

AN INVENTORY OF UNREINFORCED LOAD-BEARING STONE MASONRY BUILDINGS IN NEW ZEALAND

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SUMMARY

Almost all unreinforced stone masonry (URSM) buildings in New Zealand were constructed between 1860 and 1910, typically in regions where natural stone was sourced from local quarries, fields and rivers. These buildings form an important part of the country's architectural heritage, but the performance of URSM buildings during earthquake induced shaking can differ widely due to many aspects related to the constituent construction materials and type of masonry wall cross-section morphology. Consequently, as a step towards gaining greater knowledge of the New Zealand URSM building stock and its features, an exercise was undertaken to identify and document the country-wide URSM building inventory. The compiled building inventory database includes: (i) general building information, such as address, building owner/tenant and building use; (ii) architectural configuration, such as approximate floor area, number of storeys, connection with other buildings, plan and elevation regularity; and (iii) masonry type, such as stone and mortar types, wall texture and wall cross-section morphology. From this exercise it is estimated that there is in excess of 668 URSM buildings currently in existence throughout New Zealand. A large number of these vintage URSM buildings require detailed seismic assessment and the implementation of seismic strengthening interventions in order to conserve and enhance this component of New Zealand's cultural and national identity. The entire stock of identified buildings is reported in the appended annex (688 total), including 20 URSM buildings that were demolished following the Canterbury earthquake sequence.

INTRODUCTION

Early European settlements and historic places are scattered throughout New Zealand, contributing to the nation's built heritage, being an inseparable part of the country's cultural and national identity that requires conservation and protection. A large proportion of existing unreinforced stone masonry (URSM) buildings in New Zealand were constructed in the second half of the 19th century by early European settlers and as in many other countries, the construction of these buildings commonly followed traditional practices that did not take into consideration building stability and safety when subjected to earthquake induced lateral loads [1]. This inherent vulnerability to earthquakes led to a large number of New Zealand's URSM buildings being lost during the strongest seismic events, including the 1855 Wairarapa earthquake (M 8.2) near Wellington, the 1929 Murchison earthquake (M 7.8) that affected Nelson, Westport and Greymouth, the 1931 Hawke's Bay earthquake (M 7.8) near Napier and more recently the 2010/2011 Canterbury earthquake sequence (M 7.1 and M 6.3) [2, 3].

Following the 2010/2011 Canterbury earthquakes 18% of the stone masonry buildings in Christchurch were confirmed as being demolished due to safety reasons (Figure 1a) with the

fate of an additional 13% being unknown at the time of the study. For the remaining 69% of URSM buildings in existence in Christchurch prior to the earthquakes (Figure 1b), only 21% were classified as having low damage (green placard) whereas 50% were classified as heavily damaged, corresponding to categories D4 and D5 in accordance with the EMS-98 scale [4, 5, 6]. Most of the observed damage was attributed to the poor quality of constituent materials (particularly weak mortar) and/or the lack of interconnectivity between masonry leaves, see Figure 2 to Figure 6. Close examination of damaged URSM buildings allowed further investigation of historic construction methods and wall cross-section morphologies, being information that is typically only attained via destructive investigation methods. The performance of URSM buildings that had received seismic strengthening was also investigated following the Canterbury earthquakes [7].

Many of the vintage unreinforced stone masonry buildings in New Zealand are currently used for a variety of public functions, ranging from churches to schools and public offices. In addition to loss of the country's architectural heritage, the safety of building occupants and nearby pedestrians is of paramount concern due to the seismic vulnerability of URSM buildings. Detailed seismic assessment of these buildings, followed by appropriate improvement of their earthquake behaviour, will in many cases be necessary

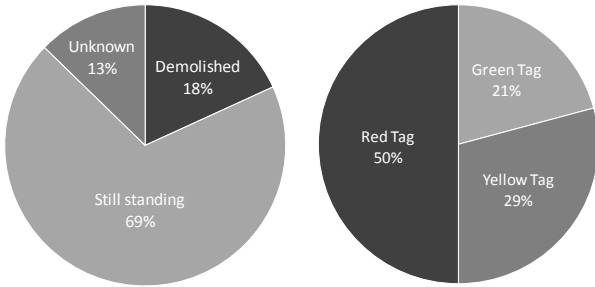
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for both building safety and heritage conservation [7, 8 and 9]. Currently, there is limited information available on how to assess New Zealand URSM buildings [10, 11]. In addition, there is a lack of readily available information for New Zealand professional structural engineers on best practice seismic improvement techniques for the URSM building type.



(a) State of URSM buildings (b) Distribution of safety evaluation placarding for 69% of buildings still standing

Figure 1: Condition of URSM building stock in Christchurch after the 2010/2011 Canterbury earthquakes – data updated June 2013.



Figure 2: Canterbury Provincial Council Buildings, Bellamy's (1864). 3 leaf basalt (from Banks Peninsula) wall and limestone ornamentation. In-plane failure shown by diagonal cracking (highlighted for clarity) and twisting of the buttress.



Figure 3: Canterbury Provincial Council Buildings, Bellamy's (1864). Halswell basalt facing with clay brick backing wall. Out-of-plane partial collapse of a gable due to the absence of bond between leaves.



Figure 4: Hakatere Station (1862) greywacke rubble walls with mudstone gables. Lack of bond between walls with activation of out-of-plane mechanism.

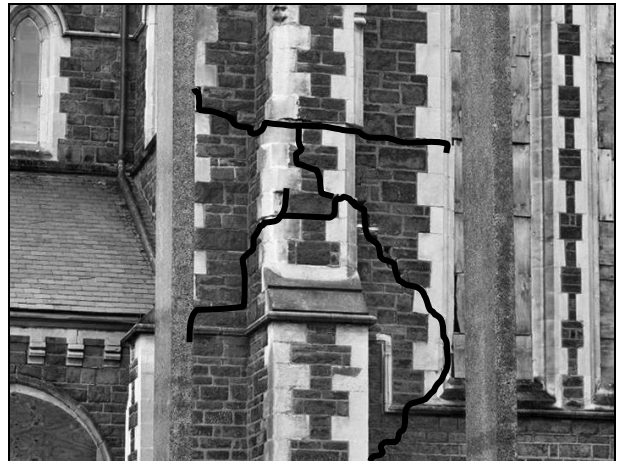


Figure 5: Cathedral Church of Christ (1864), Christchurch. 3 leaf basalt (from Banks Peninsula) wall and limestone ornamentation. In-plane failure shown by diagonal cracking (highlighted for clarity) and twisting of the buttress.



Figure 6: Cathedral of the Blessed Sacrament (1899), Christchurch. Oamaru limestone facing with cast in-situ no-fines concrete core walls. Collapse of the towers due to inadequate lateral resistance of the masonry walls.

In response to the aforementioned concerns and following the 2010/2011 Canterbury earthquakes, an exercise was undertaken to identify and document an inventory of New Zealand URSM buildings. The subsequent aim of the research project is to validate suitable and best practice methods for detailed seismic assessment and improvement of New Zealand URSM buildings.

USE OF NATURAL STONE IN NEW ZEALAND

During the pre-European period, New Zealand native Maori used cobbles and stones to construct paths and property boundary walls. With the arrival of European settlers, local natural stone was used mainly for prestigious construction projects, with the local geology and extent of access to local natural stone supplies largely determining the number of URSM buildings and the type of stone used in construction in a given region. For example, in the Otago and Canterbury regions, early settlers made use of natural stones from the nearby fields and/or rivers to build prestigious private houses and farms [12, 13, 14 and 15].

Working as a stonemason was exhausting and a dirty profession, injuries were common, and employment numbers were low. Therefore, unreinforced stone masonry buildings soon became prohibitively expensive and after approximately 1910, building stones were used mainly for facings, basement retaining walls, pillars and façades instead of for the entire load bearing structure. With increasing urbanization, timber was favoured as a building material due to its availability and ease of construction. Based on the 1901 census, only 4% of residential dwellings were constructed using clay brick or natural stone, whereas 90% were constructed using timber [16]. Currently, natural stone from local quarries is typically used for paving, fireplaces and chimneys, property boundary walls and a variety of ornamental works [16].

INVENTORY COLLECTION PROCEDURE

In order to identify and document the full inventory of URSM buildings in New Zealand, information was collected and documented beginning from the records available within the Register of the New Zealand Historic Places Trust (NZHPT) [17]. Subsequently, visits were conducted to those districts with an expected high concentration of URSM buildings. The available literature [12, 13, 14 and 15] and observations from Google Street View technology that is featured in Google Maps were also used for preliminary data collection. 61% of the collected URSM buildings are currently registered with the NZHPT [17], see Figure 7. Difficulties encountered in identifying the non-registered URSM buildings suggests that it is likely that more buildings are scattered throughout the country which have not yet been identified in the present inventory. Nevertheless, the assembled URSM building inventory is considered to be appropriately accurate and reliable.

The inventory database of URSM buildings is subdivided into geographical regions and the information is clustered into three main data groups including: (i) general data; (ii) architectural configuration; and (iii) masonry information. Table 1 shows the parameters considered for each main data group. The statistical results and observations are discussed and presented in the subsequent sections.

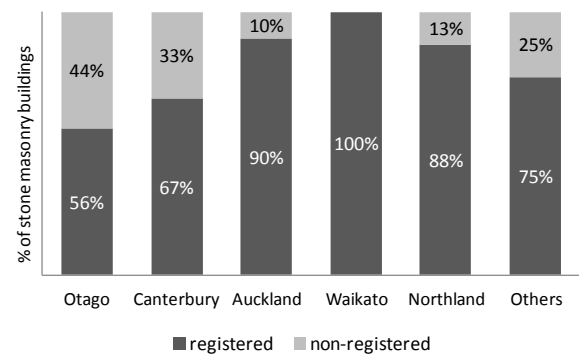


Figure 7: *Percentage of existing stone masonry buildings registered with the New Zealand Historic Places Trust (NZHPT), where “others” refers to regions with a low percentage of URSM.*

Table 1: Parameters considered in the inventory of stone masonry buildings in New Zealand

General Data	Name of building
	Location (district, city, suburb, street, #)
	Former and current use
	Construction date and date of last modification
	Construction professionals (architect, builder, mason)
	NZHPT registered number and web-link
Architectural Configuration	Phone contact, notes and other web-links
	Position (isolated or connected)
	Regular or irregular plan and elevation
	Floor area (approximate range of values)
Masonry Information	Number of storeys
	Stone type (igneous, sedimentary, metamorphic)
	Stone sub-type (basalt, limestone, schist, etc.)
	Extraction site of natural stones
	Surface texture (ashlar, rubble, coursed rubble, etc.)
Cross-section (constituent materials and no. of leaves)	
Ornamental works (material used around openings, corners, pillars, stringcourses, spires, etc.)	

BUILDING CHARACTERISTICS

Construction period and use

During data collection and documentation 688 URSM masonry buildings were identified, including 20 URSM buildings which were demolished following the 2010/2011 Canterbury earthquakes. Approximately 65% of the existing URSM stock was built between 1860 and 1890, see Figure 8. The use of natural stone was particularly common for the construction of public facilities such as churches, schools and universities, government properties (courthouses, chambers, courts, boundary markers, fortresses, lighthouses, prisons) and civic facilities (museums, libraries, stations, post offices, theatres, banks). Many of the earliest settlements were also constructed using natural stone, especially in the Otago countryside. Clusters of buildings and estates were built following a traditional code of practice and were used as rural houses, farms, manufacturing facilities and settlements.

