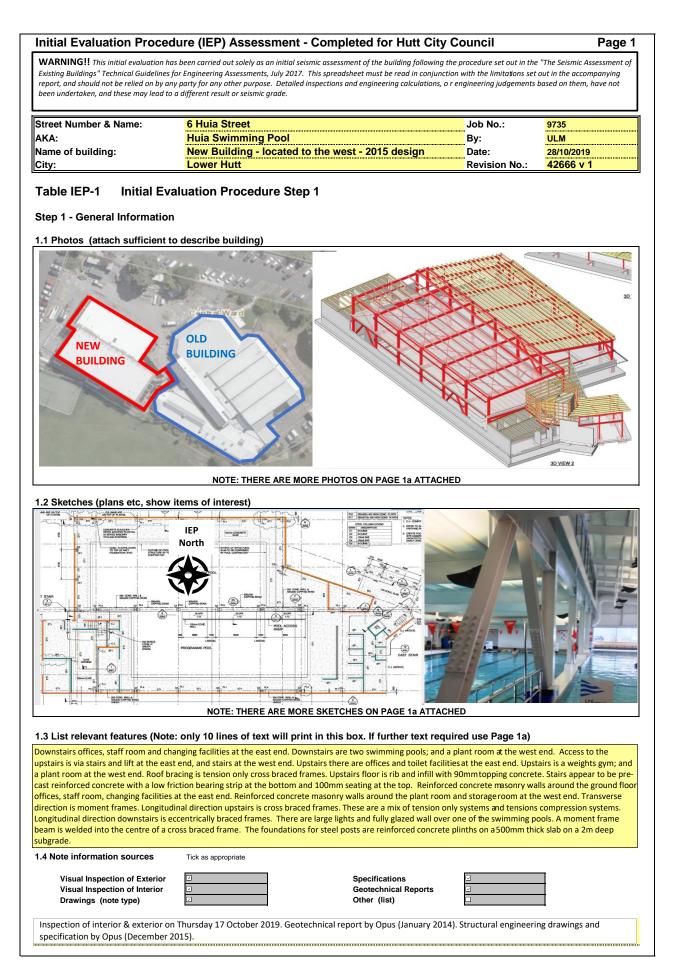
Street Number & Name:	6 Huia Street			Job No.:	9735
AKA:	Huia Swimmin	ig Pool		By:	ULM
Name of building:	Old Building -	located to the eas	st - 1979 design	Date:	24/10/2019
City:	Lower Hutt			Revision No.:	42644 v 1
Table IEP-2 Initial Ev	valuation Procee	dure Step 2 con	tinued		
2.2 Near Fault Scaling Factor,	,				
If $T \leq 1.5 \sec$, Factor E = 7	1		Longitudi	nal	Transverse
a) Near Fault Factor, N(T,D) (from NZS1170.5:2004, CI 3.1.6)			N(T,D) : 1		1
b) Factor E		= 1/N(T,D)	Factor E: 1.00		1.00
2.3 Hazard Scaling Factor, Fa	actor F				
a) Hazard Factor, Z, for site Locatio	On: Hutt Valley-south of Taita Gorge	▼ Refe	er right for user-defined loo	cations	
	Z = 0.4	(from NZS1170.5:2004,	Table 3.3)		
Z ₁₉ Z ₂₀₀		(NZS4203:1992 Zone Fa	actor from accompanying Figure 3.8	5(b))	
b) Factor F			····,		
For pre 1992 For 1992-2011	=	1/Z Z ₁₉₉₂ /Z			
For post 2011	=	Z ₂₀₀₄ /Z	Factor F: 2.50		2.50
2.4 Return Period Scaling Fac a) Design Importance Level, I (Set to 1 if not known. For buildings of public building set to 1.25. For buildin public building set to 1.33 for Zone A	designed prior to 1965 and kr ings designed 1965-1976 and	known to be designed as a	Class 2	Clas	1.3
b) Design Risk Factor, R _o (set to 1.0 if other than 1976-2004,		,	$R_o = 1$	▼ Item	₁ ▼
c) Return Period Factor, R					
(from NZS1170.0:2004 Building Imp	portance Level)	Choose Importance	<u>e Level</u> ○ 1 ○ 2 ● 3 R = <u>1.3</u>	• 04 0	1 0 2 • 3 0 4
d) Factor G	=	IR _o /R		_	
2.5 Ductility Scaling Factor, F a) Available Displacement Duc		Structure	Factor G: 1.00		1.00
Comment:			$\mu = \frac{2.00}{2.00}$		2.00
Reinforced concrete column	is a remorced masonry	wans			
b) Factor H			k_{μ}		k_{μ}
	For pre 1976 (max For 1976 onwards		= 1.57 = <u>1</u>	_	1.57 1
(where kµ is NZS1170.5:2004 Inela	astic Spectrum Scaling Factor	, from accompanying Table	Factor H: 1.00		1.00
2.6 Structural Performance So a) Structural Performance Fac	•	r I			
(from accompanying Figure 3.4) Tick if light timber-framed con		n		_	
			S _p = 0.70		0.70
b) Structural Performance Sca Note Factor B values for 1992 to 2	-	= 1/S _p 0.67 to account for Sp in this	Factor I: 1.43		1.43
2.7 Baseline %NBS for Buildi (equals (%NBS) _{nom} x E x F			71%		71%

et Number & Name:	6 Huia Street		Job No.:	9735
	Huia Swimming Pool		By:	ULM
ne of building: :	Old Building - located to the eas Lower Hutt	st - 1979 design	Date: Revision No.:	24/10/2019 42644 v 1
ole IEP-3 Initial Eva	aluation Procedure Step 3			
o 3 - Assessment of Perf er Appendix B - Section B3.2)	ormance Achievement Ratio (PAR)			
ongitudinal Direction				
potential CSWs		ctural Performance e - Do not interpolate)		Facto
Plan Irregularity		Significant	Incignificant	Factor A 0.7
Effect on Structural Performan	ed masonry walls and a cross braced frame a	Significant around the amenities and c	O Insignificant hanging area. No roof	
bracing observed over main p	ool. Centre of mass closer to the 2 storey an			
Vertical Irregularity Effect on Structural Performan		Significant	Insignificant	Factor B 1.0
	umns & RC masonary are continuous for the	-	° °	
pool the RC columns terminat Short Columns	te at 2.3m and there is an LVL eccentrically b	raced frame above. Largel	y single storey.	
