

PROTECTING FRIENDS HOUSE

7 MONCRIEFF STREET, WELLINGTON

The story of its seismic strengthening

Wellington Monthly Meeting
Religious Society of Friends Aotearoa New Zealand
Te Hāhi Tūhauwiri (Quakers)

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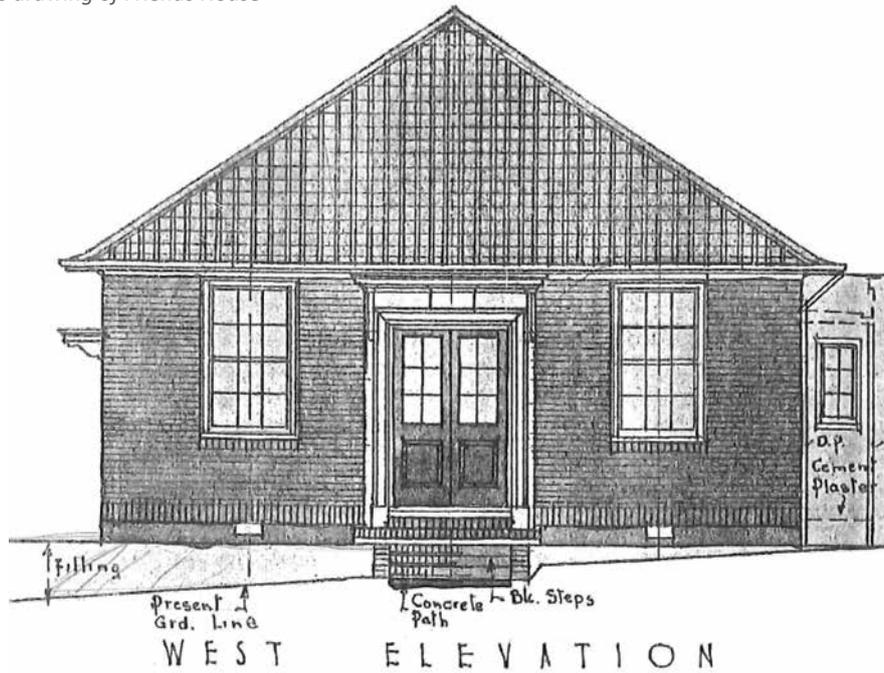
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Wellington Monthly Meeting gratefully acknowledges the many and varied contributions of time and expertise, both paid and unpaid, and generous financial donations received from those who shared the common goal of protecting Friends House from potential earthquake damage. Success in achieving that objective has extended the life of the building and enhances the safety of everyone using the premises in the future.

The intention when preserving a heritage building is for all the evidence of the alterations to be hidden from sight. By way of thanks to those who supported the project this booklet is our gift to record the steps taken which are now otherwise invisible.

Fig. 1 1929 Architect's drawing of Friends House



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Introduction

This booklet records the major project undertaken between **mid-2011 and mid-2016** to seismically strengthen the Quaker Meeting House in Wellington to meet the updated Building Act 2004.

The existence of the Meeting House, named Friends House when built in **1929**, owes much to the guidance of many English Friends and the financial support of Britain Yearly Meeting. Wellington Friends now rejoice that Friends House has the status of a heritage building. However, this status carries responsibilities and limits the architectural changes which can be made.

In the **1990s** Friends House had not been found to be earthquake-prone under the codes of the day, but building standards were raised nationwide in **2004** and councils around New Zealand revised

their assessments of potentially unsafe buildings. Wellington City Council (WCC) reviewed Friends House under the Building Act requirements and advised the Meeting in **January 2011** of its findings that Friends House was potentially earthquake-prone under the new standards.

This news was preceded by the Christchurch 7.1 earthquake of **4 September 2010**. It was soon followed by a second even more devastating magnitude 6.3 Christchurch earthquake on **Tuesday 22 February 2011** at 12.51 p.m. This earthquake killed 185 people and injured several in collapsing buildings and left much of the city centre in ruins⁽¹⁾. Older stone or brick buildings, and even Christchurch Friends Meeting House, had been particularly badly damaged as were several more modern multi-storey buildings.

This demonstration of the destructive power of earthquakes lent a sense of urgency to the issue.

The notice served by WCC on Friends House Wellington resulted in much work to establish the integrity of the building and the eventual strengthening required. Wellington Friends, with the help of the New Zealand Friends Trust Board, commissioned the strengthening work which was completed in 2016. In addition to funding the work from Meeting funds and loans, we are grateful to the many generous donors who assisted in raising funds for the extraordinary work detailed in this booklet.

Source material for this account of the project to protect Friends House includes: a progress report from the Wellington Monthly Meeting's Earthquake Protection Committee (EPC) of 27 February 2013;

the final report of the Meeting House Strengthening Committee dated December 2016; Wellington Monthly Meeting minutes; and other documents as cited.

The text which follows is (mostly) a chronological ordering of events. Key dates are highlighted in bold to provide a time line through the text

Friends House in Wellington remains today much as it has always been in appearance but structurally sounder and with a warmer and lighter interior. We hope it can remain thus for the next one hundred years.

A brief history

Two Quakers, Thomas and Jane Mason, were passengers on the New Zealand Company ship Olympus when it first arrived in Wellington in **1841**. They settled in Taita and held regular meetings for worship in their home as witnessed by visiting Friends. Gradually more Friends settled in Wellington. John and Hannah Rigg and their family arrived in **1894** and held meetings in their home. In **1902** Wellington Meeting began meeting in a public hall every Sunday.

The Wellington Monthly Meeting was formed in **1912**, covering the area of Wellington, Hawkes Bay and Taranaki. In **1932** it was divided into two separate Monthly Meetings: Wanganui and Taranaki being one and Wellington and Hawke's Bay the other, into which 58 Friends transferred⁽²⁾.

The following description of the building of the Wellington Meeting House is taken from the Wellington City Heritage website⁽³⁾.

Funds were gradually raised for a purpose-built Meeting House, with some of the contributions coming from England and other parts of New Zealand.

It was originally decided to build in Abel Smith Street – “to fill a spiritual and social need in a less favoured community” – but the site was thought too small and so a section at Moncrieff Street was chosen instead. Architect William Gray Young of Gray Young, Morton and Young designed the house and it was built by Trevor Brothers, whose tender was £1,381. (Total cost of land, improvements and furnishings was put at £3,350.) By **1929** work on the Meeting House was completed.

As the house neared completion, it was described to Friends in a special letter.

“The Meeting House...is planned to accommodate eighty persons. It is equipped with electrical lighting and heating and has, opening out of the front hall, two cloak rooms and a room fitted to provide for the preparing of meals and the holding of committees.”

When they completed the building, Trevor Brothers were . . . thanked by the Friends. Before the building of the house, meetings were attracting average attendances of 17. . . but by the early 1950s the Friends had outgrown the main building. In **1954** a children’s room was added to the house at a cost of £591.

By **1997** Friends House was no longer able to comfortably accommodate all the activities of the Wellington Meeting. An annex to the building was designed which included a new kitchen and meeting area, the widening of the courtyard and disabled access. The additions were completed in **1999**.

The focus of this booklet is on the subsequent earthquake protection of Friends House to preserve it for its original purpose as a centre for Quaker worship meetings.