Natural stone was also used for the construction of hotels, restaurants, warehouses and shops where townships were expanding. As shown in Figure 9a, approximately 62% of the existing URSM buildings were constructed for private use (settlements, residential and commercial use), whereas 38% of the buildings were constructed as public facilities.

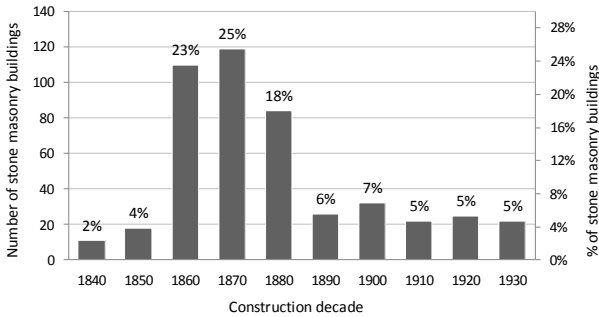


Figure 8: Construction decade of URSM buildings in New Zealand.

Based on observations from past earthquake damage, it was identified that alterations to a building’s original structure and configuration are likely to result in modification of the seismic performance of the building [18, 19]. New openings that altered the structural system of the façades, transformation of the internal spaces that involved removal of load-bearing walls, replacement of roof, floors or other part of the structure, and the addition of new storeys are some examples of typical alterations that have a potentially adverse effect on the seismic performance of a URSM building. Such alterations are likely to be related to a change in the original intended use of the building. Hence, both original and current building use were recorded in the database of URSM buildings (see Figure 9). Figure 9b shows that the number of URSM buildings which are still used as originally intended is high (52%), compared with 24% of URSM buildings that have had a changed use. The presence of ruins or vacant buildings was estimated to be approximately 11% (NZHPT, [17]).

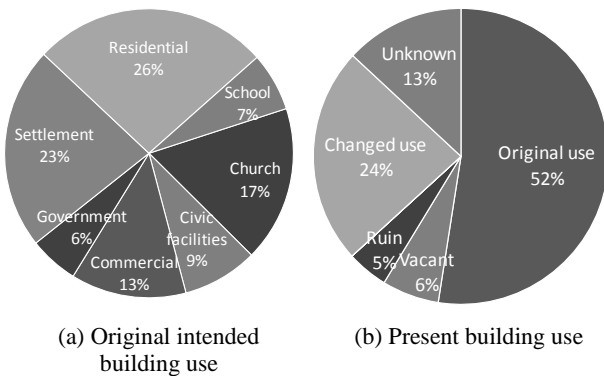


Figure 9: URSM building usage statistics.

Architectural configurations

Typically unreinforced stone and clay brick masonry buildings represent a box-type structural system composed of vertical (walls) and horizontal (floors and roof) structural elements. Gravity and seismic loads are transferred from the floors, acting as horizontal shear/flexural members, to the bearing walls, acting as vertical compression members that transfer loads to the foundations. Hence, the structural arrangement and the architectural shape are significant factors in the global seismic performance of the building [1].

Plan and elevation symmetry and regularity, approximate dimensions (foot-print area) and number of storeys were identified and documented for URSM buildings during the

data collection stage. A building was considered regular in plan when the foot-print area was comparable to a simple geometric shape. Buildings with a ‘T’, ‘L’, or ‘U’ shaped foot-print and/or buildings with multiple projections were considered as irregular in plan. A building was considered regular in elevation when the floor height was similar in all its parts without projections, and there was an absence of ornamental structures (such as pinnacles, spires, flying buttresses, dome lanterns, and other similar features). It was observed that the majority (approximately 54%) of existing unreinforced stone masonry buildings in New Zealand are regular in both plan and in elevation and typically consist of one or two storeys. Connections between load-bearing walls or between walls and floors or roof are commonly insufficient. Timber floors and roofs are typically present in URSM buildings. The foot-print area data was clustered into 6 value ranges, with a large number of the documented URSM buildings (40%) having an area ranging between 51 to 200 m², while 25% have a smaller floor area and typically consist of huts, barns, stables, sheds or other farm buildings. 16% of the URSM buildings consist of a foot-print area ranging between 201 to 500 m², typically consisting of public buildings constructed in the city centres. Figure 10 to Figure 12 shows graphical representation of the results.

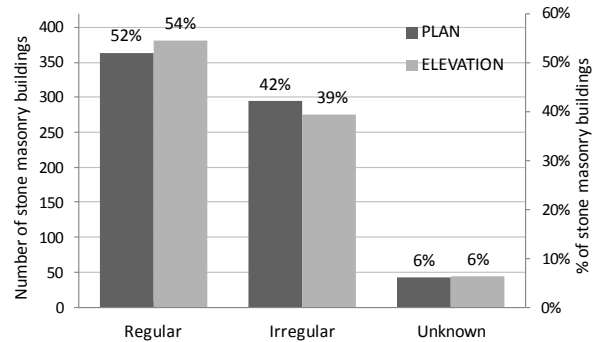


Figure 10: Presence of regular and irregular URSM building layout, both in plan (dark grey) and in elevation (light grey).

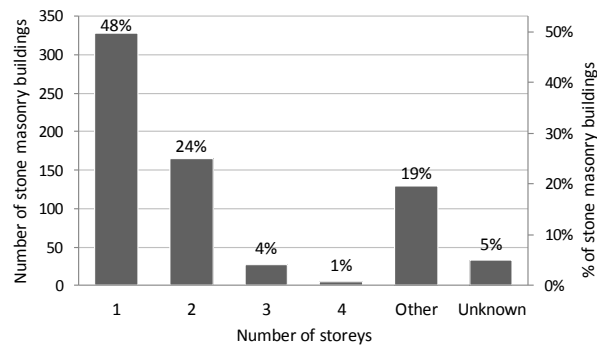


Figure 11: Number of storeys for existing URSM buildings. The category “other” reports all buildings with high open space and large gable walls, typically being churches and halls.

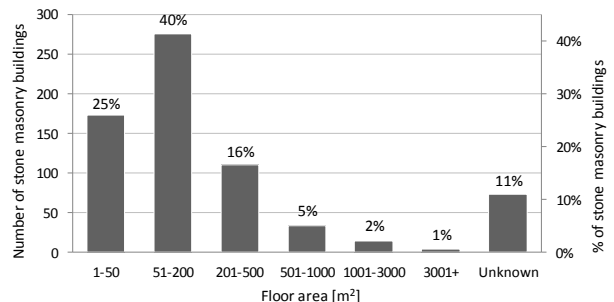


Figure 12: Approximate foot-print area in m² of existing URSM buildings.

An important factor that influences the global seismic performance of URSM buildings is the interaction with neighbouring buildings, also known as pounding effects [1]. It has been shown in previous earthquakes that isolated buildings belonging to the same age and type of construction frequently exhibit different failure mechanisms when compared to row buildings [18, 19]. In order to evaluate the possibility of pounding, a distinction between isolated and connected buildings was identified and documented in the inventory. Figure 13 shows that there are more isolated URSM buildings (64%) than connected buildings (28%), with the latter category including both row and clustered buildings. Small townships in the Otago countryside were typically built using URSM buildings and were arranged in a row or cluster with minimal use of timber construction.

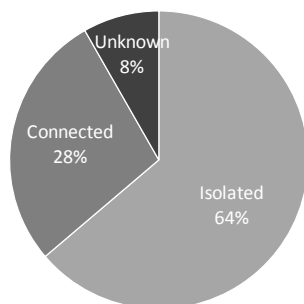


Figure 13: Presence of isolated and connected (including in a row and clustered) URSM buildings.

STONE TYPES AND GEOGRAPHICAL DISTRIBUTION

Constituent stone types

Natural stones are typically classified as either igneous, sedimentary or metamorphic depending on their origin and formation. Each group includes several sub-types that differ in attributes such as colour, extraction site, particle sizes, constituent minerals, presence of layers (bedding, foliation and cleavage) and discontinuities (or defects), density, hardness, strength, roughness, porosity and weight [20, 21]. Recognising the type of constituent stone(s) used in construction is one of the first steps during an assessment of a building, with the methods used in this assessment being discussed in [8, 9].

Igneous rocks are formed by cooling and solidifying of molten magma and are widely found throughout New Zealand. Igneous rock types were used as the primary construction material (28% of URSM buildings) mainly in Northland, Auckland, Waikato, Taranaki and Canterbury.

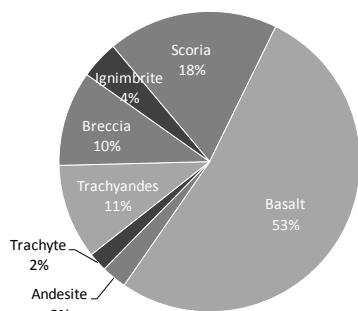


Figure 14: Usage of igneous rock sub-types as construction material in New Zealand.

Igneous sub-types used in construction (see Figure 14) were basalt and scoria (or tuff) extracted in Auckland, Bay of Islands, and Banks Peninsula (see Figure 15), trachyandesite from Leith Valley (see Figure 16), trachyte from Banks

Peninsula, New Plymouth andesite, Port Chalmers breccia (see Figure 17) and Waikato ignimbrite [13, 14]. The properties (colour, density, porosity, compressive strength, etc.) of each type of natural stone vary depending on the quarry where the stones were extracted and consequently result in varying rates of deterioration [20, 21].



Figure 15: Bluestone Store in Auckland, 1861, built using local basalt.



Figure 16: University of Otago in Dunedin. Built between 1878 and 1923 with Leith Valley trachyandesite and Oamaru limestone as ornamentation.



Figure 17: Carey's Bay Hotel in Port Chalmers, built in 1874 using local breccia.

Sedimentary rocks, such as sandstone (Charteris Bay and central Canterbury) and greywacke (Nelson and Southland), form from sediments (e.g. mud, sand and gravel) that accumulated and compacted in layers in the ocean, lakes and river valleys [13, 14]. A particular type of sedimentary rock is limestone (sourced from Oamaru, Pleasant Valley and Hawke's Bay) which typically forms via accumulation, compaction and cementation of deposits of marine shells (calcium carbonate). Limestone is softer and easier to cut in comparison to other stone types and therefore was widely used

in construction (22% of the URSM building inventory) and for building ornamentation, such as around openings, corners, pillars, stringcourses and spires (see Figure 16). Selective examples of URSM buildings constructed in north-east Otago using limestone are shown in Figure 18 to Figure 20.



Figure 18: *Criterion Hotel in Oamaru, 1877, constructed using local limestone.*



Figure 19: *Harbour Street in Oamaru. The buildings were constructed between 1875 and 1885 using Oamaru limestone.*



Figure 20: *Totara Estate, near Oamaru, built by the owner with local limestone (1867-1881).*

Metamorphic rocks, such as schist, arise from the transformation of existing rock types (igneous or sedimentary) that have been subjected to heat and pressure, causing profound physical and/or chemical change [13, 14]. A wide variety of schist was used in the construction of URSM buildings in central Otago (36% of the URSM stock); see Figure 21 to Figure 23 for typical examples.