Effect on Structural Performan	ce o Severe o	Significant	Insignificant	Factor C 1.0
None.		-	a 10 111	
	building has a frame structure. For stiff bi	uildings (eg shear walls).	the effect of pounding	
may be reduced by taking	the coefficient to the right of the value ap	pplicable to frame building	gs.	
may be reduced by taking Table for Selection	the coefficient to the right of the value ap Fa	ctor D1 For Longitudin Severe Signifi	gs. al Direction: 1.0 icant Insignificant	
Table for Selection	the coefficient to the right of the value ap	ctor D1 For Longitudin Severe Signifi n 0 <sep<.005h .005<sep<="" td=""><td>gs. al Direction: 1.0 icant Insignificant p<.01H Sep>.01H</td><td></td></sep<.005h>	gs. al Direction: 1.0 icant Insignificant p<.01H Sep>.01H	
Table for Selection	the coefficient to the right of the value ap Fa of Factor D1 Separatio	ctor D1 For Longitudin Severe Signifi n 0 <sep<.005h .005<sep<br="">n 0 1 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0</sep<.005h>	gs. hal Direction: 1.0 icant Insignificant p<.01H Sep>.01H 1 0 1	
Table for Selection	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh	ctor D1 For Longitudin Severe Signifi n 0 <sep<.005h .005<sep<br="">n 0 1 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0</sep<.005h>	gs. hal Direction: 1.0 icant Insignificant p<.01H Sep>.01H 1 0 1	
Table for Selection	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigi ment of Floors not within 20% of Storey Heigi	ctor D1 For Longitudin Severe Signifi n 0 <sep<.005h .005<sep<br="">n 0 1 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0</sep<.005h>	gs. hal Direction: 1.0 icant Insignificant p<.01H Sep>.01H 1 0 1	
Table for Selection Ai Alignr b) Factor D2: - Height	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect 	ctor D1 For Longitudin Severe Signifi n 0 <sep<.005h< td=""> .005<sep< td=""> ht 0 0 ctor D2 For Longitudin 0</sep<></sep<.005h<>	gs. hal Direction: 1.0 icant Insignificant p<.01H Sep>.01H 0 1 0.7 0.8 hal Direction: 1.0	
Table for Selection	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect 	ctor D1 For Longitudin Severe Signifi n 0 <sep<.005h< td=""> .005<sep< td=""> ht 0 0</sep<></sep<.005h<>	gs. hal Direction: 1.0 icant Insignificant p<.01H Sep>.01H 0 1 0.7 0 0.8 hal Direction: 1.0 icant Insignificant	
Table for Selection Alignment b) Factor D2: - Height	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect Fa of Factor D2 Height Difference > 4 Storey	ctor D1 For Longituding Severe Signifi 0 <sep<.005h< td=""> .005<sep< td=""> ht 0 .005 ctor D2 For Longituding .005 Severe Signifi 0<5ep<.005H</sep<></sep<.005h<>	gs. hal Direction: 1.0 icant Insignificant p<.01H	
Table for Selection Ai Alignr b) Factor D2: - Height	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect Fa of Factor D2 Height Difference 2 to 4 Storey Height Difference 2 to 4 Storey	ctor D1 For Longituding Severe Signifi 0 <sep<.005h< td=""> .005<sep< td=""> int 0 .005 ht 0.4 0 ctor D2 For Longituding Severe Signifi 0<sep<.005h< td=""> .005 .005 0.4 0 0 0 0.4 0 0 0.4 0 0 0.4 0 0 0.05 .005 0 0.4 0 0 0.4 0</sep<.005h<></sep<></sep<.005h<>	gs. al Direction: 1.0 icant Insignificant p<.01H	
Table for Selection Ai Alignr b) Factor D2: - Height	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect Fa of Factor D2 Height Difference > 4 Storey	ctor D1 For Longituding Severe Signifi 0 <sep<.005h< td=""> .005<sep< td=""> int 0 .005 ht 0.4 0 ctor D2 For Longituding Severe Signifi 0<sep<.005h< td=""> .005 .005 0.4 0 0 0 0.4 0 0 0.4 0 0 0.4 0 0 0.05 .005 0 0.4 0 0 0.4 0</sep<.005h<></sep<></sep<.005h<>	gs. al Direction: 1.0 icant Insignificant p<.01H	
Table for Selection Ai Alignr b) Factor D2: - Height	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect Fa of Factor D2 Height Difference 2 to 4 Storey Height Difference 2 to 4 Storey	ctor D1 For Longituding Severe Signifi 0 <sep<.005h< td=""> .005<sep< td=""> int 0 .005 ht 0.4 0 ctor D2 For Longituding Severe Signifi 0<sep<.005h< td=""> .005 .005 0.4 0 0 0 0.4 0 0 0.4 0 0 0.4 0 0 0.05 .005 0 0.4 0 0 0.4 0</sep<.005h<></sep<></sep<.005h<>	gs. al Direction: 1.0 icant Insignificant p<.01H	
Table for Selection Align b) Factor D2: - Height Table for Selection	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect Fa of Factor D2 Height Difference 2 to 4 Storey Height Difference 2 to 4 Storey	ctor D1 For Longitudin Severe Signifi n 0 <sep<.005h< td=""> .005<sep< td=""> nt 0 1 0 ht 0 0.4 0 ctor D2 For Longitudin Severe Signifi Severe Signifi 0 Severe Signifi 0 Severe Signifi 0 Severe Signifi 0 Severe 0.05 0.05 S 0.4 0 S 0.7 0 S 1 0</sep<></sep<.005h<>	gs. al Direction: 1.C icant Insignificant p<.01H Sep>.01H 0.7 0.8 al Direction: 1.C icant Insignificant >.01H Sep>.01H 7 0 1 0 1 1 1 1 1 1 1 1 1 1 1	Factor D 1.0
Table for Selection Align b) Factor D2: - Height Table for Selection Site Characteristics - Stable Effect on Structural Performance	the coefficient to the right of the value ar Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect Fa of Factor D2 Height Difference > 4 Storey Height Difference 2 to 4 Storey Height Difference < 2 Storey Height Difference < 2 Storey Height Difference < 2 Storey Height Difference < 3 Storey	ctor D1 For Longituding Severe Significable 0 <sep<.005h< td=""> .005<sep< td=""> in 0<sep<.005h< td=""> .005<sep< td=""> int 0 0 int 0.4 0 ctor D2 For Longituding Severe Significable Severe Significable 0.4 0 Severe Significable 0.05 0.05 s 0.4 0 0 s 0.4 0 0 s 0.7 0 0 s 0 0.7 0 s 1 0 1 exts the structural performant Significant</sep<></sep<.005h<></sep<></sep<.005h<>	gs. al Direction: 1.0 icant Insignificant p<.01H Sep>.01H 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Factor D 1.0