Friends House status

The Land Information NZ (LINZ) registry records the Society of Friends New Zealand Trust Board (Trust Board) as the legal owner of Friends House, as it is for all Quaker Meeting Houses in New Zealand. Although owned by the Trust Board, the properties are in the care of the local meeting. Wellington Monthly Meeting (WMM) has the responsibility for the maintenance and care of Friends House and the other buildings at its two properties on Moncrieff Street. This work is usually delegated to its Premises Committee.

Friends House is listed by the NZ Historic Places Trust (now Heritage NZ Pouhere Taonga) as an historic place, Category 2, under the Historic Places Act 1993. It is listed by WCC in its district plan as a heritage building protected as a pre-1930 building.

Earthquake-prone survey by Wellington City Council

“Earthquake-prone” is defined in the Building Act 2004⁽⁴⁾. Wellington City Council adopted policies that involved its consultants reviewing all relevant buildings using the NZ Society of Earthquake Engineers’ initial evaluation procedure. (Dwellings are excluded from the 2004 Act’s earthquake-prone provision unless in larger multi-storey blocks.)

In **October 2010** this evaluation procedure determined that Friends House was potentially earthquake-prone. Prior to that, under the requirements applying in 1998, Friends House had not been classified as earthquake-prone. The strengthening was required as a result of more stringent seismic standards for existing buildings from 2004.

Notice of potential earthquake risk

In **January 2011** WMM received a letter from the WCC advising that Friends House was potentially earthquake-prone and that it was necessary to retain our own consultants to ascertain the actual strength of the building within six months or, by default, it would be listed by the council as earthquake-prone.



View of the main entrance and Friends House from street level.

Credit: WCC - Charles Collins, 2015

Establishing the level of risk

Two major aspects related to the level of earthquake risk, if any, which existed. Firstly, the nature of the land on which Friends House sat and, secondly, its structural integrity.

Geotechnical assessment

Friends House is sited at the edge of an underground ridge where bedrock is close to the ground surface and so removes the effect of soft ground amplification of seismic motions. The site is in a subsoil class which has lower design requirements to mitigate seismic actions than much of the surrounding area. ⁽⁵⁾

Structural assessment

WMM of **6 March 2011** gave approval for structural engineers to review the building's earthquake risk status.

Sinclair, Knight, Mertz (SKM), an international consulting firm which had absorbed a firm that had previously done consulting engineering work on the Meeting's buildings, was retained to verify its earthquake-prone status. SKM reported in **April 2011** that Friends House was earthquake-prone, being only approximately 10% of the strength it would be required to be if it was being built to the current code i.e. 10% of the New Building Standard (10% NBS). Anything less than 33% NBS was defined under the Building Act as earthquake-prone. Friends House was less than half the strength necessary, which meant that the building occupants were more than 25 times more at risk from earthquake injury than in a modern building.

Extracts from the Handbook for Trustees

The Trust Board was established when property that had been purchased under the name of London Yearly Meeting was handed over to New Zealand to manage.

During the life of the Trust there have been times when significant decisions have been made relating to property acquisition and disposal and management of assets, but the Trust Deed makes it clear that day-to-day management of properties remains with the relevant meeting.

The Board holds a Meeting House Fund. These funds are not tagged but there are priorities:

Priority One

- (a) Essential maintenance beyond the resources of the Monthly Meeting.
- (b) Disability access.

Priority Two

Improvements that significantly increase the usability and quality of Friends' Meeting Houses, both for Friends and for the community.

Priority Three

Financial needs created by changes in by-laws or building codes or other new compliance requirements.

Description of the building

The strengthening work proposal needs to be understood in its relationship to the building's construction. It has been described by SKM as follows:

“The Meeting House at 7 Moncrieff Street, constructed in 1929, measures 12.8 m long by 8.8 m wide. The single storey building is constructed of unreinforced cavity brick masonry with reinforced concrete footings and a reinforced concrete band at roof level. There are timber roof trusses with a tile roof. The tile fixings have been inspected and found to be in good condition.

The exterior walls consist of two wythes of 4½” brick work with a 2½” cavity between. The walls are penetrated by windows and door openings that are well distributed such that there are significant wall panels between openings. The internal walls are a combination of 4½” and 9” solid brick walls.

The ceilings consist of gypsum plaster sheets, fixed to the bottom chord of the roof trusses and lower section of the rafters in the meeting room, and the underside of the ceiling joists to the remainder of the building. The principal fixing of the rafters to the perimeter walls is by means of skew nails to the wall top plate. The top plate is fixed to the reinforced concrete band by means of ½” bolts.

Construction is to a high standard with good quality materials used throughout the building. Cement mortar has been used in the brick work construction to give relatively high strength to the wall elements.”⁽⁶⁾

The city council subsequently served a notice to the effect that Friends House had to be strengthened by **6 June 2027**. If this work was not done, the Council could forbid all use of the building, and have it strengthened at the owner's cost.

Trust Board advised

As owners of the building, the Friends Trust Board needed to endorse WMM's decisions that affected the future of the Meeting House.

In **May 2011** the Trust Board was informed of the situation.

The Trust Board agreed to forgo the remainder (\$12,585.36) of a previous loan so that the Monthly Meeting could use the sum set aside for the repayment to hire consultants to identify a preferred option

for strengthening. A further grant of \$12,000 from the building fund was agreed once a contract for earthquake strengthening consultancy was let.

In **June 2011** three consultants were invited to submit proposals for identifying strengthening options and providing cost estimates. The firm of SKM was selected.

Earthquake Protection Committee (EPC)

The Monthly Meeting on **7 August 2011** appointed an Earthquake Protection Committee (EPC) to assume responsibility for the project from the Premises Committee. The committee was tasked to investigate and report directly to WMM on measures to strengthen the Meeting House to meet the Society's obligations as owners of an "earthquake-prone building."

Proposal for seismic strengthening

In **December 2011** the Earthquake Protection Committee recommended to WMM that a quote from SKM to prepare initial plans for strengthening should be accepted. Further meetings were held with SKM to explore strengthening options.

Alternatives considered

In their report of **29 February 2012** SKM presented an analysis of alternative strengthening methods for the ceilings and walls. Three alternative strengthening methods were examined for each of the three brick wall types: cavity, 9" thick and 4¹/₂" thick. These alternatives had been selected from a longer list, in consultation with the EPC. Each method was described in detail, including construction process, explanatory plans and details, advantages, disadvantages and cost.

Reflecting the multi-disciplinary capability of the practice at that time, this excellent report was comprehensive and to the right degree of detail. It enabled the EPC to quickly identify the most appropriate method for each structural element. Cost was important. But of at least equal significance was the ability of the strengthened element, and the building as a whole, to remain viable after an earthquake. (While the principal aim of the code is to protect human life, the survival of the building is also important, particularly for a heritage structure.)

This latter factor was especially significant for the two most vulnerable elements: the external cavity brick and internal 4¹/₂" brick walls. Prestressing the former overcomes the fatal flaw of brickwork under seismic loading: its weakness in tension and shear.

Thus, it becomes able to withstand bending forces without fracture. The replacement of the internal brick walls with lighter framed braced walls reduces their seismic loading, and gives them more resistance to out-of-plane forces.