Figure 21: *Arrow Kilwinning Lodge, 1888 Arrowtown, built using local schist.*

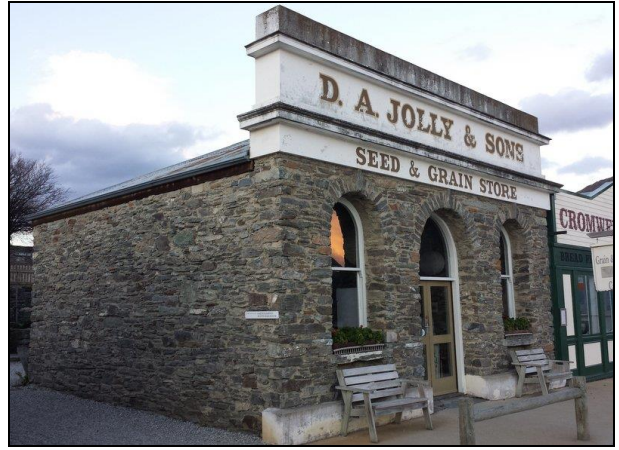


Figure 22: *Seed & Grain Store, Old Cromwell, built using local schist.*



Figure 23: *Mitchell's Cottage - outbuilding, Fruitlands, built in 1904 by the owner using local schist.*

Geographical distribution

The majority (92%) of the identified URSM buildings are concentrated in the South Island, with 65% of the buildings being located in Otago and 25% of the buildings being located in the Canterbury region (data from prior to the 2010/11 Canterbury earthquakes, where 20 stone masonry buildings were demolished due to the heavy damage suffered), see Figure 24. Mapping of the recorded data showed that the use of construction stone types was directly related to the local geology (see Figure 25).

The geographical distribution of URSM buildings was compared with the seismic hazard map of the country [11], and as shown in Figure 25b it can be observed that a large number (approximately 35%) of unreinforced stone masonry buildings are located in the highest earthquake hazard zones of the country, i.e. Z hazard factor between 0.3 to 0.6 [11].

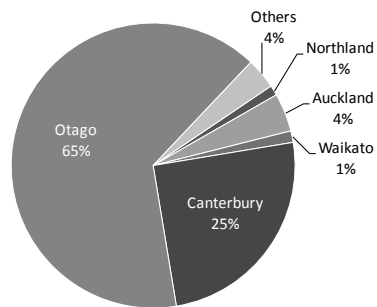
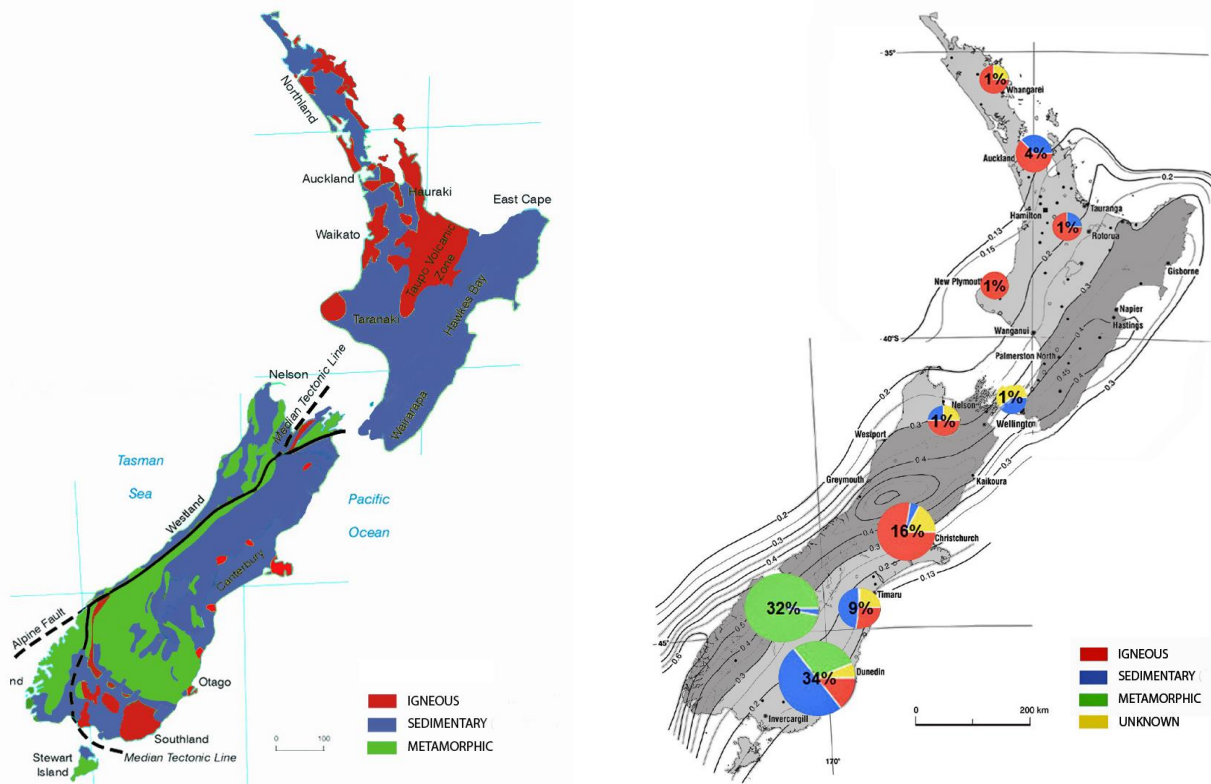


Figure 24: *Estimated provincial populations of stone masonry buildings in New Zealand.*



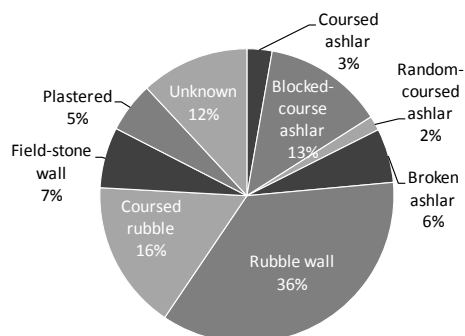
(a) Distribution of igneous, sedimentary and metamorphic rocks

(b) URSM building distribution correlated with seismicity (dark grey area represents the highest seismic hazard zone)

Figure 25: Geographical distribution of URSM buildings in New Zealand.

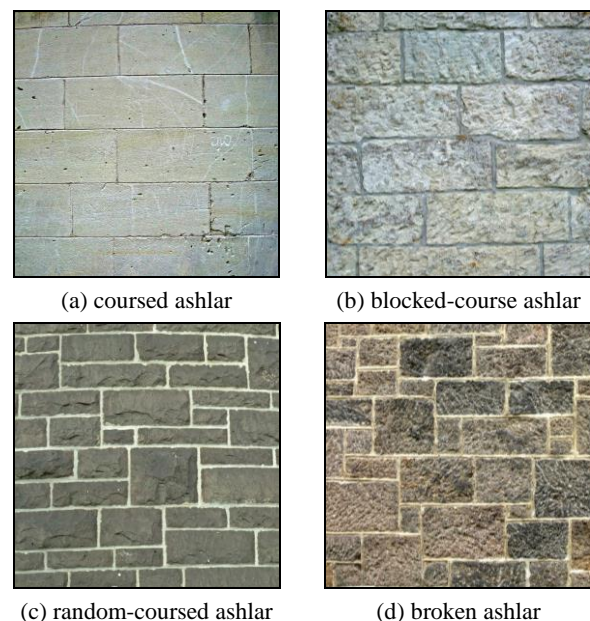
SURFACE TEXTURE AND WALL CROSS-SECTION

One significant defect for multi-leaf stone masonry walls is the absence of link elements oriented in the wall's transverse direction, such as when a wall is constructed of small pebbles, contains a rubble infill, or when two well-ordered external leaves are not interconnected [1, 8]. Observations from previous earthquake damage investigations indicate that a regular surface texture on the wall face does not necessarily correspond with a regular cross-sectional morphology [4, 5, 18 and 19]. Therefore, an analysis of the mechanical behaviour of existing multi-leaf masonry walls must incorporate a detailed investigation of the wall's cross-section arrangement [8, 9].

**Figure 26: Prevalent stonework used on the texture surface of the URSM buildings in New Zealand.**

The texture classification method presented by Lowndes [22] was used in this study to identify the recurring stone masonry typologies in New Zealand (see Figure 26). Ashlar and rubble stonework are the two main surface texture categories. Ashlar texture refers to natural stones that are cut on four sides with the adjoining sides oriented at right angles to each other, having straight and horizontal mortar bed joints, and with the

vertical joints kept plumb [22]. Several ashlar stonework examples were identified in New Zealand, including coursed ashlar (3%, Figure 27a), blocked-course ashlar (13%, Figure 27b), random-coursed ashlar (2%, Figure 27c) and broken ashlar (6%, Figure 27d). As shown in Figure 26, rubble stonework was used in construction more frequently than was ashlar stonework.

**Figure 27: Examples of ashlar stonework in New Zealand: limestone wall in (a) Oamaru and (b) Clark's Mill, Maheno; (c) basalt wall of the Dunedin Railway Station; (d) scoria wall of the Arts Centre, Christchurch.**

The rubble type of surface texture refers to natural stones in which the adjoining sides are not required to be oriented at right angles. Such stonework is generally laid with mortar joints dressed with strong cement based pointing mortar. It was identified that structural mortar is likely to be weak or locally absent. Natural rubble stones are set irregularly in the wall and the interstices are filled with spalls and mortar [22]. Typical rubble stonework that was identified included rubble walls (36%, Figure 28 a-b), field-stone walls (7%, Figure 28c) and coursed rubble (16%, Figure 28d). In central Otago, schist is a particular case of texture surface where the typical foliation makes it difficult to cut ashlar stone. Schist was commonly used as rubble stonework but a refined ashlar stonework finish with regular mortar joints was sometimes superficially simulated (see Figure 29). Several examples of a simulated ashlar surface texture were identified in the Fruitlands area (central Otago), Alexandra and Clyde.

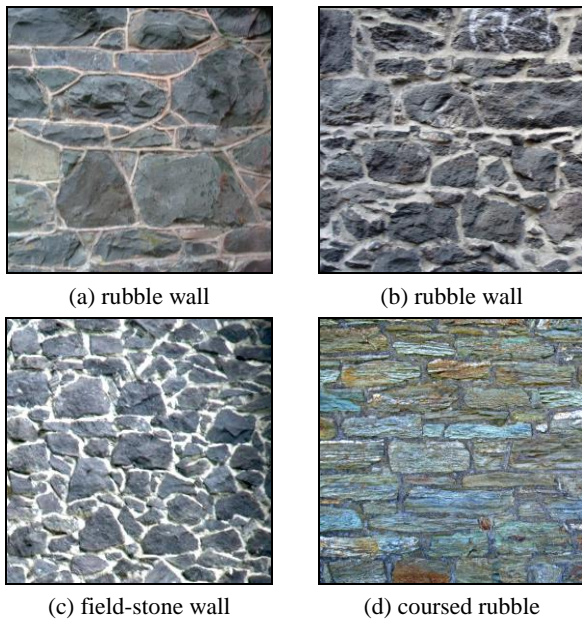


Figure 28: *Examples of rubble stonework in New Zealand: basalt wall in (a) the church of the Holy Innocents, Mt. Peel; (b) the Bluestone Store, Auckland; (c) Kinder House, Parnell; and (d) schist wall, St. James church in Roxburgh.*

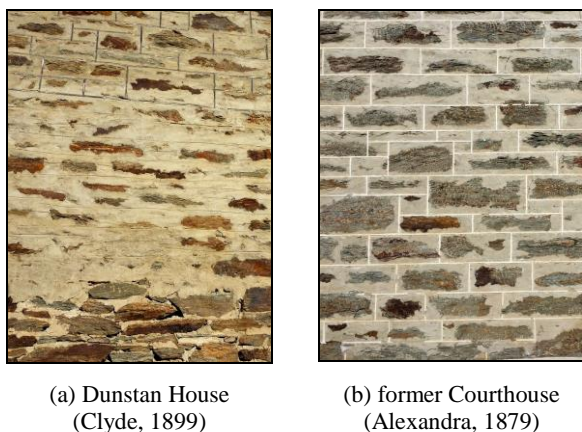


Figure 29: *Representative examples of rubble wall built using local schist and simulating a broken ashlar surface texture.*

A visual inspection of the building is usually insufficient to identify the cross-section morphology of the wall, such as the number of leaves, individual leaf thickness and constituent materials. Sonic and radar tests, core drilling and boroscopy are useful methods that could be adopted for onsite investigations of the masonry cross-section morphology [8, 9].

