synod.otago.southland@xtra.co.nz 21/5/2025 15:30

FW: 127 Taieri Road Dunedin roof estimate

To Conrad Anderson <conrad_a@xtra.co.nz>

Hi Conrad,

This is the email about the roof below.

Thanks,

Fergus Sime
Executive Officer
Synod of Otago and Southland
Ground Floor
Cameron Centre
First Church Dunedin
417 Moray Place
P O Box 1131
Dunedin 9054
Phone (03) 477 7365
Phone 0800 76 22 22
Mobile 027 404 8468

From: campbell paton <ca.paton@hotmail.com>
Sent: Wednesday, 21 May 2025 2:16 pm
To: synod.otago.southland@xtra.co.nz
Subject: Fwd: 127 Taieri Road Dunedin roof estimate

Subject: 127 Taieri Road Dunedin

Kia Ora,

Looking at the street view, the ridges and valleys look rusty. So I assume you'll also need new flashings and a new ridge. Most of the time we recommend copper as it has the same life span as slate, which would also require copper spouting.

Reroofing with a proper ventilated build up also requires all the flashings and spouting replaces.

Long story short, I made a quote recently for the All Aaints Anglican Church in Dunedin. Based on what I see on Google Maps and DCC, and your 256m² flat number, your project has around half the size, so you are looking at 555000.- for the project incl. Copper flashings and lead ridge with Canadian Glendyn slate to 680000.- with Penrhyn heather blue Welsh slate. These prices don't include scaffold and spouting. They are based on an exchange rate Gbp to NZD 1:2.23. The prices are estimates and generous, so also include some upcoming, at the moment not foreseeable, problems and the small roof at the entrance.

There is also a small tower on the back, right now with rusty corrugate installed. It would make sense to also fix this and the flat roof of the tower when going forward.

If you need a detailed quote, I can have a look somewhere in the coming two weeks and write a proper quote.

Please feel free to reach out with any questions.

All the best,
Ngā mihi,

Alexander de la Cour

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2 Hughes Cresent
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Architectural Envelopes

SITEWISE GOLD 2021/22

- Outlook-1kjgzyxc.png (13 KB)
- Outlook-klcxyiaf.png (41 KB)
- Outlook-ilb1sftb.png (2 KB)
- Outlook-xeeis4rv.png (2 KB)

Hi Peter,

After reading some of these reports some questions arise. I'm not a structural engineer, so my apologies if these are ignorant questions!

With the Hall it appears that they did the required work from documents you have supplied. Does that mean the NBS percentage improved? If so, was another report done to state the new percentage?

With the church report, I note in your report you say in the Executive Summary, '…**Important**: This analysis is only valid if the work is done.' Does that mean that the 35%NBS is only valid if they have done the work? It appears they haven't done the work, so is the NBS a lower figure?

I look forward to your reply.

Thanks,

Fergus Sime

Executive Officer

Synod of Otago and Southland

Ground Floor

Cameron Centre

First Church Dunedin

417 Moray Place

P O Box 1131

Dunedin 9054

Phone (03) 477 7365

Phone 0800 76 22 22

Mobile 027 404 8468

Hi Fergus,

Your questions are not ignorant at all. They are valid, in fact!

Hall

The completed improvements on the Hall brought it up to 80%NBS. There isn't a report that specifically says that but it is implied in Table 1 of the report 14083/2 Revision 3 (i.e. the 'proposed improvements' have been completed).

Church

Yes, the 35%NBS score is provisional until the roof truss connections are inspected (in detail) and the damaged mortar repaired. That will be why the report was left in *Draft* form. It doesn't necessarily mean that the building will be below 35%NBS. However, it does mean that the additional work will be required before the 35%NBS score can be confirmed.

A complicating factor to this is that the *seismic assessment of existing buildings Guidelines* were updated in 2017, 2 years after the report was written. If the seismic assessment for the Church is to be updated then it will have to be re-assessed against the current 2017 Guidelines.

I hope that all makes sense.

Call me if you have any questions.

Regards,

Peter L Stevenson
Chartered Professional Engineer

STEVENSON BROWN LTD

p 021 481 195.

Email: peter@structures.co.nz

KAIKORAI PRESBYTERIAN CHURCH
CNR TAIERI RD & NAIRN ST
DUNEDIN

SEISMIC ASSESSMENT REPORT

REPORT PREPARED FOR:
KAIKORAI PRESBYTERIAN CHURCH.

REPORT PREPARED BY:
Peter Stevenson (CPEng)
STEVENSON BROWN LTD.