Initial proposals were to strengthen to 67% of new building standard (67% NBS). A decision on options to do this was made in **May 2012**.

Exploring demolition and other options

WMM on **16 September 2012** tasked some Friends with checking out previous understandings concerning consent to demolish Friends House. Their report to **December 2012** WMM advised on the outcome of meetings with the then NZ Historic Places Trust (NZHPT) and WCC Planning Section. The options from their report are summarised in Table 1.

Table 1: Options for action

Option	Analysis
Demolition	NZHPT would not support demolition. A Resource Management Act hearing would be needed to remove the heritage status before demolition could proceed. WCC advised any application for demolition would be notified and a commissioner’s hearing would incur a fee of \$15,000. There would be no guarantee of a favourable outcome and the possibility would remain of an appeal with further costs, delays and uncertainty. The cost of a replacement building was likely to be more than \$250,000. The WCC would need to be convinced that “there is no reasonable option to losing the item.”
Alteration	A building consent application fee of about \$1,500. Planning fees of \$8,000 if the heritage aspects of the building exterior were to be altered. The earthquake-prone status would be removed. Total cost estimate \$250,000.
Do nothing	WCC could eventually prevent use of the building. WCC could do the strengthening work itself, recovering the cost from Friends. The risk to the building and its occupants would remain.
Sale	Low price reflecting the requirements for strengthening. Loss of Meeting House.

Given the NZHPT policy not to support demolition, WCC advised consent to demolish Friends House was highly unlikely. The legal processes of the Resource Management Act 1991 to gain approval were costly and lengthy, with a favourable outcome unlikely. In view of the cost and uncertainty associated with seeking demolition, the EPC concluded demolition was unrealistic so an application to demolish was not made.

In **July 2012** SKM provided a quotation for detailed plans and building consent documentation as well as cost estimates for administering the tendering and construction phases. The indicative estimate for the construction portion of the project at this point was about \$250,000.

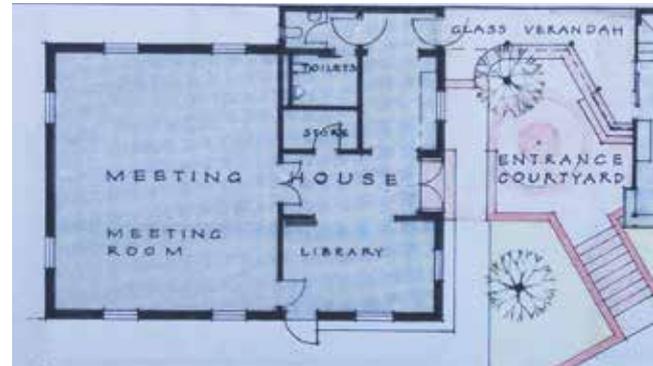
WCC Built Heritage Incentive Fund Grant

In **August 2012** an application was made to the WCC Built Heritage Incentive Fund for a grant towards the cost of preparing detailed engineering plans and estimates for the strengthening work. A grant of \$30,000 was made in **December 2012**.

A condition of the grant was that a heritage architect be retained to report on the cultural history of Friends House, describe the building, layout and features, evaluate the current proposal for structural strengthening and recommend appropriate conservation standards to be applied in the work. Studio Pacific Architecture was retained for this report and for the subsequent sign-off once work was complete.

Following confirmation of this grant, SKM were commissioned to prepare detailed plans and specifications to building consent stage and a quantity surveyor's cost estimate.

At the **February 2013** Monthly Meeting, the WCC grant was noted. To date the Meeting had spent \$18,900, of which \$12,585 was from the Trust Board, to establish whether Friends House was earthquake-prone. The EPC asked MM to consider asking Elders to convene a second meeting to look at options. The consultation meeting held on **17 March** was a two-part process (looking at the shape of the meeting and the future of existing properties) and was reported back to the April Monthly Meeting. A further consultation meeting was held in **May 2013**.



Above: Architect's plan showing the layout of Friends House prior to seismic strengthening.

Below: View of the main meeting room as it was being cleared out prior to the start of the strengthening project.



Discerning the way forward

Gaining clearness about the Meeting's investment in its properties became critical for unity within the Meeting. Quakers call the process of achieving clarity and unity in decision-making *discernment*. They seek to jointly discern (find) a true way forward.

Although the EPC was given the task of exploring strengthening options for Friends House, which was realistically the only answer to the situation, the Monthly Meeting was not clear about the best way forward from this juncture. Monthly Meeting became the forum for considering the possibilities.

The Monthly Meeting approved that its Elders initiate a wider consideration of the future of the Meeting's properties and options to meet its accommodation needs. These options were outside the scope of EPC although members of the committee

were involved in discussions. The purpose was to make sure everyone in the Monthly Meeting had an opportunity to hear about the history of the Moncrieff Street buildings and to understand the issues relating to earthquake strengthening. The opportunity was also taken to consider other questions, such as: the need for a Meeting House and other Wellington properties; the purposes these may serve in the life of the Meeting; and ensure the appropriate uses of Quaker resources.

The first of these consultative meetings was held on **16 September 2012**. Presentations were made to the meeting on history, seismic strengthening and options for the future. It was not intended that the meeting make decisions but rather to provide an opportunity for people to listen, reflect and consider

the future of WMM's properties. There was some discussion at the end of the meeting about setting up a group to consider other options besides earthquake strengthening but it was decided this was not the time to do this. However, the notes from the meeting say that it might be appropriate to set up such a group at some stage.

Subsequent consultative meetings were held in **March and May 2013** prior to a decision by the Monthly Meeting in **October 2013**.

These meetings, open to all Monthly Meeting members and attenders, were well-publicised, well-attended and well-facilitated. They were held over an extended period of time to encourage as wide an input as possible.

The depth of discussion at these meetings was extensive and probing to the extent of going back to basics such as to whether there was justification for owning any property at all or the need for a fixed location to meet. Moving on from there, possible changes to Friends House to be done in conjunction with the earthquake strengthening were considered. These changes included: heating, ventilation, acoustics, energy efficiency, lighting, rearrangement of the internal layout, skylights or larger east wall windows, extensions to the east. Among the wider questions was whether another building, George Fox House, should be kept for its present uses or sold.

Decision to meet code 100%

The Elders reported regularly to Monthly Meeting on the progress of the consultative meetings. In the

Future of our properties

“There have been 3 consultative meetings to consider the future of our properties. Four agreements have been reached as a result of these consultations. We approve these four agreements as a basis for the earthquake strengthening and associated work. The four agreements are:

- a) We wish to have a property as a home base and centre of our activities
- b) The current Meeting House location is as good as we are likely to get because of its central location and proximity to public transport routes.
- c) Owning our own property provides greater flexibility and enables us to ensure good utilisation of the resource by sharing it with other groups in the community. We do however, need to investigate whether changes to the building as part of the strengthening project are needed to encourage the fullest possible utilisation.
- d) Resident Friends make a strong contribution to the life of the Meeting and we wish to ensure that in any changes made to the properties, accommodation for Resident Friends continues to be provided.”