Table for Selection Align b) Factor D2: - Height Table for Selection Site Characteristics - Stable Effect on Structural Performan Greater Wellington Regional	the coefficient to the right of the value ar Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect Fa of Factor D2 Height Difference 2 to 4 Storey Height Difference 2 to 4 Storey Height Difference < 2 Storey Height Difference < 2 Storey Height Difference < 2 Storey	ctor D1 For Longituding Severe Signifi n 0 <sep<.005h< td=""> .005<sep< td=""> ht 0 0 .005 ht 0.4 0 .005 ctor D2 For Longituding Severe Signifi 0 0.4 00 's 0.4 0 's 0.4 0 's 0.1 0 exts the structural performant Significant sign potential, low slope fail Sope fail</sep<></sep<.005h<>	gs. al Direction: 1.0 icant Insignificant p<.01H Sep>.01H 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Factor D 1.0
Table for Selection Align b) Factor D2: - Height Table for Selection Site Characteristics - Stable Effect on Structural Performant Greater Wellington Regional of Longitudinaly, the heavy concert	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect Fa of Factor D2 Height Difference 2 to 4 Storey Height Difference 2 to 4 Storey Height Difference < 2 Storey Height Difference < 0 Severe O	ctor D1 For Longituding Severe Signifi n $0 < Sep < .005H$.005 < Sep	gs. al Direction: 1.0 icant Insignificant p<.01H Sep>.01H 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	Factor D 1.0
Table for Selection Align b) Factor D2: - Height Table for Selection Site Characteristics - Stable Effect on Structural Performant Greater Wellington Regional of Longitudinaly, the heavy concord Other Factors - for allowance Record rationale for choint rious structural systems: 1) aced frames 5) Timber eccent	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect Fa of Factor D2 Height Difference > 4 Storey Height Difference > 4 Storey Height Difference < 2 Storey Height Difference < 2 Storey Height Difference < 2 Storey Height Difference < 2 Storey Height Difference < 0 Council Flex Map Viewer, moderate liquefact rete structure appears to be well tied together e of all other relevant characterstics of the bu	ctor D1 For Longituding Severe Significable to frame building 0 <sep<.005h< td=""> .005<sep< td=""> ht 0.4 0 ctor D2 For Longituding Severe Significable to frame building Severe Significable to frame building Severe score 0.4 0 score Significable to frame building Severe score Significant 0 significant Significant Significant significant Significant Significant sidding For < 3 store otherwise</sep<></sep<.005h<>	gs. al Direction: 1.0 icant Insignificant p<.01H Sep>.01H 1 0 1	Factor D 1.0 spective Factor E 1.0 Factor F 1.2
Table for Selection Align b) Factor D2: - Height Table for Selection Site Characteristics - Stable Effect on Structural Performant Greater Wellington Regional of Longitudinaly, the heavy concord Other Factors - for allowance Record rationale for choint rious structural systems: 1) aced frames 5) Timber eccent	the coefficient to the right of the value ap Fa of Factor D1 Separatio lignment of Floors within 20% of Storey Heigh ment of Floors not within 20% of Storey Heigh Difference Effect Fa of Factor D2 Height Difference > 4 Storey Height Difference 2 to 4 Sto	ctor D1 For Longituding Severe Significable to frame building 0 <sep<.005h< td=""> .005<sep< td=""> ht 0.4 0 ctor D2 For Longituding Severe Significable to frame building Severe Significable to frame building Severe score 0.4 0 score Significable to frame building Severe score Significant 0 significant Significant Significant significant Significant Significant sidding For < 3 store otherwise</sep<></sep<.005h<>	gs. al Direction: 1.0 icant Insignificant p<.01H Sep>.01H 0 0 0 0 0 0 0 0 0 0 0 0 0	Factor D 1.0 spective Factor E 1.0 Factor F 1.2

et Number & Name:	6 Huia Street		Jo	b No.:	9735
A:	Huia Swimming Pool		By	<i>r</i> :	ULM
ne of building:	Old Building - located to the eas	st - 1979 desig	•••••••••••	ite:	24/10/2019
	Lower Hutt		Re	evision No.:	42644 v 1
ole IEP-3 Initial E	valuation Procedure Step 3				
3 - Assessment of Pe er Appendix B - Section B3.2,	rformance Achievement Ratio (PAR))			
ransverse Direction					_
potential CSWs		tructural Perfor lue - Do not inter			Fac
Plan Irregularity		0			
Effect on Structural Perform	nance O Severe extension ended concrete masonry was extension of the second concrete masonry was extension of	Significant	wers and therane	 Insignifican 	t Factor A 0.
	e CoM is > 0.3xW from the COR; Wall spacing				
Effect on Structural Perform		Significant		Insignifican	t Factor B 1.
	olumns & RC masonary are continuous for the nate at 2.3m and there is an LVL eccentrically b				
Effect on Structural Perform	nance _O Severe O	Significant		Insignifican	t Factor C 1.
None observed.					
Note:		uildinas (ea shea	r walls) the offe	ct of pounding]
Note: Values given assume th	e building has a frame structure. For stiff building has a frame structure for stiff building the coefficient to the right of the value ap			ct of pounding]
Note: Values given assume th may be reduced by takin	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap	Factor D1 For T	e buildings. ransverse Dire	ction: 1.0	
Note: Values given assume th	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap no of Factor D1 Separatic	Factor D1 For T Severe 0 <sep<.005h< td=""><td>e buildings. ransverse Dire</td><td></td><td></td></sep<.005h<>	e buildings. ransverse Dire		
Note: Values given assume th may be reduced by takin	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap n of Factor D1	Factor D1 For T Severe 0 <sep<.005h< td=""><td>e buildings. ransverse Dire Significant</td><td>ction: 1.0</td><td></td></sep<.005h<>	e buildings. ransverse Dire Significant	ction: 1.0	
Note: Values given assume th may be reduced by takin Table for Selectio	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap no of Factor D1 Separatic	Factor D1 For To Severe on 0 <sep<.005h ht 0 1</sep<.005h 	a buildings. ransverse Dire Significant I .005 <sep<.01h< td=""><td>ction: 1.0 Insignificant Sep>.01H</td><td></td></sep<.01h<>	ction: 1.0 Insignificant Sep>.01H	