It is noted that during the inventory documentation phase no non-destructive tests (NDT), minor destructive tests (MDT) or destructive tests (DT) were undertaken on any of the documented URSM buildings.

A combined arrangement of natural stone facing and clay brick backing (see Figure 30 d-e) was observed to be a common construction technique used in city centres and it is highly likely that a similar technique was used for the construction of iconic URSM buildings in several centres including Christchurch, Dunedin and Auckland. Combining two constituent construction methods resulted in simplified and accelerated construction, thereby reducing the construction cost of large and complex buildings when compared to the use of stone masonry construction only. Some examples of combined construction are the Arts Centre in Christchurch and the University of Otago in Dunedin, where the grandeur was obtained by constructing the building façade using natural stone but the less visible walls were constructed using only clay brick masonry (Figure 31). Another example of mixed construction is the Cathedral of the Blessed Sacrament in Christchurch where the walls were built using two leaves of ashlar Oamaru limestone and a cast in-situ no-fines concrete core (Figure 30f).

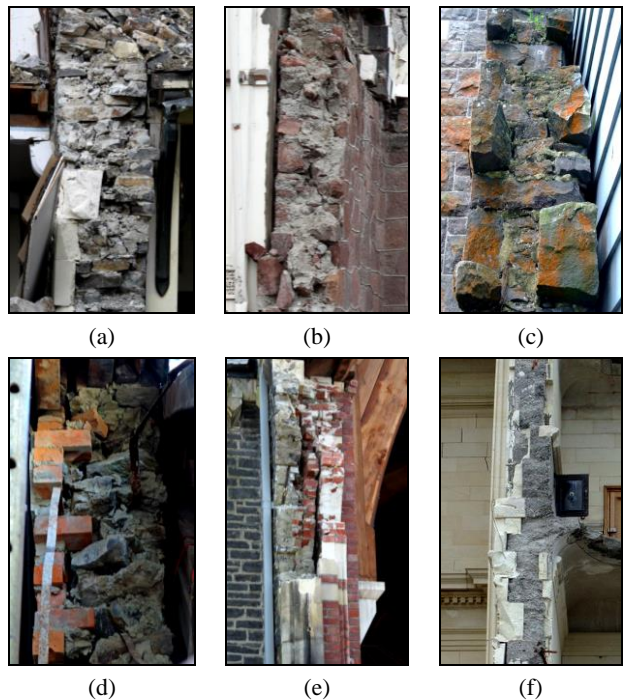


Figure 30: *Typical unreinforced stone masonry cross-section in New Zealand. 3 leaves with rubble fill in (a) the Trinity Church and (b) the Provincial Chambers towers, Christchurch; (c) 3 leaves with headers in St Paul's Church, Auckland; stone front façade with clay brick back leaf in (d) Bellamy's and (e) St Luke's Church, Christchurch; (f) stone facing with cast in-situ no-fines concrete core in the Cathedral of the Blessed Sacrament, Christchurch.*

The use of natural stone for construction of the full cross-section of masonry walls was common in construction of settlements and estates spread throughout the Otago countryside, with a few examples present also in Christchurch and Auckland (Figure 30 a-c). Recurring cross-section arrangements include single-leaf and multi-leaf stone masonry walls with two external load-bearing leaves and a rubble infill. The absence of bond between the leaves (headers or ties) and the high percentage of voids are primary contributing causes of earthquake vulnerability, for both in-plane and out-of-plane loading directions [8, 9].



(a) The Arts Centre in Christchurch

(b) The University of Otago in Dunedin

Figure 31: Buildings constructed using a combination of stone and clay brick masonry.

CONCLUSIONS

The 2010/11 Canterbury earthquakes have once again highlighted the typically inadequate seismic performance of URSM buildings [4, 5], with approximately 20% of the affected URSM buildings demolished due to the heavy damage suffered. Due to the high seismic hazard across New Zealand [2, 11], it follows that assessment and mitigation of the risk associated with unreinforced stone masonry buildings is needed in order to guarantee personal safety and to protect this component of the country's built heritage. In response to a perceived lack of knowledge about the traditional construction techniques used in New Zealand's URSM buildings and suitable methods for analysis and appropriate interventions for improving the seismic response of this building type, a detailed inventory of unreinforced stone masonry buildings throughout New Zealand was completed, with a total of approximately 688 URSM buildings being identified, including 20 buildings that were demolished after the recent Canterbury earthquake sequence. It is likely that more URSM buildings (such as huts, sheds, stables) are scattered throughout isolated parts of the country. The accuracy of the collected data was improved by circulating the URSM building inventory to the NZHPT District Offices and obtaining feedback. Data processing led to the following observations on the URSM built heritage in existence in New Zealand:

- A large number of URSM buildings are concentrated in high seismic hazard zones (i.e. Z hazard factor between 0.3 to 0.6) and the stone type used in construction is usually related to the geology of the region.
- URSM buildings were constructed chiefly between 1860 and 1890 and now approximately 66% of the entire inventory is registered with the NZHPT.
- A representative type of URSM building is isolated and regular in shape (plan and elevation) with a maximum of two storeys and a foot-print area less than 200 m². Connections between load-bearing walls or between walls and floors or roof are commonly insufficient. Timber floors and roofs are typically present in URSM buildings.
- Rubble stonework built using local schist or basalt and ashlar stonework of limestone were mainly used in the construction of URSM buildings. Several cases appear to be well constructed using regularly arranged stones and strong mortar, but in contrast an in-depth assessment shows the widespread use of irregular rubble core and surface pointing of mortar joints. Structural mortar is likely to be weak or locally absent.

- Multi-leaf masonry walls are common in New Zealand URSM buildings but the wall cross-section is often composed using different materials. It was identified that several public URSM buildings in the city centres were built using stone facing with a clay brick back leaf or a cast in-situ no-fines concrete core. Full cross-sections constructed of natural stone were mainly used in rural buildings. Both forms of construction usually lack connection between leaves that results in increased earthquake vulnerability.

Due to the aforementioned problems, which involve the constituent materials of each leaf in the wall cross-section and the local absence of structural mortar, a thorough investigation is recommended for a proper seismic assessment of the building and associated design of suitable seismic strengthening [8, 9]. Further development of the project presented here will include characterization of constituent materials (stone and mortar) used in URSM construction based upon laboratory testing of samples extracted on-site. Knowledge of the original materials will support the identification and validation of suitable retrofit interventions and will be helpful for the selection of compatible materials. The inventory presented here will support the identification of priority buildings and provide basic information including address, owner contact details, and current state of the building. The overarching goal of the project is to support the conservation and protection of the URSM built heritage of New Zealand and the safety of the people working in and around these buildings.

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ANNEX 1 – UNREINFORCED STONE MASONRY BUILDINGS IN NORTHLAND

Name	Address	NZHPT
Northland - GLENBERVIE		
Douglas Stone Barn (Former Stable/Barn)	264 Ngunguru Rd Ngunguru Rd	R.# 3925 R.# 3931
Northland - GLENBERVIE		
Edmonds Ruins Stone Store	Edmonds Rd 248 Kerikeri Rd	R.# 406 R.# 5
Northland - GLENBERVIE		
Ruins William Williams House Ruins Williams Memorial Church of St Paul (Anglican)	Williams Rd Marsden Rd 36 Marsden Rd	R.# 3938 R.# 403 R.# 3824
Northland - GLENBERVIE		
Old Stone Butter Factory	8 Butter Factory Ln	

ANNEX 2 – UNREINFORCED STONE MASONRY BUILDINGS IN AUCKLAND

Name	Address	NZHPT
Auckland - AUCKLAND		
Airedale Street Cottages Auckland Savings Bank Auckland Town Hall Bluestone Store Chief Post Office Coldicutt House District Court House House (Former Deanery) Hulme Court Kinder House Melanesian Mission Building Mt Eden Prison (Old) Old Arts Building Parnell Branch Library St Andrew's Church (Presbyterian) St Matthew's in the City Church (Anglican) St Paul's Church (Anglican) Stonemason's House War Memorial Museum Whitby Lodge	30-32 Airedale St 256-260 Queen St 301-303 Queen St 9-11 Durham Ln 12 Queen St 753 Mt Eden Rd 40A Kitchener St 4 Takutai St 17 St Stephens Av 350 Parnell Rd 2 Ayr St 40-44 Tamaki Dr 1 Lauder Rd 22 Princes St 390 Parnell Rd 2 Symonds St 132-134 Hobson St 28 Symonds St 2A/27 Falcon St 28 Domain Dr 330 Parnell Rd	R.# 7089 R.# 4473 R.# 549 R.# 2647 R.# 101 R.# 2606 R.# 4909 R.# 2638 R.# 108 R.# 19 R.# 110 R.# 111 R.# 88 R.# 25 R.# 547 R.# 20 R.# 99 R.# 650 R.# 94 R.# 2640
Auckland - DEVONPORT		
North Head Barrack	Hauraki Gulf Marine Park	R.# 7005
Auckland - EAST TAMAKI		
St John's Church (Anglican)	328 East Tamaki Rd	
Auckland - KAWAU ISLAND		
Pumphouse Ruins Smelting House Ruins	Miners Point Smelting Bay	R.# 9 R.# 10
Auckland - MANGERE BRIDGE		
St James' Church (Anglican)	39 Church Rd	R.# 689
Auckland - PANMURE		
Mt Wellington Stone Cottage	King St-Queen St	R.# 518
Auckland - PAPA KURA		
Selwyn Chapel (Anglican) Christ Church	103 Great South Rd 40 Coles Crescent	R.# 693
Auckland - REMUNERA		
St Luke's Church (Presbyterian)	132 Remuera Rd	R.# 647

**ANNEX 3 – UNREINFORCED STONE MASONRY
BUILDINGS IN WAIKATO**

Name	Address	NZHPT
Waikato - HAMILTON		
Kaiapoi House (Former)	17 Hood St	R.# 2702
Waikato - LICHFIELD		
Bakehouse	Kinloch Rd	R.# 4237
Stone Store (Former)	Pepperill Rd	R.# 2689
Waikato - PIARERE		
Stone Kitchen (Former)	Horahora Rd	R.# 4229
Waikato - PUTARURU		
House	83 Tirau St	R.# 4274
House	85 Tirau St	R.# 4275
House	87 Tirau St	R.# 4276
Waikato - TAUPO		
Magazine (Former)	23 Story Place	R.# 942
Waikato - WHITIANGA		
Stone Store	Robinsons Rd	R.# 4684

**ANNEX 4 – UNREINFORCED STONE MASONRY
BUILDINGS IN BAY OF PLENTY**

Name	Address	NZHPT
Bay of Plenty – TAURANGA, MT MAUNGANUI		
St Peter's Church (Anglican)	15 Victoria Rd	