(WMM Minute No.7, October 2013)

meantime, further discernment by the Monthly Meeting on the seismic strengthening led to the decision, taken in **June 2013**, to strengthen to 100% NBS. This increased the estimated cost by \$40,000.

This additional cost ensured:

- an additional level of safety for building occupants
- a building less likely to require repairs after an earthquake
- that the building’s full value would be realised should it be sold in the future
- the very much greater cost and difficulty of a later upgrading would be avoided.

It was noted that any prospective buyer who intended to use the building for any use other than religious meetings, would have to first strengthen

it to 100% NBS as the Building Act requires. The uncertainty of such a large cost risk would effectively have made the property unsaleable if the work was not done.

Discernment results

The **October 2013** Monthly Meeting considered the outcome of the Meeting-wide consultation process and recorded a minute on the *Future of our properties* (p. 22).

In the final result, a remarkable clarity of vision had emerged amongst those who participated in the discernment process that traversed varied opinions and differences and which invoked many core Quaker values. Over the space of a year, a generally comfortable way forward emerged.

A further consultative meeting was later held in **August 2014** to make recommendations on the work to be commissioned in addition to strengthening.

Detailed design

As part of the required outcomes from the WCC Built Heritage Incentive Fund grant of \$34,500 (incl. GST) for the design phase, SKM provided a design features report in **October 2013** summarising work done to that date, including the criteria and methodology to achieve 100% NBS ⁽⁷⁾. Full drawings and specifications were provided, outlining the agreed options for external and internal walls and ceiling replacement with rafter strengthening (pp. 26-27).

A further requirement of the grant was a heritage architect's report to confirm that the proposed work would meet the council's heritage objectives. The

Table 2: Costs of project from May 2011 to February 2014

Investigations, assessments, heritage reporting, design, and cost estimates		Cost \$*
SKM	Verification of earthquake-prone status	4,000
SKM	Detailed seismic assessment	4,600
SKM	Design 67% NBS proposal	11,000
SKM	Design 100% NBS proposal	9,000
SKM	Detailed design, building consent documentation	20,000
Studio Pacific Architecture	Heritage architect report	2,800
	SUBTOTAL	\$51,400

* Costs are rounded and include GST.

report was provided by Lianne Cox, heritage architect of Studio Pacific Architecture, and concluded that:

“The completed work will have no effect on the external appearance. Internally, the lightweight walls will be revealed as modern if tapped, however we believe this is acceptable. Some heritage fabric is lost, however the major spaces, features and detailing are retained, or reinstated. The strategies for strengthening the walls and the ceiling diaphragm are low impact and well considered. We consider that the overall impact of the completed structural strengthening will be almost unnoticeable, as it is all concealed, or integrated with the existing.”

In a report dated **24 February 2014**, EPC advised March Monthly Meeting that it had received and considered the engineering design documentation for the strengthening of the Meeting House to 100% NBS.

The costs associated with this project as at **February 2014** are given in Table 2.

Detailed design phase costs

Following the decision to proceed with the strengthening work, tender documentation and evaluation, contract supervision and administration work by the consulting engineers was necessary. The estimate for these phases of the work provided in SKM’s letter of 17 July 2012 had been \$24,089.00 (incl. GST). Cost escalation over two years was expected. Studio Pacific Architecture’s quote included an amount of \$1,635.00 (incl. GST) for reviewing the work and reporting on the building once the strengthening work was under way and completed.

Fund arrangements put in place for the seismic strengthening design phase are given in Table 3.

Table 3: Funding arrangements 2014

Funds from:	Funds for:	Amount \$ *
NZ Friends Trust Board (by forgoing outstanding loan payments)	Investigate strengthening options	12,585
NZ Friends Trust Board	Second stage consulting fee	12,000
Wellington Monthly Meeting	Confirmation of earthquake-prone status	4,025
WCC Built Heritage Incentive Fund	Detailed strengthening plans and specifications	34,500
	TOTAL	\$63,110

* Amounts are rounded and include GST.

Fig. 2 2014 Approved Plan - Existing layout showing new work.

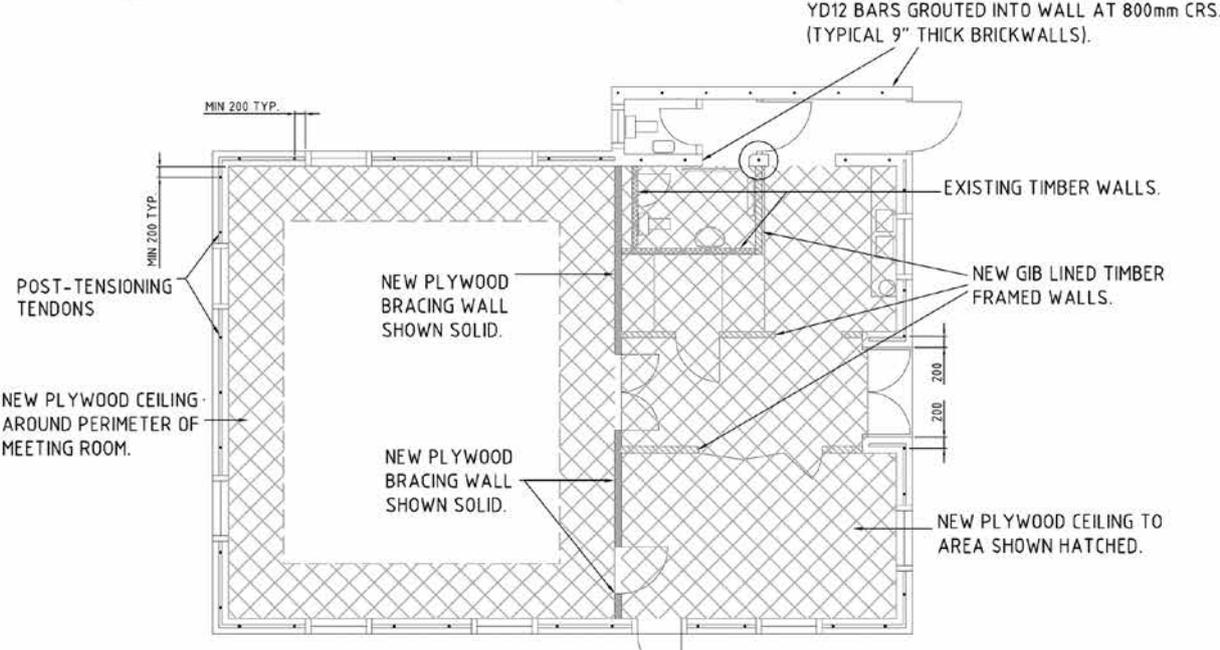


Fig. 3 2014 Approved Plan - Meeting Room ceiling edge.