Note: Values given assume th may be reduced by takin Table for Selectio	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap n of Factor D1 Alignment of Floors within 20% of Storey Heig nment of Floors not within 20% of Storey Heig	Factor D1 For To Severe on 0 <sep<.005h ht 0 1</sep<.005h 	ransverse Dire Significant I .005 <sep<.01h O 1</sep<.01h 	ction: 1.0 Insignificant Sep>.01H O 1	
Note: Values given assume th may be reduced by takin Table for Selection Alig b) Factor D2: - Heigh	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap n of Factor D1 Alignment of Floors within 20% of Storey Heig nment of Floors not within 20% of Storey Heig nt Difference Effect	Factor D1 For To Severe n 0 <sep<.005h ht 0.4</sep<.005h 	ransverse Dire Significant I .005 <sep<.01h 0 1 0.7</sep<.01h 	ction: 1.0 Insignificant Sep>.01H O 1 O 0.8 Ction: 1.0	
Note: Values given assume th may be reduced by takin Table for Selection Alig	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap n of Factor D1 Alignment of Floors within 20% of Storey Heig nment of Floors not within 20% of Storey Heig nt Difference Effect	Factor D1 For To Severe n 0 <sep<.005h ht 0.4</sep<.005h 	ransverse Dire Significant I .005 <sep<.01h 0 1 0.7</sep<.01h 	ction: 1.0 Insignificant Sep>.01H O 1 O 0.8	
Note: Values given assume th may be reduced by takin Table for Selection Alig b) Factor D2: - Heigh	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap on of Factor D1 Alignment of Floors within 20% of Storey Heig nament of Floors not within 20% of Storey Heig nt Difference Effect For of Factor D2 Height Difference > 4 Storey	Factor D1 For T Severe 0 <sep<.005h ht 0.4 Factor D2 For T Severe 0<sep<.005h< td=""><td>ransverse Dire Significant I .005<sep<.01h 0 1 0 0.7 ransverse Dire Significant I .005<sep<.01h 0 0.7</sep<.01h </sep<.01h </td><td>ction: 1.0 Insignificant Sep>.01H O 1 O 0.8 Ction: 1.0 Insignificant</td><td></td></sep<.005h<></sep<.005h 	ransverse Dire Significant I .005 <sep<.01h 0 1 0 0.7 ransverse Dire Significant I .005<sep<.01h 0 0.7</sep<.01h </sep<.01h 	ction: 1.0 Insignificant Sep>.01H O 1 O 0.8 Ction: 1.0 Insignificant	
Note: Values given assume th may be reduced by takin Table for Selection Alig b) Factor D2: - Heigh	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap on of Factor D1 Alignment of Floors within 20% of Storey Heig nament of Floors not within 20% of Storey Heig on to floors not within 20% of Storey Heig theight Difference > 4 Storey Height Difference 2 to 4 Storey Height Difference 2 to 4 Storey	Factor D1 For T Severe 0 <sep<.005h ht 0.4 Factor D2 For T Severe 0<sep<.005h severe 0<sep<.005h Severe 0<sep<.005h severe 0<sep<.005h< td=""><td>ransverse Dire Significant I .005<sep<.01h 0 1 0 0.7 ransverse Dire Significant I .005<sep<.01h 0.05<sep<.01h 0.07 0.7 0.9</sep<.01h </sep<.01h </sep<.01h </td><td>ction: 1.0 Insignificant Sep>.01H O 1 O 0.8 Ction: 1.0 Insignificant Sep>.01H O 1 O 1 O 1</td><td></td></sep<.005h<></sep<.005h </sep<.005h </sep<.005h </sep<.005h 	ransverse Dire Significant I .005 <sep<.01h 0 1 0 0.7 ransverse Dire Significant I .005<sep<.01h 0.05<sep<.01h 0.07 0.7 0.9</sep<.01h </sep<.01h </sep<.01h 	ction: 1.0 Insignificant Sep>.01H O 1 O 0.8 Ction: 1.0 Insignificant Sep>.01H O 1 O 1 O 1	
Note: Values given assume th may be reduced by takin Table for Selection Alig b) Factor D2: - Heigh	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap on of Factor D1 Alignment of Floors within 20% of Storey Heig nament of Floors not within 20% of Storey Heig nt Difference Effect For of Factor D2 Height Difference > 4 Storey	Factor D1 For T Severe 0 <sep<.005h ht 0.4 Factor D2 For T Severe 0<sep<.005h severe 0<sep<.005h Severe 0<sep<.005h severe 0<sep<.005h< td=""><td>ransverse Dire Significant I .005<sep<.01h 0 1 0 0.7 ransverse Dire Significant I .005<sep<.01h 0 0.7</sep<.01h </sep<.01h </td><td>ction: 1.0 Insignificant Sep>.01H O 1 O 0.8 Ction: 1.0 Insignificant Sep>.01H O 1</td><td></td></sep<.005h<></sep<.005h </sep<.005h </sep<.005h </sep<.005h 	ransverse Dire Significant I .005 <sep<.01h 0 1 0 0.7 ransverse Dire Significant I .005<sep<.01h 0 0.7</sep<.01h </sep<.01h 	ction: 1.0 Insignificant Sep>.01H O 1 O 0.8 Ction: 1.0 Insignificant Sep>.01H O 1	
Note: Values given assume th may be reduced by takin Table for Selection Alig b) Factor D2: - Heigh	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap on of Factor D1 Alignment of Floors within 20% of Storey Heig nament of Floors not within 20% of Storey Heig on to floors not within 20% of Storey Heig theight Difference > 4 Storey Height Difference 2 to 4 Storey Height Difference 2 to 4 Storey	Factor D1 For T Severe 0 <sep<.005h ht 0.4 Factor D2 For T Severe 0<sep<.005h severe 0<sep<.005h Severe 0<sep<.005h severe 0<sep<.005h< td=""><td>ransverse Dire Significant I .005<sep<.01h 0 1 0 0.7 ransverse Dire Significant I .005<sep<.01h 0.05<sep<.01h 0.07 0.7 0.9</sep<.01h </sep<.01h </sep<.01h </td><td>ction: 1.0 Insignificant Sep>.01H O 1 O 0.8 Ction: 1.0 Insignificant Sep>.01H O 1 O 1 O 1</td><td></td></sep<.005h<></sep<.005h </sep<.005h </sep<.005h </sep<.005h 	ransverse Dire Significant I .005 <sep<.01h 0 1 0 0.7 ransverse Dire Significant I .005<sep<.01h 0.05<sep<.01h 0.07 0.7 0.9</sep<.01h </sep<.01h </sep<.01h 	ction: 1.0 Insignificant Sep>.01H O 1 O 0.8 Ction: 1.0 Insignificant Sep>.01H O 1 O 1 O 1	
Note: Values given assume th may be reduced by takin Table for Selectio Alig b) Factor D2: - Heigh Table for Selectio	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap on of Factor D1 Alignment of Floors within 20% of Storey Heig nament of Floors not within 20% of Storey Heig on to floors not within 20% of Storey Heig theight Difference > 4 Storey Height Difference 2 to 4 Storey Height Difference 2 to 4 Storey	Factor D1 For Tr Severe on 0 <sep<.005h ht 0.4 Factor D2 For Tr Severe 0<sep<.005h s 0.4 Severe 0<sep<.005h s 0.4 s 0.4 s 0.4 s 0.4 s 0.4</sep<.005h </sep<.005h </sep<.005h 	ransverse Dire Significant I .005 <sep<.01h 0 1 0 0.7 co.7 ransverse Dire Significant I .005<sep<.01h 0 0.7 0.9 0 1</sep<.01h </sep<.01h 	ction: 1.0 Insignificant Sep>.01H 0 1 0 0.8 Ction: 1.0 Insignificant Sep>.01H 0 1 0 1 0 1	Factor D 1.