**ANNEX 5 – UNREINFORCED STONE MASONRY
BUILDINGS IN HAWKE'S BAY**

Name	Address	NZHPT
Hawke's Bay - RUAHINE FOREST PARK		
Shutes Hut	Ruahine Forest Park	

**ANNEX 6 – UNREINFORCED STONE MASONRY
BUILDINGS IN TARANAKI**

Name	Address	NZHPT
Taranaki - NEW PLYMOUTH		
New Plymouth Prison	1 Downe St	R.# 903
Richmond Cottage	2 Ariki St	R.# 7088
St Mary's Church (Anglican)	37 Vivian St	R.# 148
Te Henui Vicarage	290 Courtenay St	R.# 892

**ANNEX 7 – UNREINFORCED STONE MASONRY
BUILDINGS IN WELLINGTON**

Name	Address	NZHPT
Wellington - PORIRUA		
Kaiwharawhara Magazine	Ngaio Gorge	R.# 7215
Wellington - WELLINGTON		
Paremata Barracks Ruins	Pascoe Av	R.# 1329
Parliament House	Parliament Grounds	R.# 223

**ANNEX 8 – UNREINFORCED STONE MASONRY
BUILDINGS IN TASMAN**

Name	Address	NZHPT
Tasman - MOTUEKA		
Catholic Church (Former)	31 High St	R.# 1671
Tasman - TAKAKA		
Sacred Heart Church	94 Commercial St	

**ANNEX 9 – UNREINFORCED STONE MASONRY
BUILDINGS IN NELSON**

Name	Address	NZHPT
Nelson - NELSON		
Christ Church Cathedral (Anglican)	Selwyn Place	
Nelson - STOKE		
Isel House	16 Hilliard St	R.# 1592
St Barnabas' Church (Anglican)	523 Main Rd	R.# 3025

**ANNEX 10 – UNREINFORCED STONE MASONRY
BUILDINGS IN MARLBOROUGH**

Name	Address	NZHPT
Marlborough – BLENHEIM		
Court House	58 Alfred St	R.# 1509
War Memorial & Clock Tower	Seymour Square	R.# 243
Marlborough – HAVELOCK		
St Peter's Church (Anglican)	Lawrence St	
Marlborough – WHARANUI		
St Oswalds' Church (Christian)	SH1	

**ANNEX 11 – UNREINFORCED STONE MASONRY
BUILDINGS IN WEST COAST**

Name	Address	NZHPT
West Coast - BIRCHFIELD		
Griffiths Foundry Furnace (Former)	459 SH67	R.# 5022
West Coast - WESTPORT		
Westport Railway Workshop (Former)	Adderley St	R.# 3047

**ANNEX 12 – UNREINFORCED STONE MASONRY
BUILDINGS IN CANTERBURY**

Name	Address	NZHPT
Canterbury - ASHBURTON		
Mudbrick Cottage	Longbeach Rd	R.# 7517
Canterbury - ASHWICK		
Ashwick Station Stable Ruins	Stoneleigh Rd	R.# 185

Name	Address	NZHPT
Canterbury - CAVE		
All Saints' Church (Anglican)	30 Elisabeth St	
Limestone House (Former)	Cannington Rd	R.# 1960
St David's Pioneer Memorial Church	Burnetts Rd	R.# 312
St Monica Church (Catholic)	Anne St	
Canterbury - CHRISTCHURCH		
Akaroa War Memorial	Rue Lavaude	
All Saints' Church (Anglican)	48 Wakefield Av	
Arts Centre, Boy's High	2 Worcester St	R.# 7301
Arts Centre, Boy's High Gymnasium	2 Worcester St	R.# 7301
Arts Centre, Engineering Extentions	2 Worcester St	R.# 7301
Arts Centre, Electrical Engineering	2 Worcester St	R.# 7301
Arts Centre, Hydraulics	2 Worcester St	R.# 7301
Arts Centre, Mechanical Engineering	2 Worcester St	R.# 7301
Arts Centre, Clock Tower and East Wing	2 Worcester St	R.# 7301
Arts Centre, College Hall	2 Worcester St	R.# 7301
Arts Centre, Classics	2 Worcester St	R.# 7301
Arts Centre, West Lecture	2 Worcester St	R.# 7301
Arts Centre, Girl's High	2 Worcester St	R.# 7301
Arts Centre, Chemistry	2 Worcester St	R.# 7301
Arts Centre, Biology & Physics	2 Worcester St	R.# 7301
Arts Centre, Common Room	2 Worcester St	R.# 7301
Arts Centre, Library	2 Worcester St	R.# 7301
Arts Centre, Registry Building	301 Montreal St	R.# 7373
Canterbury Museum - 1st Building	15 Rollerston Av	R.# 290
Canterbury Museum - 2nd Building	15 Rollerston Av	R.# 290
Canterbury Provincial Government Buildings	280 Durham St North	R.# 45
Canterbury Provincial Government Buildings	83 Armagh St	R.# 45
Canterbury Provincial Government Buildings	280 Durham St North	R.# 45
Canterbury Provincial Government Buildings	280 Durham St North	R.# 45
Canterbury Provincial Government Buildings	85 Armagh St	R.# 45
Cashfields Building	154-158 Cashel St	Demolished
Cashmere Hills Church (Presbyterian)	2 MacMillan Av	R.# 1842
Cathedral Church of Christ (Anglican)	100 Cathedral Square	R.# 46
Cathedral of the Blessed Sacrament (Catholic)	136 Barbadoes St	R.# 47
Christ's College - 1923 Wing	33 Rollerston Av	
Christ's College - Big School	33 Rollerston Av	R.# 48
Christ's College - Chapel	33 Rollerston Av	R.# 3277
Christ's College - Hare Memorial Library	33 Rollerston Av	R.# 3278
Christ's College - Jacobs House	33 Rollerston Av	R.# 3279
Christ's College - Memorial Dining Room	33 Rollerston Av	R.# 3276
Christ's College - School House	33 Rollerston Av	R.# 3280
Cottage	13 Spencer St	R.# 4914
Cracroft House Servants Quarters (Former)	30 Shalamar Dr	R.# 3104
Cranmer Court	350 Montreal St	Demolished
Curator's House	5 Rolleston Av	R.# 1863
Danmark Dwelling	10 Desmond St	Demolished

Name	Address	NZHPT
Edmond's Clock Tower	295 Madras St	Demolished
Greystones	104 Glandovey Rd	R.# 3802
Halswell Quarry Station - Workmen Quarters	182 Kennedys Bush Rd	
Halswell Quarry Stone House	181 Kennedys Bush Rd	R.# 7223
House	1 Eversleigh St	Demolished
House	63 Aldwins Rd	R.# 579
Lansdowne Stables	Old Tai Tapu Rd	R.# 1789
Magistrates Court	85 Armagh St	R.# 5308
Malbas - Commercial Building	136 Manchester St	
Malthouse (Former)	71 Colombo St	R.# 1902
Mckenzie Willis Building	181 High St	R.# 1909
Methodist Church	309 Durham St North	Demolished
New Brighton Clock Tower	Marine Esplanade	
Peterborough Centre	25 Peterborough St	R.# 1914
Pink Pussy Cat Building	206 Tuam St	R.# 3127
Pyne Gould Guinness Building	Manchester St	Demolished
Rockvilla Dwelling	24 Mariner St	
Scarborough Clock Tower	The Esplanade	
Sign of the Kiwi	1700 Summit Rd	R.# 1930
Sign of the Packhorse Hut	Mt Herbert tracks	
Sign of the Takaha	200 Hackthorne Rd	R.# 275
St Barnabas Church (Anglican)	8 Tui St	R.# 3681
St Brendan's Church (Catholic)	65 Kirk Rd	
St Faith's Church (Anglican)	46 Hawke St	
St James' Church (Anglican)	69 Riccarton Rd	
St John of God Chapel	12 Nash Rd	R.# 4393
St John The Baptist Church	234 Hereford St	Demolished
St John The Evangelist Church	10 St Johns St	
St John The Evangelist Church (Catholic)	SH75	R.# 5293
St Luke's in the City Church (Anglican)	248 Manchester St	Demolished
St Mark's Church (Anglican)	101 Opawa Rd	
St Martin's Church	60 Lincoln Rd	
St Mary's Church (Anglican)	24 Church Ln	Demolished
St Mary's Convent Chapel	866 Colombo St	R.# 7239
St Michael & All Angels Hall	249 Durham St	R.# 1927
St Ninians' Church (Presbyterian)	9 Puriri St	
St Peter's Church	24 Main South Rd	R.# 1792
St Stephen's Church (Anglican)	64 Park St	
Stone Cottage	232 Opawa Rd	Demolished
Stone Cottage	471 Ferry Rd	R.# 1915
Strange & Co. Building	219-225 High St	Demolished
Sydenham Post Office (Former)	340 Colombo St	Demolished
Synagogue	Gloucester St	
The Most Holy Trinity Church	122 Avonside Dr	Demolished
Trinity Congregational Church (Former)	124 Worcester St	R.# 306
Twentymen & Cousins Store	93 Cashel St	Demolished
Victoria Clock Tower	95 Victoria St	R.# 3670
Wahi Ruru	50 Heberden Av	R.# 3125
Westleian Congregational Church	343 Colombo St	Demolished
Canterbury - CULVERDEN		
Glens of Tekoa Station - Original Homestead	1607 Tekoa Rd	R.# 268
Canterbury - DUNTRON		
St Martin's Church (Anglican)	3487 Kurow - Duntroon Rd	R.# 2429

Name	Address	NZHPT
Canterbury - ESK VALLEY		
St Mary's Church (Anglican)	Ryan's Rd	R.# 319
Canterbury - FAIRLIE		
Clayton Homestead	Lochaber Rd	R.# 310
Eversley Homestead	SH8	R.# 1958
Sutherland's Hut	Clayton Settlement Rd	
Stone Shed	Three Springs Rd	R.# 1969
Stony Creek Hut	Black Forest Station	R.# 7181
Canterbury - FENDALTON		
St John's Church (Methodist)	49 Bryndwr	
Canterbury - GERALDINE		
Church of the Holy Innocents	Rangitata Gorge Rd	R.# 1976
Co-operative Cheese Factory	53 Pleasant Valley Rd	R.# 1980
Geraldine Historical Society Museum	5 Cox St	R.# 2020
St Andrew's Church (Presbyterian)	10 Cox St	
St Andrew's Vicarage	10 Cox St	
St Thomas' Church (Anglican)	6 Church St	
Canterbury - GOVERNORS BAY		
Ohinetahi	Main Rd	R.# 3349
St Cuthbert's Church (Anglican)	Governors Bay Rd	R.# 281
Canterbury - HAKATARAMEA		
Paterson's Cottage	SH82	R.# 2428
Canterbury - HAKATERE		
Hakaterere Station - Stone Cottage	2387 Ashburton George Rd	R.# 9496
Canterbury - HORORATA		
St John's Church (Anglican)	224 Hororata Rd	
Canterbury - HURUNUI		
Hurunui Hotel	1224 Karaka Rd	R.# 1778
Canterbury - KAITUNA VALLEY		
St Kentigern Church (Anglican)	396 Kaituna Valley Rd	
Canterbury - KAKAHU		
Kakahu Lime Kiln	Halls Rd	R.# 315
Walker And Mcdougall Lime Kiln Complex - Kiln	Meredith Rd	R.# 7613
Walker And Mcdougall Lime Kiln Complex - Stables	Meredith Rd	R.# 7613
Canterbury - KUROW		
Hakataramea Station Woolshed	Hakataramea Valley Rd	R.# 318
St Alban's Chapel	83 Provincial Highway	R.# 2435
St Alban's Stables	83 Provincial Highway	R.# 5442
St Alban's Vicarage	83 Provincial Highway	R.# 2435
Stone 'Cook Shop'	842 Moorland Settlement Rd	
Stone Homestead	842 Moorland Settlement Rd	R.# 7428
Stone Store	37-39 Bledisloe St	R.# 4897
Canterbury - LAKE TEKAPO		
Church of the Good Shepherd Macauley Hut	Pioneer Dr Macauley River track	R.# 311
Canterbury - LEITHFIELD		
Harleston	801 Ashworths Rd	R.# 3744