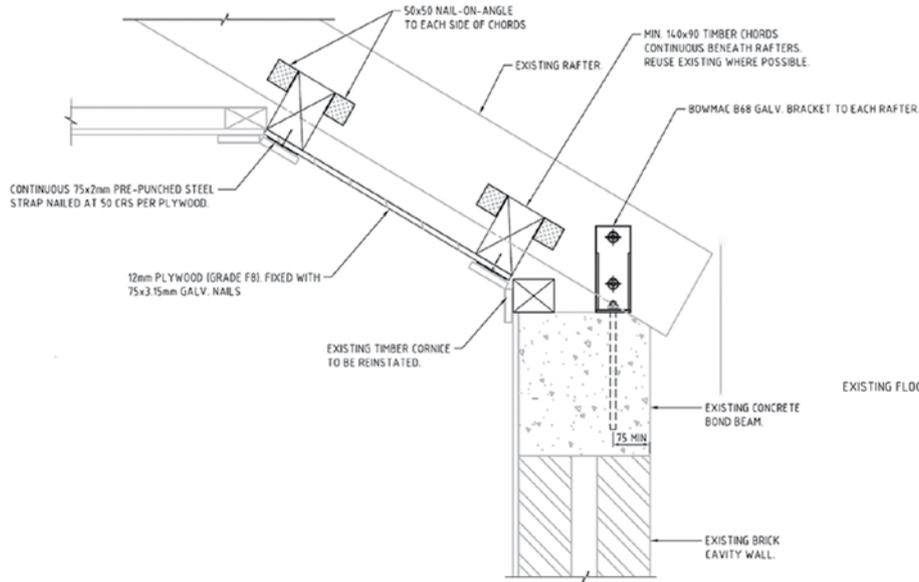
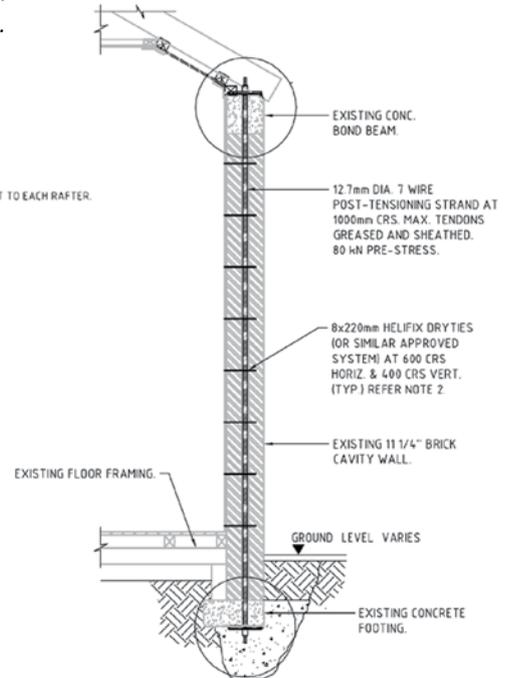


Fig. 4 2014 Approved Plan - Double skin brick walls strengthening.



Added design specifications for Friends House

Given the major disruption to the life of the Meeting during the extensive work needed for seismic strengthening, the opportunities to economically carry out other high priority work and enhancements were considered.

WMM on **7 September 2014**, on the recommendations of the consultation meeting held on 17 August, appointed two groups: one to prepare a brief for thermal insulation, electrical wiring, heating, ventilation and lighting improvements; and a second architectural group to prepare a brief for the architects for the spaces other than the meeting room. The result of this work was to include:

- improving heating, lighting, ventilation, energy efficiency and thermal insulation
- adding storage cupboards accessible from the kitchenette
- mandatory improvements to fire safety and signage for the access for people with disabilities as required as a condition of the building consent
- fully rewiring the building given the extent of demolition and the uncertain state of some of the older wiring.

Studio Pacific Architects were retained to provide a final report to meet the heritage grant conditions once work was finished to confirm that the heritage architectural features were satisfactorily preserved in accordance with their initial report.

Committees

Committees formed and then merged as the work changed. Once the investigative work of EPC was completed its outputs became an integral part of the ongoing work on general upgrading and modification of Friends House, including oversight of the construction contract. This Meeting House Strengthening Committee later absorbed the Meeting House Funding Committee, established 6 October 2013. The Strengthening Committee also took over the functions of the Architectural Committee established by September 2014 Monthly Meeting.

On-going funding exploration

The Monthly Meeting of June 2013 had minuted that a new estimate of \$408,000 for the Meeting House strengthening also included additional items such as

heating, ventilating, insulation and alterations to the library and storage layout.

A further WCC Heritage Incentive Fund grant was sought and \$50,000 was granted in **August 2015** based on detailed engineering plans and specifications and cost estimates provided. Additional architectural plans and specifications were commissioned from Paul Cummack.

In an email of **22 October 2015** the area co-ordinator of Heritage New Zealand Pouhere Taonga (formerly the NZ Historic Places Trust) turned down an approach for funding as the heritage fund did not provide funding assistance to Heritage 2 properties.

The Lion Foundation was not approached as its income is derived from gambling machines. The option to seek Lottery Board funding was rejected

because, as explained by email from the Strengthening Fund Committee to Alison Dangerfield, 22 October 2015, “Quakers won’t accept that kind of money”.

To meet the funding shortfall arising from cost increases the YM Trust Board, with the endorsement of YM Standing Committee, agreed in **mid-October 2015** to assist the project funding by up to \$200,000 as a loan. The ultimate guarantee for the repayment of the loan was the Trust Board’s ability, as the legal owner, to sell George Fox House.

The committee also agreed “with enthusiasm” that a proposal from Resident Friends to Donate for a Date should be taken to the next Monthly Meeting. This initiative was seen as an opportunity to personalise the history of the Meeting House while raising funds.

Investigation of selling a strip of the site

A special Meeting for Business held in **October 2015** considered an offer from a neighbour to buy a three metre-wide strip of land at the eastern edge of the Meeting House site for \$100,000. It was acknowledged that “The offer is a call to the Meeting to discern better and increased use of the space, and to protect our flexibility for the future.” As a consequence, the offer was not accepted.

Construction tenders and contract award

As the construction contract was in the name of The Religious Society of Friends Aotearoa / New Zealand Trust Board, the Board, by minute 2015/38, appointed the convenor of the WMM Strengthening Committee to act as its agent to administer the contract.

Once the heritage grant from the Wellington City Council Built Heritage Incentive Fund was confirmed, making sufficient finance accessible, the Meeting agreed to proceed with calling tenders. Heritage New Zealand Pouhere Taonga confirmed their support of the plans for the proposed project in a letter of **14 December 2015**.

The consulting engineering firm by this time had been taken over and changed its name to Jacobs. The firm approached a number of construction

contractors with a reputation for working in the seismic strengthening field on brick buildings and five contractors indicated their interest in tendering.

Tenders closed on **11 December 2015**. Only two completed tenders were received and the prices were about \$100,000 over the estimate. Jacobs advised that the work load in the sector and the proximity to the holiday season were likely reasons for this disappointing response. Friends investigated calling tenders a second time but Jacobs advised that this would be unlikely to produce a better result and the contract period would probably then run over the worst winter weather.

Tender evaluation

Tenders were evaluated on a weighted attributes basis which recognised previous experience in similar

works, resources, proposed sub-contractors and construction methodology together with price. Price counted for 60% of the total score.

Based on this evaluation method, the tender from Sparrow Construction Ltd., which was the more expensive tender by \$32,000, was identified as the preferred bid. Even if the weighting of the price component was increased to 82% this tender still returned the highest score, which reflected the significant superiority of Sparrow’s resources, staff and methodology.