Note: Values given assume th may be reduced by takin Table for Selectio Alic b) Factor D2: - Heigh Table for Selectio Site Characteristics - Sta	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap n of Factor D1 Separatic Alignment of Floors within 20% of Storey Heig mment of Floors not within 20% of Storey Heig to Difference Effect Height Difference 2 to 4 Storey Height Difference 2 to 4 Storey Height Difference 2 Storey Height Difference < 3 storey Heig	Factor D1 For Tr Severe on 0 <sep<.005h ht 0.4 Factor D2 For Tr Severe 0<sep<.005h s 0.4 Severe 0<sep<.005h s 0.4 s 0.4 s 0.4 s 0.4 s 0.4</sep<.005h </sep<.005h </sep<.005h 	ransverse Dire Significant I .005 <sep<.01h 0 1 0 0.7 co.7 ransverse Dire Significant I .005<sep<.01h 0 0.7 0.9 0 1</sep<.01h </sep<.01h 	ction: 1.0 Insignificant Sep>.01H 0 1 0 0.8 Ction: 1.0 Insignificant Sep>.01H 0 1 0 1 0 1	Factor D 1.
Note: Values given assume th may be reduced by takin Table for Selectio Alig b) Factor D2: - Heigh Table for Selectio Site Characteristics - Sta Effect on Structural Perform Greater Wellington Region	e building has a frame structure. For stiff b ng the coefficient to the right of the value ap an of Factor D1 Separatic Alignment of Floors within 20% of Storey Heigh nment of Floors not within 20% of Storey Heigh nt Difference Effect Height Difference 2 to 4 Storey Height Difference 2 to 4 Storey Height Difference 2 Storey Height Difference < 3 st affer Ability, landslide threat, liquefaction etc as it affer	Factor D1 For Tr Severe 0 <sepc.005h ht 0.4 Factor D2 For Tr Severe 0<sepc.005h /s 0.4 /s 0.7 /s 1 Pactor D2 For Tr Severe 0<sepc.005h /s 0.4 /s 0.7 /s 1 Pactor D2 For Tr Severe 0<sepc.005h /s 0.4 /s 0.4 /s</sepc.005h </sepc.005h </sepc.005h </sepc.005h 	ransverse Dire Significant I .005 <sep<.01h 0 1 0.07 ransverse Dire Significant I .005<sep<.01h 0.07 0.9 0.1 0.9 0.1</sep<.01h </sep<.01h 	ction: 1.0 Insignificant Sep>.01H 0 1 0 0.8 ction: 1.0 Insignificant Sep>.01H 0 1	Factor D 1.
Note: Values given assume th may be reduced by takin Table for Selection b) Factor D2: - Heigh Table for Selection Site Characteristics - Sta Effect on Structural Perform Greater Wellington Regions precast double tee beams for	e building has a frame structure. For stiff building the coefficient to the right of the value aport of the coefficient to the right of the value aport of Floors to the right of the value aport of Floors D1 Separation Alignment of Floors within 20% of Storey Height Difference Effect The of Factor D2 The dight Difference 2 to 4 Storey Height Difference 2 to 4 Storey Height Difference 2 Storey Height Difference 3 Height Difference 3 Height Difference 4 Storey Height Difference 4 Storey Height Difference 5 Height Differ	Factor D1 For Tr Severe on 0 <sep<.005h ht 0 0.4 Factor D2 For Tr Severe 0<sep<.005h % 0 0.4 % 0 0.7 % 0 1 Factor D2 For Tr Severe 0<sep.005h % 0 0.4 % 0 0.7 % 0 1 Factor D2 For Tr Severe 0<sep.005h % 0 0.4 % 0 0.7 % 0 1 Factor D2 For Tr Severe 0<sep.005h % 0 0.4 % 0 0.4</sep.005h </sep.005h </sep.005h </sep<.005h </sep<.005h 	a buildings. ransverse Dire Significant I 005 <sep<.01h -="" 0.07="" 0.9="" 005<sep<.01h="" 007="" 01="" 0erformance="" 3="" dire="" failure="" from="" i="" maxi<="" pote="" ransverse="" significant="" slope="" storeys="" td="" ≤=""><td>ction: 1.0 Insignificant Sep>.01H 0 1 0 0.8 ction: 1.0 Insignificant Sep>.01H 0 1 1 1 1 1 1 1 1 1 1 1 1 1</td><td>Factor D 1.</td></sep<.01h>	ction: 1.0 Insignificant Sep>.01H 0 1 0 0.8 ction: 1.0 Insignificant Sep>.01H 0 1 1 1 1 1 1 1 1 1 1 1 1 1	Factor D 1.
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Note: Values given assume th may be reduced by takin Table for Selectio b) Factor D2: - Heigh Table for Selectio Site Characteristics - Sta Effect on Structural Perform Greater Wellington Regions precast double tee beams for Other Factors - for allowa Record rationale for a Various structural systems: frames 5) Timber eccentric	e building has a frame structure. For stiff building has a frame structure. For stiff building the coefficient to the right of the value approximate the coefficient to the right of the value approximate to factor D1 Separatic Alignment of Floors within 20% of Storey Height Difference Floors not within 20% of Storey Height Difference 2 to 4 Storey Height Difference 2 Storey Height Difference < 3 Height Difference < 3 Height Difference < 3 Height Difference < 4 Storey Height Difference < 3 Height Difference < 4 Height Difference < 4 Height Difference < 4 Height Difference < 3 Height Difference < 3 Height Difference < 4 Height Differenc	Factor D1 For Tr Severe 0 <sep<.005h ht 0.4 Factor D2 For Tr Severe 0<sep<.005h (S 0.4 (S 0.7 (S 0.4 (S 0.7 (S 0.4 (S 0.7 (S 0.4 (S 0.7 (S 0.4)) (S 0.7 (S 0.4)) (S 0.7 (S 0.4) (S 0.7 (S 0.4)) (S 0.7 (S 0.7)) (S 0.7) (S 0.7)</sep<.005h </sep<.005h 	a buildings. ransverse Dire Significant I 01 01 01 07 ransverse Dire Significant I 005 <sep<.01h 0="" 0.07="" 0.7="" 0.9="" 005="" 005<sep<.01h="" 01="" 0<="" 1="" sep<.01h="" td=""><td>ction: 1.0 Insignificant Sep>.01H 0 1 0 0.8 ction: 1.0 Insignificant Sep>.01H 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td><td>Factor D 1. spective Factor E 0. Factor F 1.3</td></sep<.01h>	ction: 1.0 Insignificant Sep>.01H 0 1 0 0.8 ction: 1.0 Insignificant Sep>.01H 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Factor D 1. spective Factor E 0. Factor F 1.3
Values given assume th may be reduced by takin Table for Selection b) Factor D2: - Heigh Table for Selection Site Characteristics - Sta Effect on Structural Perform Greater Wellington Regions precast double tee beams for Other Factors - for allowan Record rationale for a Various structural systems: frames 5) Timber eccentric	e building has a frame structure. For stiff building the coefficient to the right of the value appreciated to the right of the value appreciated for	Factor D1 For Tr Severe 0 <sep<.005h ht 0.4 Factor D2 For Tr Severe 0<sep<.005h (S 0.4 (S 0.7 (S 0.4 (S 0.7 (S 0.4 (S 0.7 (S 0.4 (S 0.7 (S 0.4)) (S 0.7 (S 0.4)) (S 0.7 (S 0.4) (S 0.7 (S 0.4)) (S 0.7 (S 0.7)) (S 0.7) (S 0.7)</sep<.005h </sep<.005h 	a buildings. ransverse Dire Significant I 01 01 01 07 ransverse Dire Significant I 005 <sep<.01h 0="" 0.07="" 0.7="" 0.9="" 005="" 005<sep<.01h="" 01="" 0<="" sep<.01h="" td=""><td>ction: 1.0 Insignificant Sep>.01H 0 1 0 0.8 ction: 1.0 Insignificant Sep>.01H 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td><td>Factor D 1. spective Factor E 0. Factor F 1.3</td></sep<.01h>	ction: 1.0 Insignificant Sep>.01H 0 1 0 0.8 ction: 1.0 Insignificant Sep>.01H 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Factor D 1. spective Factor E 0. Factor F 1.3