Name	Address	NZHPT
Canterbury - LYTTTELTON		
Holy Trinity Church (Anglican)	17 Winchester St	Demolished
Old Vicarage	26 Ripon St	
St John's Church (Presbyterian)	44 Winchester St	Demolished
St Joseph's Church (Catholic)	18 Winchester St	Demolished
Stone Cottage	100 Cressy Terrace	
Timeball Station	2 Reserve Terrace	Demolished
Canterbury - MONAVALLE		
Limestone House (John's)	SH8	R.# 1961
Monavale School	Monavale Rd	R.# 1963
Canterbury - MOUNT PEEL		
Bottom Mount Peel Hut	Mount Peel	
Mount Peel Boundary Hut	Rangitata Gorge Rd	R.# 7182
Canterbury - OKAINS BAY		
St John The Evangelist Church (Anglican)	1131 Okains Bay Rd	R.# 1715
Canterbury - OMARAMA		
Benmore Station Complex - Men's Quarters	1567 SH83	R.# 7805
Benmore Station Complex - Wool Store	1567 SH83	R.# 7805
Omarama Station - Stone Hut	Omarama-Lindis Pass Rd	
Canterbury - OTEKAIEKE		
Danseys Cottage	Special Shool Rd	R.# 2419
Robert Campbell Estate Cottage	Special Shool Rd	R.# 4887
Robert Campbell House	Special Shool Rd	R.# 4378
Robert Campbell House Stables	Special Shool Rd	R.# 4377
Canterbury - OTIPUA		
St Mark Church (Anglican)	High St	
Canterbury - PLEASANT POINT		
Opihi Hotel (Former)	492 Opihi Rd	R.# 3144
St Alban's Church	10 Manse Rd	
Canterbury - RIPAPA ISLAND		
Fort Jervois	Ripapa Island	R.# 5306
Canterbury - RUAPUNA		
All Saints' Church (Anglican)	396 Shepherds Bush Rd	
Canterbury - TAI TAPU		
St Paul's Church (Anglican)	850 Old Tai Tapu Rd	R.# 4395
Tai Tapu Public Library	845 Old Tai Tapu Rd	R.# 4394
Canterbury - TEMUKA		
Commercial Building	89 King St	R.# 2027
St Joseph's Church (Catholic)	26-28 Wilkin St	R.# 2033
St Peter's Church (Anglican)	192 King St	
Canterbury - TIMARU		
Bank Street Church (Methodist)	38/40 Bank St	R.# 3155
Bluestone House	40 Maltby Av	R.# 7116
Claremont Homestead	Mt Horrible Rd	R.# 7379
Gladstone Board of Works Building	95 Stafford St	R.# 327
Gleniti Library	Gleniti Rd	R.# 2060
Headmaster's House (Former)	34 Arthur St	R.# 2076
Landing Service Building (Former)	2 George St	R.# 326
St Mary's Church (Anglican)	24 Church St	R.# 328
Canterbury - TOTARA VALLEY		
St Paul's Church (Presbyterian)	586 Cleland Rd	R.# 1995

Name	Address	NZHPT
Glencelg Stables	Totara Valley Rd	R.# 316
Canterbury - WAI AU		
All Saints' Church (Anglican)	35 Parnassus St	R.# 3690
Canterbury - WAIMATE		
Bluestone House	13 Timaru Rd	R.# 2040
Knox Church	58 Shearman St	

ANNEX 13 – UNREINFORCED STONE MASONRY BUILDINGS IN OTAGO

Name	Address	NZHPT
Otago - ALEXANDRA		
Alexandra Courthouse (Former)	8 Centennial Av	R.# 2081
Como Villa	266 Earnsleugh Rd	
Criterion Club Hotel	13 Tarbert St	
Dentist's Surgery	56 Tarbert St	
Foxwells Cottage	203 Conroys Rd	
Foxwells Cottage - Ruin	203 Conroys Rd	
Fraser's Shop	55 Tarbert St	
Magazine	0 Thomson Way	
Old Bnz Building	12 Tarbert St	
Simmond's Boarding House (Former)	18 Limerick St	R.# 2080
St Aidans Church (Anglican)	42 Shannon St	
St Enochs Church	12 Centennial Av	
Stables	Thomson Way	
Otago - ALMA		
Cumbria (Homestead)	250 Oamaru-Alma Rd	R.# 4888
Cumbria (Stables)	250 Oamaru-Alma Rd	R.# 4896
Cumbria (Wooden Cottage)	250 Oamaru-Alma Rd	R.# 4899
Otago - ARROWTOWN		
Ah Lums Store	4 Buckingham St	R.# 4366
Ah Wak's Lavatory	4 Buckingham St	R.# 2084
Ale House Restaurant	Buckingham St & Ramshaw St	
Arrow Kilwinning Lodge	9 Wiltshire St	R.# 2110
Arrowtown General Store	20 Buckingham St	R.# 4370
Building	SH6 - Lake Hayes	
Building	SH6 - Lake Hayes	
Building	SH6 - Lake Hayes	
Building	SH6 - Lake Hayes	
Building	SH6 - Lake Hayes	
Building	SH6 - Lake Hayes	
Building 14 Wiltshire St	14 Wiltshire St	
Building 17 Bedford St	17 Bedford St	
Building 18 Wiltshire St	18 Wiltshire St	
Building 25 Buckingham St	25 Buckingham St	
Building 5 Buckingham St	5 Buckingham St	
Building Corner Hertford St	Wiltshire St	
Building Ramshaw Lane	Ramshaw Lane	
Building Ramshaw Lane	Ramshaw Lane	
Cherry Tree Cottage #1	34 Wiltshire St	
Cherry Tree Cottage #2	34 Wiltshire St	
Cherry Tree Cottage #3	34 Wiltshire St	
Cherry Tree Cottage #4	34 Wiltshire St	
Cherry Tree Cottage #5	34 Wiltshire St	
Chinese Hut #1	4 Buckingham St	
Chinese Hut #2	4 Buckingham St	
Chinese Hut #3	4 Buckingham St	
Chinese Hut #4	4 Buckingham St	
Cottage	21 Anglesea St	R.# 2089
Cottage	16 Caernarvon St	R.# 2100
Cottage	31 Merioneth St	R.# 2103
Cottage	8 Villiers St	R.# 2104
Council Chambers	57 Buckingham St	
Dudlly's Cottage - #1	4 Buckingham St	

Name	Address	NZHPT
Dudlly's Cottage - #2	4 Buckingham St	
Explosive Magazine	42 Berkshire St	R.# 2108
Gaol (Former)	8 Cardigan St	R.# 350
Gibbston Valley	Buckingham St	
Mary Mc Killop Cottage	7 Hertford St	
Museum	Buckingham St	
Pittaway's Cottage	69 Buckingham St	
Public Library	Buckingham St	
R. Pritchard - Pharmacy	Buckingham St	
R. Pritchard - Rear	Buckingham St	
Real Estate	Buckingham St	
Reidhaven	5 Villiers St	R.# 2116
Reidhaven - Small Building	5 Villiers St	R.# 2116
Reids Stables	40 Wiltshire St	R.# 2115
Roman Catholic Church	7 Hertford St	R.# 2117
St John's Church (Presbyterian)	26 Berkshire St	R.# 2119
Stable Block	28 Buckingham St	R.# 2118
Stone Cottage Tearooms	51 Buckingham St	R.# 2092
Store House	3 Berkshire St	R.# 2122

Otago – BANNOCKBURN

Bannockburn Presbyterian Church	33 Hall Rd	R.# 2385
Cottage Ruins	Stewart Town	
Kawarau Station Homestead	847 Bannockburn Rd	R.# 7619
Kawarau Station Woolshed	847 Bannockburn Rd	R.# 7620
Settlement	Stewart Town	R.# 5610

Otago – BECKS

White Horse Hotel (Former)	4149 Becks-Lauder Rd	R.# 5221
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Otago – BENDIGO

Bendigo Ruin #1	Bendigo Loop Rd	
Bendigo Ruin #2	Bendigo Loop Rd	
Matilda Battery	Bendigo Loop Rd	
Miner's Cottage	Bendigo Loop Rd	

Otago - CARRICK RANGE

Battery/Dam/Hut	Carrick Range	R.# 5616
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Otago – CLYDE

Annan's Hotel	10 Sunderland St	
Benjamin Naylor's House	7 Fraser St	
Brian Herb Factory Museum	22 Fache St	
Chris McDonald's House	45 Sunderland St	
Chris McDonald's Nursery	45 Sunderland St	
Clyde Courthouse (Former)	7 Blyth St	R.# 2379
Clyde Post Office (Former)	4 Blyth St	R.# 2384
Clyde Postmaster's House	2 Blyth St	
Commercial Hotel (Former)	35 Sunderland St	R.# 2369
Dr Morice's Home	16 Sunderland St	
Dunstan Hotel (Former)	29 Sunderland St	R.# 2368
Dunstan Hotel (Former) - Shed	29 Sunderland St	
Dunstan Masonic Lodge	26 Sunderland St	
Hartley Arms Hotel	25 Sunderland St	
Oliver's Restaurant And Lodge Complex	28 Sunderland St	R.# 5187
Police Sergeant's House	9 Blyth St	
St Dunstan's Church (Catholic)	61 Sunderland St	R.# 2387
St Michael & All Angels Church (Anglican)	8 Matau St	R.# 2396
Stone Building Matau St	Matau St	
The Athenaeum	26 Sunderland St	
Tinker's Cottage	16 Sunderland St	
Tryell's House	51 Sunderland St	
Undertaker's Building	Fache St	

Otago – CROMWELL

Belfast Store	Mckinlay Lane	
Building 13 Inniscort St	13 Inniscort St	
Building 30 Inniscort St	30 Inniscort St	
Building 32 Inniscort St	32 Inniscort St	
Building 40 Inniscort St	40 Inniscort St	
Building 55 Achil St	55 Achil St	

Name	Address	NZHPT
Building 7 Sligo St	7 Sligo St	
C.Freetrade Butchery	Mckinlay Ln	
Cowburn - Cobb & Co	Mckinlay Ln	
Cowburn - London Stables	Mckinlay Ln	
Cromwell Courthouse (Former)	43 Inniscort St	R.# 2129
Cromwell Kilwinning Lodge	69 Melmore	R.# 2130
No 98	Terrace	
Goldfields Old Church	52 Erris St	
Murrell's Cottage (Former)	Mckinlay Ln	R.# 2133
Post & Telegraph Office	Mckinlay Ln	
Roman Catholic Church	3 Sligo St	
Seed & Grain Store Café	Mckinlay Ln	
St Andrew's Church (Anglican)	41 Blyth St	R.# 2132
St John's Church (Presbyterian) (Former)	24 Inniscort St	R.# 2131
Store	Mckinlay Ln	
Wisharts Blacksmith	Mckinlay Ln	