Approval to proceed

Wellington Monthly Meeting of **February 2016** agreed by minute to the letting of a contract for the seismic strengthening of the Meeting House as recommended in the report from the Seismic

Strengthening Committee and to seek the Religious Society of Friends Aotearoa Trust Board formal approval to proceed. The following minute of the Yearly meeting Standing Committee was recorded:

“Standing Committee agrees to the Religious Society of Friends Aotearoa New Zealand Trust Board placing \$200,000 from the bequests and other funds it holds in a ring-fenced account on which Wellington MM can draw as needed for the earthquake strengthening project on its Meeting House. Drawings would become interest-bearing loans to the MM at an interest rate equivalent to what can be obtained in other investments, and also be repaid in lump sums as they become available.”

Contract let

Once funding was confirmed and the building consent issued, Sparrow’s tender of \$479,400 was accepted on **3 March 2016** and work started on site on **7 March 2016**. The full list of consultants and contractors is given in Table 4.



A photographic record was kept of the site before and during work.

Table 4: Consultants and contractors

Role	Consultants and contractors
Structural engineers	Sinclair Knight Mertz (SKM) (renamed Jacobs in 2014)
Heritage architect	Studio Pacific Architecture Ltd
Architect (contract documentation)	Paul Cummack Conservation Ltd
Lighting design and supply	Lighting Design Solutions
Main Contractor	Sparrow Construction Ltd
Electrical subcontractor	The Electric Company, specified under a contract condition. The company has been the Meeting’s electrical maintenance contractor. This condition ensured continuity in knowledge to maintain and service the systems including the energy efficient control systems for heating, lighting and ventilation.

Construction work 2016

Heritage considerations required both the interior and exterior of the building to be maintained in their original appearance. Exceptions were the installing of exhaust fans on the outside of the eastern wall and removal of dark panelling above window sill level on the eastern wall of the meeting room to improve the lighting.

Work progress

While contractors were working, the garage was reserved for their use. Parking was therefore restricted during the week and access to Friends House, the side path and studio at the rear of the section was restricted to the contractors.

The accompanying photographic record shows the various stages of the work.

Scope

The contract involved:

- Prestressing the brick cavity exterior walls
- Connecting the cavity brick layers with “Helifix” steel ties
- Grouting bars into the solid brick exterior wall
- Replacing the ceilings as structural diaphragms
- Replacing ceiling insulation
- Demolishing interior brick partition walls and replacing by timber framed bracing walls
- Replacing wall linings and including insulating linings to the meeting room
- Electrical rewiring
- Heating, lighting and ventilation
- Fire safety requirements for alarms and egress lighting
- An additional storage cupboard accessible from the kitchenette.

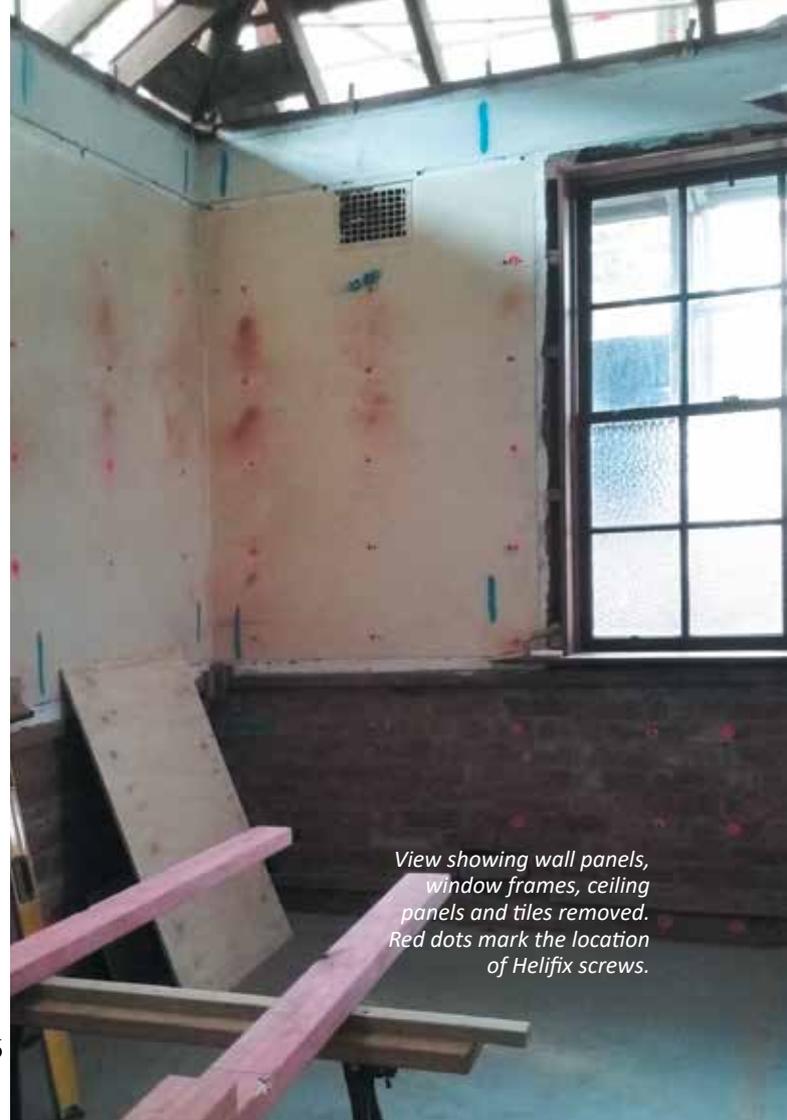
The carpet was removed and stored off-site and the timber floors were protected with other used carpet overlaid with tarpaulins.

The ceilings and insulation were removed. The timber panelling was removed to enable installation of 200 Helifix stainless steel ties drilled from the building interior into the twin skin brick walls to tie the two skins together. Red spots on the wall marked the insertion points for the ties.

The wall panels along with the finishing timbers around the doors and windows and other joinery were removed with care, repaired and stored on site before reinstatement.

The interior brick walls were demolished.

Three or four rows of roofing tiles were removed along the edge of the roof to enable access to the top of the walls.



View showing wall panels, window frames, ceiling panels and tiles removed. Red dots mark the location of Helifix screws.



A close-up of the wall preparation.



A view of the ceiling with the roof tiles removed.



A view of the topside of the roof under the canopy. The roof tiles over the walls have been removed.



A sample Helifix stainless steel tie drilled into the twin skin exterior brick walls to tie the two skins together.



A view of the underside of the tiles from inside the roof cavity.



A view inside the roof cavity.



A scaffold tube supporting the ceiling and roof. The edge of an internal brick wall in the process of being demolished is shown.

Pits were excavated under the exterior walls at about 25 locations to enable the anchoring of the prestressing cable at foundation level.

These pits were then backfilled with concrete that considerably enhanced the integrity of the building's foundations.



Excavation work to pour concrete anchors for the prestressing cables.

The solid 9-inch thick walls in the south-west of the building were strengthened by drilling 25mm holes from roof level into the foundations. Steel reinforcing was then inserted and grouted in. A water-cooled and lubricated diamond drill was used for drilling.



Sections of the cores of brick and mortar that were drilled out.



The yellow water-cooled and lubricated diamond drill.