	6 Huia Street	Job No.:	<mark>9735</mark>
KA :	Huia Swimming Pool	By:	ULM
ame of building:	Old Building - located to the east - 197	······	24/10/2019
ity:	Lower Hutt	Revision No.:	<mark>42644 v 1</mark>
able IEP-4 Initial E	valuation Procedure Steps 4, 5, 6 and	d 7	
tep 4 - Percentage of Nev	w Building Standard (%NBS)		
		Longitudinal	Transverse
.1 Assessed Baseline %A (from Table IEP - 1)	IBS (%NBS)b	71%	71%
.2 Performance Achieven (from Table IEP - 2)	ient Ratio (PAR)	0.84	0.59
.3 PAR x Baseline (%NBS) _b	60%	40%
.4 Percentage New Buildi (Use lower of two value	ing Standard (%NBS) - Seismic Rating es from Step 4.3)		40%
itep 5 - Is <i>%NBS <</i> 34?			NO
tep 6 - Potentially Earthq	uake Risk (is <i>%NBS</i> < 67)?		YES
tep 7 - Provisional Gradi	ng for Seismic Risk based on IEP	Seismic Grade	C
Additional Comments (ite	ems of note affecting IEP based seismic rating)		
Seating of the precast floor Longitudinal bracing behind Strength of cantilever colun Stability and strength of can transverse wall to the rear c strength of the upstairs rein	I the tiered seating. nns and plinths in the transverse direction of the learner's ntilever columns supporting reinforced concrete masonry	, s pool area. walls (longitudinal wall to the rear of t he ch	nanging facilities and
Deletion of the test			
Relationship betw	reen Grade and <i>%NBS</i> :		

KA	ne of building:	<mark>6 Huia Street</mark> Huia Swimming Pool Old Building - located to the east - 1979 d Lower Hutt	Job No.: By: lesign Date: Revision No	9735 ULM 24/10/2019 .: 42644 v 1
	p 8 - Identification of po	aluation Procedure Step 8 nential Severe Structural Weaknesses (SSWs) a significant number of occupants) that could result in	
1	Number of storeys above	/e ground level		2
2	Presence of heavy cond	crete floors and/or concrete roof? (Y/N)		Y
	Potential Severe	Structural Weaknesses (SSWs):		
	Note: Options that are greye	ed out are not applicable and need not be considered.		
	Occupancy not consi	dered to be significant - no further considerat	tion required	
	Risk not considered t	o be significant - no further consideration req	uired	
		al Severe Structural Weaknesses (SSWs) have ould result in significant risk to a significant n		
	1. None identified			
	2. Weak or soft storey	(except top storey)		
		l/or beam-column joints the deformations of v other structural elements	which are	
	4. Flat slab buildings connections	with lateral capacity reliant on low ductility sl	ab-to-column	
	5. No identifiable con	nection between primary structure and diaphr	ragms	
	6. Ledge and gap stal	rs		
	IEP Assessm	ent Confirmed by	Signature	
			Name CPEng. No	
		as been carried out solely as an initial seismic assessment of the buildin neering Assessments, July 2017. This spreadsheet must be read in conju		





reet Number (A: me of buildi y:		6 Huia Street Huia Swimmin New Building Lower Hutt	g Pool - located to the west -	2015 des	ign	Job No.: By: Date: Revision No.:	9735 ULM 28/10/2019 42666 v 1	
ble IEP-2	Initial Eva	luation Proced	dure Step 2					
ep 2 - Deter	mination of (%	VBS) b						
•) for particular build nominal (%NBS)	ing - refer Section B5	5)			. 1	T	
					<u>Longitudina</u>	<u>ai</u>	<u>Transverse</u>	
	trengthening Data	ve been strengthened	d in this direction					
	•	•	ling has been strengthened	to	N/A		N/A	
-		-						
b) Year of Des	ign/Strengthening	, Building Type and	Seismic Zone					
					Pre 1935 🔾		Pre 1935	~
					935-1965 _O 965-1976 _O		1935-1965 1965-1976	
					976-1984 _O		1976-1984	
					984-1992 _O 992-2004 _O		1984-1992 1992-2004	-
					992-2004 _O 004-2011 _O		2004-2011	
				Post	Aug 2011 _ම		Post Aug 2011	۲
			Building Type:		Not applica	able	Not applical	ble
			Seismic Zone:		Not applica	able	Not applical	ble
c) Soil Type	From N204470 F					_		
	From NZS1170.5:2			D Soft Soil		•	D Soft Soil	•
	From NZS4203:19 (for 1992 to 2004 a				Not applica	able	Not applical	ble
d) Estimate P Comment:	eriod, I			h _n =	8.4		8.4	m
Two storey shear walls		e and steel EBF and	steel CBF and masonry	$A_c =$	1.00		1.00	m²
	esisting Concrete Fr		$T = \max\{0.09h_n^{0.75}, 0.4\}$		0		0	
	esisting Steel Frame ly Braced Steel Fra		$T = \max\{0.14h_n^{0.75}, 0.4\}$ $T = \max\{0.08h_n^{0.75}, 0.4\}$		0 ()		• 0	
All Other F	rame Structures:		$T = \max\{0.06h_n^{0.75}, 0.4\}$		0		0	
Masonry S	ihear Walls hear Walls:		$T = \max\{0.09h_n^{0.75}/A_c^{0.5}, 0.4\}$ $T \le 0.4 \sec$		0		0	
User Defin	ed (input Period):				0		0	
		neight in metres from the b hismic weight or mass.	ase of the structure to the	ı	0.40		0.69	
	.					_		1
e) Factor A:	Strengthening factor d if not strengthened)	etermined using result fro	m (a) above (set to 1.0	Factor A	1.00		1.00	
f) Factor B:	Determined from NZSI results (a) to (e) above	EE Guidelines Figure 3A.1	using	Factor E	1.00		1.00	
g) Factor C:	For reinforced concrete C = 1.2, otherwise tak	e buildings designed betwo e as 1.0.	een 1976-84 Factor	Factor C	1.00		1.00	l
h) Factor D:		l prior to 1935 Factor D = (5) where Factor D may be		Factor D	1.00		1.00	
(%NBS) _{nom} =	AxBxCxD			(%NBS) _{not}	n 100%		100%	

Street Number & Name: AKA: Name of building: Chy: Table IEP-2 Initial Evaluation Procedure Step 2 continued 2.2 Near Fault Scaling Factor, Factor E If T a Used, Factor Ret T and Table IEP-2 Initial Evaluation Procedure Step 2 continued 2.2 Near Fault Scaling Factor, Factor F a) Near Factor F a) Near Factor Scaling Factor, Factor C b) Factor F for prot 1902 - 11 at the factor, R for prot 2011 - 2 Zung Z Factor FF: 100 2.4 Return Period Scaling Factor, R for prot 2011 - 2 Zung Z Factor FF: 100 2.4 Return Period Scaling Factor, R for prot 2011 - 2 Zung Z Factor FF: 100 2.5 Decision Factor, R for try Scaling Tactor, NC To Zung Prot NC TO Scaling Tactor, Scaling Prot NC TO Scaling Prot To Zung Prot To Zung Prot NC TO Scaling Prot To Zung Prot NC TO Scaling Prot To Zung Prot NC TO Scaling Prot To Zung Prot To Zung Prot NC TO Scaling Prot To Zung Prot NC TO Scaling Prot To Zung Prot To Zung Prot To Zung Prot NC To Zung Prot NC To Zung Prot NC To Zung Prot To Zung Prot To Zung Prot To Zung Prot	Initial Evaluation Proced	lure (IEP) Asses	sment - Con	npleted for Hutt City	Council	Page 3