Otago - DUMBARTON

Building - Stable	SH8	
Hexton Greenhouse	SH8	
Hexton House	SH8	
Maulbrack	SH8	
Moa Seed Barn	SH8	R.# 7626
Moa Seed Farmhouse	SH8	R.# 7626

Otago - DUNEDIN

Bishopgrove	16 Patmos Av	R.# 2140
Bishopscourt (Columba College)	421 Highgate	R.# 2147
Building 19 Bond St	19 Bond St	R.# 3173
Cathedral Church of St Joseph (Catholic)	14 Rattray St	R.# 364
Caversham Church	61 Thorn St	R.# 7319
Chingford Park Stables	411 North Rd	R.# 2146
Clarkes Store	79 Woodhaugh St	
Dunedin Club	33 Melville St	R.# 2151
Dunedin Law Courts	1 Stuart St	R.# 4374
Dunedin North Post Office (Former)	361 Great King St	R.# 2154
Dunedin Railway Station	Anzac Av	R.# 59
Dunedin Town Hall And Concert Chamber	Moray Place	R.# 2150
Equitable Insurance Association Building (Former)	45 Vogel St	R.# 4751
Fortune Theatre	231 Stuart St	R.# 3378
Garrison Hall	8 Dowling St	R.# 3176
H.E. Shacklock Building	599 Princes St	R.# 2160
Highcliff Settlement - House	Highcliff Rd	
Highcliff Settlement - Shed	Highcliff Rd	
Highcliff Settlement - Stables	Highcliff Rd	
House	2 William St	R.# 2172
Knox Church (Presbyterian)	453 George St	R.# 4372
Larnach Castle	145 Camp Rd	R.# 2190
Larnach Castle - Camp Estate	145 Camp Rd	
Larnach Castle Stables	145 Camp Rd	R.# 2191
Marinoto	0 Newington Av	R.# 7303
Mathiesons Farm Steading - Dwelling	121 Centre Rd	R.# 7580
Mathiesons Farm Steading - Outbuilding	121 Centre Rd	R.# 7580
Mathiesons Farm Steading - Stables	121 Centre Rd	R.# 7580
Municipal Chambers	38 The Octagon	R.# 2197
Northern Cemetery - Larnach's Tomb	41 Lovelock Av	R.# 7658
Northern Cemetery -Sexton's Cottage	40 Lovelock Av	R.# 7658
Nz Loan & Mercantile Agency Company Limited (Former)	31-33 Thomas Burns St	R.# 4755
Otago Boy's High School (Central Block)	18 Arthur St	R.# 375
Renfrew House	111 Highgate	R.# 2166
Savoy Restaurant	50 Princes St	R.# 378
Smaill's Homestead	42 Southdale Rd	R.# 7639
Smaill's Homestead - Outbuildings	42 Southdale Rd	R.# 7639
Springfield	949 Highcliff Rd	R.# 4715

Name	Address	NZHPT
St Dominic's Priory (Former) - South Wing	31 Smith St	R.# 372
St Matthew's Church (Anglican)	28 Hope St	R.# 2212
St Pauls Cathedral And Belfry (Anglican)	36 The Octagon	R.# 376
Transit House	44 Park St	R.# 367
Union Bank of Australia	319 Princes St	R.# 2138
University of Otago - Allen Hall Theatre & Archway	Leith St	R.# 2225
University of Otago - Clock Tower Building	364 Leith St	R.# 62
University of Otago - Geology Block	Leith St	R.# 4765
University of Otago - Home Science Block	Union St	R.# 2226
University of Otago - Marama Hall	Union St	R.# 2227
University of Otago - School 9f Mines	Union St	R.# 4771
University of Otago - Staff Club	Union St	R.# 2230

Otago - DUNTROON

St Magnus Church (Presbyterian) (Former)	11 Rees St	R.# 3255
St Martin's Church (Anglican)	3487 SH83	R.# 2429

Otago - ENFIELD

Church (Presbyterian)	805 Weston-Ngapara Rd	R.# 2417
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Otago - FRANKTON

Building	SH6	
Building	SH6	
Building	SH6	
Building - Kawarau Falls #1	SH6	
Building - Kawarau Falls #2	SH6	

Otago - FRUITLANDS

Building 1216 Sh8	1216 SH8	
Building 1217 Sh8 - House	1217 SH8	
Building 1217 Sh8 - Stable	1217 SH8	
Building 1220 Sh8	1220 SH8	
Building Symes Rd	Symes Rd	
Butler's Farm - Barn	Fruitlands Rd	R.# 3240
Butler's Farm - Dairy	Fruitlands Rd	R.# 3240
Butler's Farm - Farm	Fruitlands Rd	R.# 3240
Butler's Farm - Fruit Shed	Fruitlands Rd	R.# 3240
Butler's Farm - Henhouse	Fruitlands Rd	R.# 3240
Butler's Farm - Stables	Fruitlands Rd	R.# 3240
Cape Broom Dairy (Former)	1369 SH8	R.# 3241
Cape Broom Hotel (Former)	1369 SH8	R.# 3241
Fruitlands Sattlement - House	1391 Fruitlands Roxburgh Rd	
Fruitlands Sattlement - Sheld	1391 Fruitlands Roxburgh Rd	
House Symes Rd	Symes Rd	
Miner's Rock Shelter	SH8	R.# 2371
Mitchell's Cottage	Symes Rd	R.# 337
Mitchell'S Cottage - Chicken Coop	Symes Rd	
Mitchell's Cottage - Outbuilding	Symes Rd	
Mitchell's Cottage - Outhouse	Symes Rd	
Ruin Symes Rd	Symes Rd	
Shed	1426 SH8	
Speargrass Inn - Dwelling	1300 Fruitlands Roxburgh Rd	
Speargrass Inn - House	1303 Fruitlands Roxburgh Rd	
Speargrass Inn - Lodge	1300 Fruitlands Roxburgh Rd	
Speargrass Inn - Sheld	1300 Fruitlands Roxburgh Rd	

Otago - GALLOWAY

Galloway Station - Chaff	438 Galloway Rd	R.# 2373
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Name	Address	NZHPT
House		
Galloway Station - Homestead	438 Galloway Rd	R.# 2373
Galloway Station - Men's Quarters	438 Galloway Rd	R.# 2373
Galloway Station - Stable	438 Galloway Rd	R.# 2373
Otago - HAMPDEN		
Church (Presbyterian)	2 London St	R.# 3249
Otago - HERBERT		
Otepopo Presbyterian Manse (Former)	1895 Maheno-Herbert Rd	R.# 5250
St John's Church (Presbyterian)	1 Ord St	R.# 2416
Otago - HYDE		
Church of the Sacred Heart of Jesus (Catholic)	9137 Eton St	R.# 2253
Otago - KUROW		
Hakataramea Station	Hakataramea Valley Rd	R.# 318
Woolshed		
Kurow Hotel	53 Bledisloe St	R.# 4893
St Alban's Chapel	5634 Kurow-Duntroon Rd	R.# 2435
St Alban's Stables	5634 Kurow-Duntroon Rd	R.# 5442
St Alban's Vicarage	5634 Kurow-Duntroon Rd	R.# 2435
Stone Store	37 Bledisloe St	R.# 4897
Western Hotel (Former)	5469 Kurow-Duntroon Rd	R.# 7325
Otago - LAKE ROXBURGH VILLAGE		
Farm - Shed	3077 SH8	
Farm - Stable	3077 SH8	
House	3071 SH8	
Otago - LAWRENCE		
Building 33 Ross Place	33 Ross Place	
Otago - LOWBURN		
Partridge Farm - Dairy	3 Heaney Rd	R.# 7624
Partridge Farm - House	3 Heaney Rd	R.# 7624
Partridge Farm - Shed	3 Heaney Rd	R.# 7624
Partridge Farm - Stables	3 Heaney Rd	R.# 7624
Warner Dairy	Lowburn Rd	R.# 2392
Otago - LUGGATE		
Luggate Flourmill (Former)	126 SH6	R.# 3242
Otago - MACETOWN		
Macetown Bakery	Historic Macetown	
Needham's Cottage	Historic Macetown	
Otago - MACRAES FLAT		
St Patrick's Church (Catholic) (Former)	7 Hyde St	R.# 2397
Stanley's Hotel Complex - Building	1760 Macraes Rd	R.# 7659
Stanley's Hotel Complex - Hotel	1760 Macraes Rd	R.# 7659
Stanley's Hotel Complex - Interpretation Centre	1760 Macraes Rd	R.# 7659
Otago - MAHENO		
Clark's Mill Complex - Flourmill	1017 Alma-Maheno Rd	R.# 346
St Andrew's Church (Anglican)	6 Short St	
Otago - MIDDLEMARCH		
Braeside Cottage	175 Mt Stoker Rd	
Cottesbrook Station - Abattoir	105 Moonlight Rd	R.# 7650
Cottesbrook Station - Homestead	105 Moonlight Rd	R.# 7650
Cottesbrook Station - Meat Store	105 Moonlight Rd	R.# 7650

Name	Address	NZHPT
Cottesbrook Station - Men's Quarters	105 Moonlight Rd	R.# 7650
Cottesbrook Station - Stables	105 Moonlight Rd	R.# 7650
Cottesbrook Station - Woolshed	105 Moonlight Rd	R.# 7650
Jack's Stone Cottage	10 Cardigan St	
St John's Church (Presbyterian)	4 Aberafon St	
Stone Dwelling	1 Ngapuna Rd	
Stone Stable	1 Ngapuna Rd	
Strath Taieri Hotel	Snow Av	
Strathmore B&B	173 Browns Rd	
Strathmore B&B - Stable	173 Browns Rd	
Otago - MILTON		
Tokomairiro Church (Presbyterian)	30 Union St	R.# 2250
Otago - MORRISONS		
Shag Valley Station - Homestead	2353 Dunback-Morrison Rd	R.# 7616
Shag Valley Station - Mens Quarters & Cookshop	2353 Dunback-Morrison Rd	R.# 7616
Shag Valley Station - Shearers Quarters	2353 Dunback-Morrison Rd	R.# 7616
Shag Valley Station - Stables	2353 Dunback-Morrison Rd	R.# 7616
Otago - OAMARU		
A.M.P. Society Building (Former)	5 Itchen St	R.# 2278
Ah Maude's Stores (Former)	4 Harbour St	R.# 4691
Anderson & Co. Flour And Grain Merchants Store (Former)	10 Harbour St	R.# 4627
Bank of New South Wales (Former)	9 Thames St	R.# 355
Bank of New Zealand Building (Former)	1 Thames St	R.# 2279
Building 131 Thames St	131 Thames St	
Building 26 Tees St	26 Tees St	
Building 27 Tees St	27 Tees St	
Building 30 Thames St	30 Thames St	
Building 32 Thames St	32 Thames St	
Building 39 Thames St	39 Thames St	
Building 51 Thames St	51 Thames St	
Building 7 Thames St	7 Thames St	
Building 99 Thames St	99 Thames St	
Building Coquet St	24 Coquet St	
Building Wear St	14 Wear St	
Centennial Memorial Rest Rooms	1 Severn St	R.# 2284
Columba Church (Presbyterian)	33 Wansbeck St	R.# 7313
Commercial Building	6 Tyne St	R.# 2280
Connell & Clowes' Store (Former)	1 Tyne St	R.# 2283
Criterion Hotel	3 Tyne St	R.# 4689
Custom House (Former)	29 Tyne St	R.# 3461
Darling Mcdavell Limited, Stock & Station Agents	11 Tyne St	R.# 2275
Exchange Chambers (Former)	13 Tyne St	R.# 2276
Finance House	22 Wear St	
Fitzgerald House	33 Coquet St	R.# 2277
Hassell's Windmill	5 Stous St	R.# 7314
J. Rattray & Son Building	12 Wear St	
J.G. Fletts Bookstore	19 Itchen St	R.# 4628
Junction Hotel	62 Wansbeck St	R.# 7638
Lambert Bors. Tea Importers	70 Thames St	
Macallan House	42 Thames St	
Mc Diarmid's Building	81 Thames St	
Meek's Flourmill	1 Meek St	R.# 2285
Meeks Grain Elevator Building (Former)	Tyne St	R.# 4881
Meek's Grain Store	6 Harbour St	R.# 2288
Meldrum Bakehouse (Former)	25 Usk St	R.# 3218
Middle School	Severn St	R.# 2287
Municipal Chambers (Former)	96 Thames St	R.# 7356
National Bank	11 Thames St	R.# 363
Neill Brothers' Store (Former)	12 Harbour St	R.# 4647