Most of the exterior walls are of 11 1/2 inch cavity brickwork. Holes were drilled through their reinforced concrete beams at eave level, down via the wall cavity and through the foundation beams to allow for installation of the vertical prestressing steel.

Additional steel connections between the roof framing and the concrete beam on top of the walls were installed.

The roof tiles were then reinstated and the ridge capping tiles were re-pointed.





View of roof looking down Moncrieff Street towards Elizabeth St.



Ridge tiles were cleaned and broken tiles replaced.



Many old tiles were discovered to be broken and patched.

A fortunate find

While the strengthening work was under way, Sparrow Construction located a house being demolished in Karori that had identical tiles to those on Friends House. Sufficient were recovered, from those not yet flung into the waste bin, to replace damaged tiles on the roof and provide additional spares to cover future damage.

Work also needed to be done to replace old drainage.



Blocked pipe from waste mortar dumped by a prior worker.



Preparing to replace drains.



Before

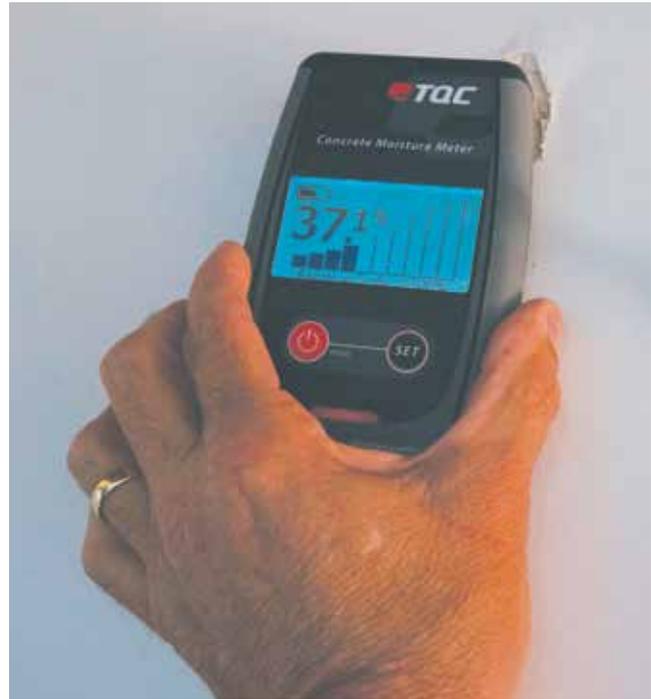


After



After

Internal wall moisture levels needed monitoring after walls were saturated by water-lubricated drilling, taking more than a year to dry.



Electrical rewiring, ventilation and heating were installed. The ceilings were replaced by structural diaphragms and the insulation reinstated.

An additional thermal insulating layer was added to the linings of the three exterior walls of the meeting room. Interior walls were rebuilt with timber-framed, plasterboard-covered walls. Interior bracing walls included plywood strengthening.



The old brick interior walls were replaced by timber framed walls with plywood strengthening.



External venting



Internal controls



Ceiling heater



LED wall lighting



A close up of the wall LED lighting strip in the meeting room.

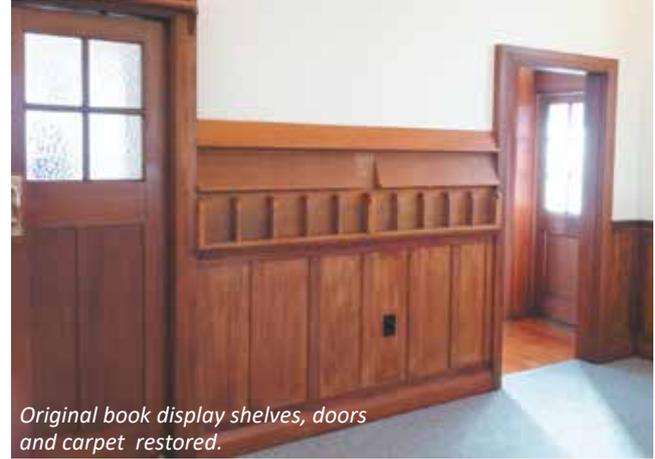


External walls had a thermal insulation lining added.



Rebuilt, internal wood-framed walls were finished with plasterboard.

Library ceiling restored.



Original book display shelves, doors and carpet restored.

Interior walls were replastered and painted. The ceilings were restored.

The interior panels and frames were replaced and the original carpet and underlay were relaid.

The fire alarms and exit signage were positioned and the centrepiece original glass light shade was rehung.



Window frames and panels restored.



Original glass light shade rehung.



Construction timeline

The timeline of the construction phase project is given in Table 5.

Table 5: Construction timeline

Process	Date	Year
Tenders called	23 November	2015
Tenders closed	11 December	2015
Contract let	3 March	2016
Work started on site	7 March	2016
Substantial completion	28 July	2016
End of maintenance period	28 October	2016
Final payment certified	2 November	2016

Finance

Pre-construction costs of \$51,400, comprising initial assessments and investigations, heritage architecture reporting, alternative designs and cost estimates up to the decision to proceed, have been given in Table 2 (page 24).

Sparrow Construction's final construction cost was \$457,000, a saving of \$22,400 on the tender price due to the full contingency allowance not being called on. Table 6 shows the total construction costs.

Fundraising

With a \$200,000 Trust Board loan facility in place, the Strengthening Fund Committee, at the request of the Monthly Meeting of **February 2016**, continued to actively investigate further options for raising funds. The Monthly Meeting had contributed funds and a legacy from Barbara Thompson was gratefully

Table 6: Total including construction costs

Company	Tasks completed	Cost \$ *
Jacobs (ex SKM)	Call tenders, tender assessment, building consent application, contract supervision	57,000
Studio Pacific Architecture	Heritage Architecture inspection and reporting	1,000
Cummack Architects	Architectural specification and drawings	3,500
Lighting Design Solutions	Design and supply dimmable LED lighting	3,900
COR Associates	Heating and ventilation	1,300
Sparrow Construction	Construction contract	457,000
State Insurance	Contract insurance	2,000
WCC	Building consent fee	5,000
	SUBTOTAL CONSTRUCTION	\$530,700
	SUBTOTAL PRECONSTRUCTION	\$51,400
	TOTAL PROJECT COST	\$582,100

* Costs are rounded and include GST.

received along with donations from local Friends. There was still more to find.

A legal opinion, provided by Tim Carter, barrister and solicitor, established that, although the legal owner was the Friends' Trust Board, Wellington Meeting clearly benefited from this arrangement which, while not proprietorial, was "more in the nature of a licence".

He advised that the Monthly Meeting "should have no hesitation in asking for contributions from national and international Friends".

Accordingly, in **April 2016**, letters were drafted to seek external assistance. Those addressed to the British and the Australian Yearly Meetings recapped the encouragement and monetary support of British Friends to Wellington Friends in the early 1900s to

build Friends House and the ongoing links between Friends of both countries.

As a result of these appeals donations have been gratefully received. The generosity of donors has contributed significantly to the ability of the Meeting to protect Friends House for future generations.

Other funding sources

Monthly Meeting of **1 May 2016** finalised the term to five years for the loan agreement with the Friends Trust Board. The GST component of the expenditure on strengthening was also recoverable.