Name of building: New Buildinglocated to the west - 2015 design Date: 2456 v1 1455 v11455 v1145 v1	Street Number & Name:	6 Huia Street			Job No.:	9735
City: Lower Hutt Revision No: 42565 v1 Table LEP-2 Initial Evaluation Procedure Step 2 continued 2.2 Near Fault Scaling Factor, Factor E If $f \leq 1.5 \sec$, Factor E = 1 If $f \leq 1.5 \sec$, Factor F = 1 a) Name factor factor, 7 actor F a) Hazard Table XCI (2.1.6) b) Factor F for point 192 for point 2011 c) Factor F for point 192 for point 2011 c) Factor F for point 192 for point 2011 c) Factor F for for Factor C for for Factor	AKA:	Huia Swimming	Pool		By:	ULM
Table (EP-2 Initial Evaluation Procedure Step 2 continued Table (EP-2 Initial Evaluation Procedure Step 2 continued 2 Near Fault Scaling Factor, Factor E If $T \leq 1.5 \sec$, Factor E = 1 Longitudina a) Near Fault Factor, NT(D) Immu NEXTINESSION (3.3.16) b) Factor F a) Hazard Scaling Factor, Factor F b) Factor F c) Refer right for user-defined locations $\frac{1}{2} - \frac{10}{2} -$	Name of building:	New Building - I	ocated to the	west - 2015 design	Date:	28/10/2019
2.2 Noar Fault Scaling Factor, Factor E Image: construction of the start Factor, N(7.0) Image: construction of the start Factor, N(7.0) Image: construction of the start Factor, N(7.0) 1.3 Hazard Scaling Factor, Factor F Image: construction of the start Factor, N(7.0) Image: construction of the start Factor, N(7.0) Image: construction of the start Factor, N(7.0) 2.3 Hazard Scaling Factor, Factor F Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) 2.3 Hazard Scaling Factor, Factor F Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) 0.1 Factor F Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) 0.1 Factor F Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) 0.1 Factor F Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) 0.1 Start Factor, N Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) Image: construction of the start factor, N(7.0) 0.1 Start Factor, N <th>City:</th> <th>Lower Hutt</th> <th></th> <th></th> <th>Revision No.:</th> <th>42666 v 1</th>	City:	Lower Hutt			Revision No.:	42666 v 1
If $T \leq 1.5 \text{sec}$, FacTor $E = 1$ and the factor, N(7.0) The state Factor, N(7.0) The state T and Factor, N(7.0) The state T and Factor, N(7.0) The state T = 10, The	Table IEP-2 Initial Eva	aluation Procedu	ure Step 2 co	ontinued		
$ \begin{array}{c} \text{Longevinity} \\ \text{Torm K23117052004, C 3.1.0} \\ \text{for MC33117052004, C 3.1.0} \\ \text{Torm K23117052004, Takk 5.3.0} \\ \text{Torm K23117052004, Takk 5.3.0, Takk 5.3.0} \\ Torm K23117052004, Tak$. ,	Factor E				
$ \begin{array}{c} \text{(We MCS117D S2004, CD 3.16)} \\ \text{(P Factor E} & = 1 N(T.D) & \text{Factor E} & 100 \\ \hline \text{(South Constraints} & (South $					nal	Transverse
b) Factor E = 1N(T, D) Factor E: 100 100 100 1100				N(T,D): 1		1
2.3 Hazard Scaling Factor, Factor F 3) Hazard Factor, Factor F 3) Hazard Factor, Factor F 2 $= 0.4$ from NEUTOD 2004. Table 3.3 $2_{200} = 0.4$ from NEUTOD 2004. Table 3.3 For pro 1992 $2_{200} = 0.4$ from NEUTOD 2004. Table 3.3 For pro 1992 $2_{200} = 0.4$ from NEUTOD 2004. Table 3.3 For pro 1992 $2_{200} = 0.4$ from NEUTOD 2004. Table 3.3 For pro 1992 $2_{200} = 0.4$ from NEUTOD 2004. Table 3.3 1 = 0.4 from			= 1/N(T D)	Factor E: 1.00		1.00
a) Hazard Factor, Z. for site Location: u_{m} where watch is forger if the NZS1170 5.2004. Table 3.3 $\frac{2}{2 \log 2} = \frac{1}{0.4}$ (from NZS1170 5.2004. Table 3.3) $\frac{2}{2 \log 2} = \frac{1}{0.4}$ (from NZS1170 5.2004. Table 3.3) For por 1902 $= 1/Z$ For post 2011 $= Z_{2 \log 2}/Z$ For Different Law (III) Different Nation (III) (IIII) (III) (III) (III) (III) (III) (III) (II			- 1/1(1,2)			1.00
Location: $ \begin{array}{c} L \\ L $	2.3 Hazard Scaling Factor, Fac	tor F				
$ \begin{array}{c} z \\ z_{000} \\ z_{0$						
$ \frac{1}{2 \cos \theta} = \frac{1}{0.4} (brown 22 zone Factor from accompanying Figure 3.5(b)) (brown 251170 5.2004, Table 3.3) (brown 251170 5.2004, Table 3.2) (brown 251170 5.2$	Location	Hutt Valley-south of Taita Gorge	▼ R	efer right for user-defined lo	cations	
$ \begin{array}{c} \begin{array}{c} & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & & \\ & & \\ & & & \\ & & \\ & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & & \\ & & & \\ & &$		-	(from NZS1170.5:200	04, Table 3.3)		
b) Factor F For pix 1992 = 1/2 For pix 1992 = 1/2 For pix 1992 = 1/2 For pix 1992 = 1/2 For pix 100 = 1/2 For pix 100 = 1/2 For pix 100 = 1/2 Factor F: 1.00 = 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00					5(b))	
$ \begin{array}{c} For \text{ proves } 1922 \\ For \text{ post } 2011 \\ = Z_{000}/Z \\ For \text{ post } 2011 \\ = Z_{000}/Z \\ \hline Factor F: 1.00 \\ \hline factor I for one for building delegated for the test and known to be designed as a public building set to 1.25 for how the test in the designed as a public building set to 1.25 for how the test in the designed as a public building set to 1.25 for how the test in the designed as a public building set to 1.25 for how the test in the designed as a public building set to 1.25 for how the test in the designed as a public building set to 1.25 for how the test in the designed as a public building set to 1.25 for the test in the designed as a public building set to 1.25 for the test in the test in the designed as a public building set to 1.25 for test the test in test. The test how the test is the test is the test in the test in test in the test is the test $		0.4	(ITOM INZ S1170.5:200	J4, TADIE 3.3)		