Name	Address	NZHPT
New Zealand Expresso	20 Wear St	
North Otago Billiards & Snooker Assn.	35 Tees St	
Northern Hotel (Former)	11 Wansbeck St	R.# 2292
Nz Loan & Mercantile Company Warehouse	14 Harbour St	R.# 354
Oamaru Athenaeum & Mechanics Institute (Former)	60 Thames St	R.# 2272
Oamaru Borough Council - Gas Department	12 Wear St	
Oamaru Courthouse	88 Thames St	R.# 353
Oamaru Garrison Band Building	Isis St	
Oamaru Harbour Board Office (Former)	2 Harbour St	R.# 4381
Oamaru Mail Office	16 Tyne St	R.# 3365
Oamaru Police Station And Lockup	16 Severn St	R.# 2293
Oamaru Post Office	20 Thames St	R.# 2294
Oamaru Post Office (1864)	12 Thames St	R.# 4686
Oamaru Silk Centre	119 Thames St	
Polytechnic	137 Thames St	
Queen's Hotel (Former)	115 Thames St	R.# 5373
Rosary Chapel (Former)	74 Reed St	R.# 2301
Rosary Convent (Former)	70 Reed St	R.# 2301
Shrimski's Sale Rooms (Former)	2 Tyne St	R.# 4692
Smith's Grain Store (Former)	9 Tyne St	R.# 4380
Spence & Bee's Store (Former)	1 Itchen St	R.# 4693
St Luke's Church (Anglican)	2 Tees St	R.# 4365
St Luke's Vicarage	1 Wharfe St	R.# 4884
St Patrick's Basilica (Catholic)	64 Reed St	R.# 58
St Paul's Church (Presbyterian)	3 Coquet St	R.# 2300
St Paul's Vicarage	5 Coquet St	
Star & Garter Hotel (Former)	11 Itchen St	R.# 3219
Star & Garter Stables (Former)	Itchen St	R.# 4880
Sumpter's Grain Store (Former)	8 Harbour St	R.# 4885
T.H. Brown's Auction Market (Former)	0 Tyne St	R.# 4687
T.H. Brown's Store (Former)	25 Tyne St	R.# 2289
Terrace of Shops	5 Wansbeck St	R.# 4688
Totara Estate - Buggy Shed Remains	583 Alma-Maheno Rd	R.# 7066
Totara Estate - Carcass Hanging Shed	583 Alma-Maheno Rd	R.# 7066
Totara Estate - Granary (Barn)	583 Alma-Maheno Rd	R.# 7066
Totara Estate - Men's Quarters & Cookhouse	583 Alma-Maheno Rd	R.# 7066
Totara Estate - Stables	583 Alma-Maheno Rd	R.# 7066
Totara Estate Home	581 Alma-Maheno Rd	
Totara Estate Homestead	583 Alma-Maheno Rd	R.# 2434
Townsend's Store (Former)	23 Tyne St	R.# 4694
Union Bank of Australia Building	14 Tyne St	R.# 2306
Union Offices (Former)	7 Tyne St	R.# 2307
Waitaki Boys' High School	10 Waitaki Av	R.# 358
Waitaki Boys' High School - Hall of Memories	10 Waitaki Av	R.# 2309
Waitaki Boys' High School - Junior School Building	10 Waitaki Av	R.# 2308
Waitaki Country Council Chambers	100 Thames St	R.# 2311
Waitaki Girls High School Building	276 Thames St	R.# 2312
Wanbrow House	6 Coquet St	
Otago - OMAKAO		
Downshire Homestead	85 Provincial Highway	R.# 5220
Otago - OPHIR		
Jenkins' Cottage	28 Swindon St	R.# 3230

Name	Address	NZHPT
Jenkins' Cottage - Smithy	28 Swindon St	R.# 3230
Jenkins' Cottage - Stable	28 Swindon St	R.# 3230
Mactavish's Hut	Ida Valley Rd	
Mcknight's Cottage	26 Swindon St	
Ophir Post Office	53 Swindon St	R.# 341
Pitches Store	45 Swindon St	R.# 7282
Policeman's House	44 Swindon St	
Restaurant Chatto Creek	Omakau-Chatto Creek Rd	
Shamrock Hotel Ruins	MacDonald St	
Stone Barn	28 Swindon St	
The Bakery	32 Swindon St	
The Bakery - Stable	32 Swindon St	
The Courthouse	44 Swindon St	
Otago - OTAGO PENINSULA		
Taiaroa Head Fog Station	Taiaroa Head	R.# 5229
Taiaroa Head Lighthouse	Taiaroa Head	R.# 2220
Otago - PALMERSTON		
Blessed Sacrament Church	44 Ronaldsay St	
St James' Church & Clark Sunday School Hall (Presbyterian)	78-80 Tiverton St	R.# 3247
St Mary's Church (Anglican)	8 Stromness St	R.# 2396
Waihemo Grange	1453 Dunback-Morrisons Rd	R.# 2407
Otago - PORT CHALMERS		
Carey's Bay Hotel	17 Macandrews Rd	
Chick's Hotel	2 Mount St	R.# 2318
Holy Trinity Church (Anglican)	9 Scotia St	R.# 2320
House	29 Currie St	R.# 2322
House	31 Currie St	R.# 2323
Iona Church	24 Mount St	R.# 7165
Maritime Museum	19 Beach St	
Port Chalmers Marine Lodge (Former)	29 Wickliffe Terrace	R.# 7759
Port Chalmer's Post Office (Farmer)	19 Beach St	R.# 359
St Mary's Star of The Sea Church (Catholic)	34 Magnetic St	R.# 2328
Otago - PUKERANGI		
Pukerangi Homestead	38 Reefs Rd	
Otago - PUKEURI		
Pukeuri Church	389 Pukeuri-Oamaru Rd	
Pukeuri War Memorial Hall	Pukeuri-Oamaru Rd	
Otago - QUEENSBERRY		
Queensberry Inn Stable Block	2567 Luggate-Cromwell Rd	R.# 2390
Otago - QUEENSTOWN		
Courthouse	45 Ballarat St	R.# 7655
Forresters Lodge (Former)	50 Ballarat St	R.# 2332
G.Woodrow Bakers (Former)	1 Cow Lane	R.# 5227
G.Woodrow Confectioners (Former)	1 Cow Lane	R.# 5227
House	47 Hallenstein St	R.# 2333
Masonic Lodge (Lake Lodge)	13 Marine Parade	R.# 2338
Mcbride's Farm Buildings (Former) - Dairy	64 Grant Rd	R.# 7729
Mcbride's Farm Buildings (Former) - Smithy	64 Grant Rd	R.# 7729
Mcneil Cottage	14 Church St	R.# 2330
Queenstown Library And Reading Room (Former)	44 Stanley St	R.# 362
Sam Summers Hut	Mt Crichton Loop track	
St Joseph's Church (Catholic)	41 Melmore St	R.# 2340
St Peter's Church (Anglican)	2 Church St	R.# 2341
Stone Building	17 Brisbane St	R.# 5225
Two Mile Hut	Wakatipu Lake	
Wakatipu Lime Company	Glenorchy-	R.# 5608
Kilns (Former)	Queenstown Rd	

Name	Address	NZHPT
Otago - RANFURLY		
Danseys Pass Coach Inn	781 Kyeburn Diggings Rd	
Otago - ROXBURGH		
Avoca House	125 Scotland St	
Gilchrist's Building	Scotland St	
House	3228 SH8	
House 111 Branxholm St	111 Branxholm St	
House 123 Scotland Street	123 Scotland St	
House 129 Scotland Street	129 Scotland St	
House 150 Branxholm St	150 Branxholm St	
House 29 Scotland St	29 Scotland St	
House 3 Ednam St	3 Ednam St	
House 4 Ferry Rd	4 Ferry Rd	
Kilkieran House	34 Scotland St	
Kilkieran Shed	34 Scotland St	
Kohinoor Inn - B&B	3364 SH8	
Kohinoor Inn - Camp	3364 SH8	
Kohinoor Inn - Stable	3364 SH8	
St James' Church (Anglican)	12 Ferry Rd	R.# 2345
Teviot Union Parish Church	144 Scotland St	
The Packhouse	3196 SH8	
Warehouse 3 Ferry Rd	3 Ferry Rd	
Otago - SEACLIFF		
Seacliff Lunatic Asylum Site	36 Russel Rd	R.# 9050
Otago - SHINGLE CREEK		
Old Stone Hut	Shingle Creek	
Otago - ST BATHANS		
Building Loop Rd	Loop Rd	
Hut Creek Hut	Oteake Conservation Park	
Ruins	Loop Rd	
St Bathans Public Hall	Loop Rd	R.# 2256
St Bathans' School Ruins	Cross St	R.# 3208
St Patrick's Church (Catholic)	Cross St	R.# 3210
The Pipe Shop	Loop Rd	
The School House	Loop Rd	
Vulcan Hotel	1670 Loop Rd	R.# 2259
Vulcan Hotel Billiards Room	1663 Loop Rd	R.# 2255
Otago - STYX CREEK		
Styx Jail	Styx Creek	
Otago - TEVIOT		
Teviot Station Woolshed	38 Smiths Rd	R.# 336
Ruins		
Otago - WANAKA		
Fork Farm Homestead	Wanaka	
Otago - WESTON		
Brookfield Reception Centre	62 Weston Rd	R.# 4886
Otago - WINDSOR		
Elderslie Station Men's Quarters	959 Weston-Ngapara Rd	R.# 3251
Elderslie Station Stables	959 Weston-Ngapara Rd	R.# 2420

ANNEX 14 – UNREINFORCED STONE MASONRY BUILDINGS IN SOUTHLAND

Name	Address	NZHPT
Southland - GORE		
Holy Trinity Church	15 Traford St	
Southland - WAIKAIA		
Stone Hut - Blue Lakes	Waikaia Piano Flat	R.# 5196

Name	Address	NZHPT
	Rd	
Southland - MANDEVILLE		
Wantwood - House	317 Waimea Valley Rd	R.# 7705

ANNEX 15 – UNREINFORCED STONE MASONRY BUILDINGS IN CHATHAM ISLAND

Name	Address	NZHPT
Chatham Island - MAUNGANUI		
German Mission House	Waitangi West Rd	R.# 5401