... The building's heritage status makes it unique to Aotearoa/New Zealand, for Quakers and non-Quakers alike, and maintains continuity with our history of those that went before us so that we can find our way into the future. We are indebted to the energy of British Friends, notably Thomas Hodgkin, Elizabeth Rutter, and the Holdsworth family, who persuaded Wellington Friends that the capital needed a Quaker Meeting House. British Friends also contributed half the cost of construction. The close alliance between Britain and Wellington Meeting has continued and we have benefitted greatly from the presence of British Friends who have acted as Resident Friends for a year.

We appeal to British Friends who feel able to offer to support the stewardship of the building for our immediate community, those who regularly visit and for those who are to come. We welcome donations large or small, in monthly payments or lump sums.

Over recent years we have benefitted from the exchange of members between our Meetings and also the presence of Australian Friends who have been resident Friends in Wellington.



Part of the letter from the Clerk of the Wellington Monthly Meeting to the Clerk of Britain Yearly Meeting.

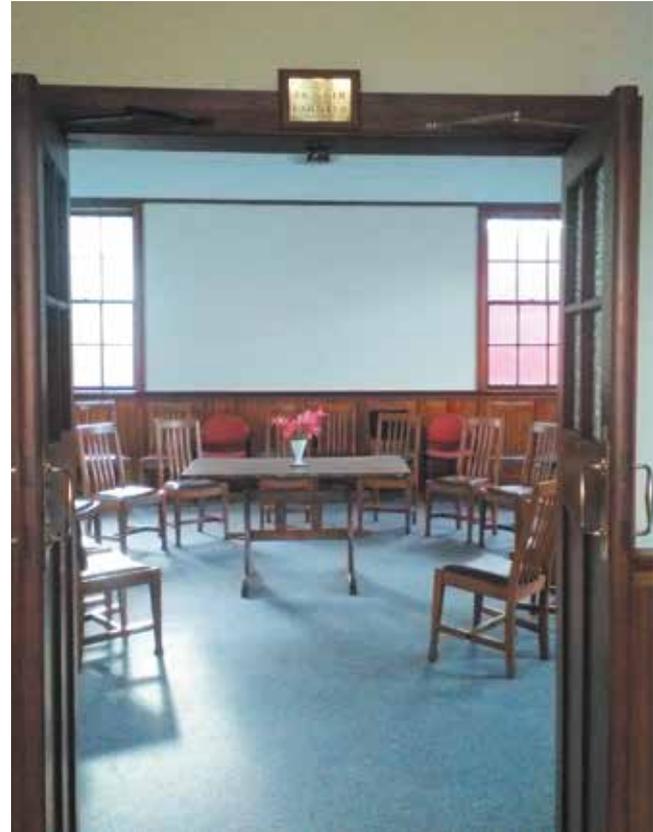
Completion

It is to be noted that the earthquake strengthening of Friends House was completed in five months (**from early March to the end of July 2016**) to 100% of the strength required for a new building under the NZ Building Code (100% NBS.)

The Monthly Meeting of **7 August 2016** made the following minute:

**“4. Meeting House Strengthening Committee:
Strengthening Report.**

We have received a report from our Strengthening Committee. The final council inspection has been completed. The heritage architect is satisfied that the heritage preservation conditions of the City Council have been met. The Meeting will continue to hold retention monies until the end of October until outstanding work and potential defects are rectified. We may be slightly over the budget for total cost.



The wall near the toilets will probably take until the end of next summer to dry before it can be plastered and painted.”

The treasurer reported that \$120,000 had so far been drawn down of the \$200,000 set aside by the Trust Board for earthquake strengthening work and that as anticipated the project had been financed with help from the Trust Board and donations.

Additional work funded

During the Meeting House strengthening project, the WMM Premises Committee undertook another project to contribute to seismic strengthening the neighbour’s brick wall. This wall forms the southern edge of the walkway between the Quaker Centre and the Meeting House and supports its glass roof.

The costs of this project are not included here. Nor are the costs of plastering and painting the toilet area wall referred to above. These costs were met through the Meeting maintenance budget.

Opening

The **May 2016** Monthly Meeting supported a proposal for a display of the history of Friends House in the building on completion of the seismic strengthening work. This display was developed in consultation with Premises and Outreach Committees.

Conclusion

This account has been a factual record of the processes which Wellington Friends undertook to meet the challenges of upgrading the strength of their Meeting House. What has not been expressed is the spirit in which the Meeting rose to this unanticipated circumstance. We acknowledge the dedication of time and effort by the committee members tasked with: researching the options; discerning which advice to seek and which companies to employ; and overseeing the progress from start to finish. But it was not the committee alone, the Elders arranged and led consultative meetings with the whole membership so that everyone had the opportunity to be involved in the penetrating and wide-ranging discussions. Monthly Meeting was the forum in which the crucial decisions were discerned.

Missing in the factual account is the emotional turmoil felt by the Monthly Meeting members as they faced up to the challenge of raising sufficient money to remedy the situation and the self-questioning about the best way forward. The example was ever present of Christchurch Monthly Meeting, which lost its Meeting House in the Christchurch earthquake and had years of searching before finding new premises. The reality of the damage earthquakes can do was more than amply demonstrated. As a footnote, just three months after the seismic strengthening work was completed, a 7.8 Kaikōura earthquake on **14 November 2016** ⁽⁸⁾ was strongly felt in Wellington. This earthquake was not of the type to damage Friends House nor similar brick buildings in the locality, but

several medium-height buildings in Wellington CBD were irreparably damaged.

The **2004** changes in the Building Act continue to influence other centres: Friends in Auckland, for example, face the need to decide the long-term future of their Meeting House in Mt Eden, which has been deemed an earthquake risk.

The Wellington Monthly Meeting met the challenge by adhering to Quaker principles and discernment processes to assist members to work their way through very difficult and complex decisions. In discernment, especially on issues critical to the life of the meeting, process is as important as the content. Members genuinely sought the leading of the spirit throughout the process.

With final success of the strengthening project and with loans gradually being repaid, Friends continue to gather together in a building which is on the surface remarkably the same as it always has been. There is little to remind us of the emotional, mental and spiritual effort and the technical skills expended to achieve this settled state. Memories fade and future Friends will simply accept the blessing of having the historic and beautiful Friends House in which to meet and worship. This booklet is to commemorate that effort, now hidden within the very structure and fabric of the Friends House, to keep the building as safe as possible for that future.



Reference notes

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- (2) Brodie, A. (1979). *The Society of Friends (Quakers) in Wellington* held by the National Library of NZ (PAM 289693 63 BRO 1979).
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- (4) NZ Government. (2005). *Building (Specified Systems, Change the Use, and Earthquake-prone Buildings) Regulations 2005*. Wellington, NZ: New Zealand Government.
- (5) Semmens, S.; Perrin, N.D.; and Dellow, G.D. (2010). It's our fault - Geological and geotechnical characterisation of the Wellington Central Business District, *GNS Science Consultancy Report 2010/176*.
- (6) SKM. (2013). *Design features report 2013*. Wellington, NZ: SKM.
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- (8) Geonet. (2016). *M 7.8 Kaikōura Mon, Nov 14 2016*. Retrieved from <https://www.geonet.org.nz/earthquake/story/2016p858000>