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Buildings" Technical Guidelines for Engineering Assessments, July 2017. This spreadsheet must be read in conjunction with the limitations set out in the accompanying report, and shoun ot be relied on by any party for any other purpose. Detailed inspections and engineering calculations, or engineering judge ments based on them, have not been undertaken, and these	Buildings" Technical Guidelines for Enginee	ring Assessments, July 2017.	This spreadsheet mus	t be read in conjunction with the lim	itations set out in the accor	npanying report, and should

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(A:	Huia Swimming Pool		By	/:	ULM
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ep 3 - Assessment of Pe efer Appendix B - Section B3.2	erformance Achievement Ratio (PAR)				
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reet Number & Name:	6 Huia Street	Job No.:	9735
KA:	Huia Swimming Pool	By:	ULM
lame of building: Sity:	New Building - located to the west - 2 Lower Hutt	2015 design Date: Revision No.:	28/10/2019 42666 v 1
•			42000 1
	Evaluation Procedure Steps 4, 5, 6 ar	nd 7	
ep 4 - Percentage of Ne	w Building Standard (%NBS)	Longitudinal	Transverse
4 Accessed Recaling %			1009/
.1 Assessed Baseline %/ (from Table IEP - 1)	VBS (%/VBS)b	100%	100%
.2 Performance Achiever (from Table IEP - 2)	nent Ratio (PAR)	1.20	1.20
.3 PAR x Baseline (%NB	3) _b	>100%	>100%
.4 Percentage New Build (Use lower of two value	ing Standard (%NBS) - Seismic Rating es from Step 4.3)		>100%
Step 5 - Is <i>%NB</i> S < 34?			NO
Step 6 - Potentially Earthc	quake Risk (is <i>%NBS</i> < 67)?		NO
Step 7 - Provisional Gradi	ng for Seismic Risk based on IEP	Seismic Grade	A+
Additional Comments (ite	ems of note affecting IEP based seismic rating)		
Relationship betw	veen Grade and <i>%NBS</i> :		

abie IEP-3 Initial Evaluation Proceedure Step 3 be 3 - identification of potential Severe Structural Weaknesses (SSWs) that could result in significant risk to a significant number of occupants 1 Number of storeys above ground level 2 Presence of heavy concrete floors and/or concrete roo? (ViN) 2 Predetial Severe Structural Weaknesses (SSWs). 2 Totoutial Severe Structural Weaknesses (SSWs). 3 Determine that are growed out are not applicable and nucl not be considered. 3 Read on a considered to be significant - no further consideration required 3 In following potential Severe Structural Weaknesses (SSWs) have been identified in the building that could result in significant risk to a significant number of occupants. 4 In following potential Severe Structural Weaknesses (SSWs) have been identified in the building that could result in significant risk to a significant number of occupants. 4 In following potential Severe Structural Weaknesses (SSWs) have been identified in the building that could result in significant risk to a significant number of occupants. 5 In following potential Severe Structural Weaknesses (SSWs) have been identified in constants. 6 In the buildings with lateral capacity reliant on low ductility slab-to-column. 7 In the identified by other structural elements. 7 In the identified by other structural elements. 8 In the identified be connection between primary structure and diaphragms. 8 Ledge and gap stairs 2 Element Confirmed by 2 Signature 8 Name 2 CEng. No.	KA:	e of building:	6 Huia Street Huia Swimming Pool New Building - located to 1 Lower Hutt	the west - 2015 design	Job No.: By: Date: Revision No.:	9735 ULM 28/10/2019 42666 v 1
2 Presence of heavy concrete floors and/or concrete roof? (VM) Y Presence of heavy concrete floors and/or concrete roof? (VM) Application of the tare greyed out are not applicable and need not be considered. Decupancy not considered to be significant - no further consideration required The following potential Severe Structural Weeknesses (SSWs) have been identified the building that could result in significant risk to a significant number of occupants: 1. None identified Weak or soft storay (accept top storay) Signature IEP Assessment Confirmed by Signature Name		8 - Identification of po	otential Severe Structural Weak	messes (SSWs) that could	result in	
Approximate of the provided of the significant - no further consideration required Are 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: 4. None identified Weak or soft story (except top story) 5. It is also buildings with lateral capacity reliant on low ductlifty slab-to-column connections by other structural elements 6. It dentifiable connection between primary structure and diaphragms 7. Judge and gap stairs	1	Number of storeys above	ve ground level			2
Index provide the set of the 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: . None identified Match or soft storey (except top storey) . Firthis columns and/or beam-column joints the deformations of which are non-attained by other structural elements . A lad slab buildings with lateral capacity reliant on low ductility slab-to-column connections . No Identifiable connection between primary structure and diaphragms . Ledge and gap stairs	2	Presence of heavy cond	crete floors and/or concrete roof?	? (Y/N)		Y
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 to the building that could result in significant risk to a significant number of occupants. . None identified * Otak or soft storey (except top storey) * Otak or soft		Potential Severe	e Structural Weaknesse	es (SSWs):		
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The following potential Severe Structural Weeknesses (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 IEP Assessment Confirmed by Image: Signature Name		Occupancy not consi	dered to be significant - no fur	ther consideration required	d	
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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 IEP Assessment Confirmed by		2. Weak or soft storey	/ (except top storey)			
S. No identifiable connection between primary structure and diaphragms 6. Ledge and gap stairs IEP Assessment Confirmed by Signature Name				formations of which are		
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IEP Assessment Confirmed by Signature Name		5. No identifiable con	nection between primary struc	ture and diaphragms		
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