DISTRIBUTION:
Kaikorai Presbyterian Church: eCOPY
STEVENSON BROWN LTD:

DATE: 09 September 2015

REFERENCE NO: 14083

Revision: DRAFT

1 Executive Summary

A Detailed Seismic Assessment was carried out for the Kaikorai Presbyterian Church building, located on the corner of Taieri Road and Nairn Street, Dunedin. The purpose of the investigation was to establish whether the existing building meets the minimum requirements for earthquake strength, set out in the NZ Building Act 2004 and the Dunedin City Council Earthquake Prone Buildings Policy, and to identify remedial work that will improve the building's seismic performance.

The seismic performance of the building was assessed in terms of *percentage of new building standard* (%NBS).

The existing building was shown to have a capacity of **35%NBS**, which is classified as a Grade C building. This is greater than 33%NBS and, therefore, the building is not considered earthquake prone, and no further action is required to meet the legislative requirements of the Building Act 2004 and the Dunedin City Council Earthquake Prone Buildings Policy.

However, it is important to note that for this analysis to be valid a minimum level of building maintenance has been assumed. This includes the repair and repointing of deteriorated mortar joints and a more detailed inspection of the (difficult to access) timber roof truss connections, where they fix into the top of the unreinforced masonry walls. These will have to be repaired if there has been any significant decay of the timbers that are pocketed into the brickwork. **Important**: This analysis is only valid if this work is done.

The building has been assessed to be at the lower end of seismic Grade C, which although it is not earthquake-prone, it is classified as an *earthquake risk* (i.e. has an assessed capacity less than 67%NBS). This means the risk of collapse (for the critical elements) is 10 times greater than that of a new building. It is recommended that the modifications, summarised in Section 6.4 of this report, are implemented as funding becomes available, to improve the capacity of the whole building to a level closer to 67%NBS.

People exiting the building during an earthquake are at risk of being hit by falling roof slates. This risk can be mitigated by either: replacing the roof slates with a new corrugated steel roof; or by constructing 'protection' verandas over the egress doors located at both ends of the transept and constructing barriers (garden plots perhaps) to keep people clear of the roof slate fall zone.

2 CONTENTS

3 INTRODUCTION

A Detailed Seismic Assessment (DSA) of the Kaikorai Presbyterian Church building has been completed using *Section 10 Revision Seismic Assessment of Unreinforced Masonry Building,* issued as part of Corrigendum No.4 of the NZSEE *Assessment and Improvement of the Structural Performance of Buildings in Earthquakes* (2006) Guidelines.

4 BASIS FOR THE ASSESSMENT

4.1 INFORMATION ON EXISTING BUILDING

The information we have used for the DSA includes:

- Visual inspection of the exterior of the building.
- Visual inspection of the interior of the building.
- No existing (original) drawings for the building were available.
- A site measure-up has been carried out and drawings of the existing building have been prepared as part of this investigation. These are included in Appendix A of this document

4.2 REFERENCES

The following references were used for the analysis:

- New Zealand National Society for Earthquake Engineering (June 2006) "*Assessment and Improvement of the Structural Performance of Buildings in Earthquakes.*"
- *"Section 10 Revision Seismic assessment of Unreinforced Masonry Buildings",* issued as part of Corrigendum No.4 of the NZSEE *AISPBE* (2006) Guidelines.
- Priestley, Calvi & Kowalsky; "*Displacement-Based Seismic Design of Structures*"; IUSS Press; 2007.
- Building Act (2004), New Zealand Government.
- Dunedin City Council, *Earthquake-prone Buildings Policy.*
- New Zealand Building Code.
- NZS 1170. NZ Loading standard.

5 GENERAL BUILDING DESCRIPTION

5.1 BUILDING FORM & CONDITION

The building is located on the corner of Taieri Road & Nairn Street, Dunedin. It is generally a single storey, unreinforced masonry (URM) church building and bell tower with the following features:

- Building constructed in 1906;
- The building appears to be largely in its original condition (there have not been any significant alterations);
- The building is generally constructed with solid clay brick walls. The walls to the nave and transept are triple brick (350mm thick) with solid brick buttresses at about 3.2m centres. The tower is solid quadruple brick (460mm thick) up to the belfry floor (about 8m above ground floor level) and triple brick above that;
- The southwest end gable wall is constructed of 6”x2” timber stud framing at about 18” centres. On the inside, the wall framing is lined with lathe and plaster. On the outside the walls are clad with corrugated iron fixed to 4x2 battens at about 24” centres, which in turn are fixed to the studs;
- The pointing to the mortar joints is coming out in places, especially higher up the building;
- The mortar behind the pointing is a lime/sand mortar, which is very soft in areas (where it has been exposed to moisture for a long time) and firm in other areas;
- The bricks are generally in good condition;
- There is evidence (efflorescence) of moisture and dampness penetrating the masonry walls. Some of the plaster render on the walls is “drummy”, which also suggest moisture is getting into the walls;
- There are bolts fixing the roof structure to the top of the gable end walls. These are showing some surface corrosion, however, they still appear to be fixed firmly in place;
- The ground floor is constructed of timber joists, supported on bearers, which are supported on piles (The sub floor space was not inspected in this case as it does not affect the seismic performance of the building). There is plenty of sub-floor ventilation;
- The walls are supported on concrete beam/strip foundations (the size of the foundations have not been confirmed). There are no significant cracks within the building and there are no obvious signs of foundation settlement;
- There is a mezzanine floor (seating gallery) at the northeast end of the nave. The floor structure is likely (not viewed) to consist of raking timber joists, spanning between the brick wall, at the rear of the mezzanine, and a timber beam at the front. There are bolts fixing the mezzanine floor to the masonry walls on three sides;
- The tower floor and roof were not inspected. However, these have been assumed to be constructed of timber joists spanning wall to wall with little or no (horizontal) fixings;
- The church roof is clad with slate;
- The slate is supported on battens, which are fixed to 4”x2” rafters, which are fixed to 6”x3” underpurlins, which are supported by triangular timber trusses at about 3.2m centres. Where visible, the timber roof structure appears to be in reasonable condition. Some borer holes were observed in some of the accessible roof timbers

where sap wood had been used. The extent of damage is difficult to ascertain without destructive testing. However, on the surface the damage appears to be at the lower end of the scale;

- The timber roof trusses are most likely bolted onto a timber jack-post, which is pocketed and secured into the brickwork. Because of access difficulties, the form and condition of this connection could not be confirmed. A more detailed assessment of these connections is required and it to be the subject of further investigation;
- No signs of rot were observed in the roof structure. However, because of access difficulties the connections between the trusses and the walls were unable to be viewed. These should be checked in more detail at some stage as part of any future maintenance work or upgrade;
- There is a fibrous plaster ceiling throughout the building;
- The ground is most likely to consist of Class C sub-soils as defined in NZS 1170.5 (assessed from a visual inspection of the topography and the Earthquake Hazard Maps in the DCC Earthquake-prone Buildings Policy Document. A specific geotechnical assessment has not been carried out);
- The building has been assessed assuming importance level IL2 as defined in NZS 1170.0;

The inertia forces, generated within the building structure during earthquake shaking, will generally be resisted by the URM walls only. The existing roof structure is <u>not</u> capable of providing an effective diaphragm to transfer the inertia forces from the face loaded walls into the side walls. However, the roof structure will provide a significant amount of damping to the top of the face loaded walls, which will improve their response in an earthquake.

5.2 MATERIAL PROPERTIES

The following material properties where used for the DSA of the building. These were assessed using the *NZSEE Section 10 Revision* document.

Table 1: Material Properties

Material	Description	Average Compressive Strength ❖ (MPa)	Masonry Compressive Strength f'_m (MPa)	Cohesion c (MPa)	Coefficient of friction μ	Density ρ (kN/m^3)
Mortar	Soft (ave)	2.0	10.6	0.3	0.3	18
Bricks	Medium	26.0				

❖ Note that the material properties have not been obtained from site specific tests. Rather they are the lower bound strength properties that would be expected for this type of construction.

5.3 ROOF TO WALL CONNECTIONS

Because of access difficulties we could not view the connections between the timber roof trusses and the top of the masonry side walls to the nave. However, given the way the building has been constructed each truss is likely to be bolted to a timber jack-post, which is pocketed and bolted into the brickwork. This is an area where timber decay can occur (the result moisture and dampness in the masonry). The construction and condition of these connections is to be checked in more thoroughly as part of any minimum maintenance work required to be done.

The top of the 3 gable walls are connected into the roof structure at 3 points: one connection at the apex and one half way down on each side of the gable (refer to the drawings in Appendix A). These connections consist of a 20 dia threaded rod welded to a 60x6 steel strap, which is bolted to timber underpurlin with 2 ½" bolts. The capacity of each connection is about 16kN (limited by the ½" bolts).

5.4 Minimum Level of Improvement/Maintenance

For this analysis, a minimum level of building maintenance has been assumed. It has been assumed that the brick walls will remain intact during earthquake shaking. As mentioned above, there are significant areas of the wall (particularly at higher levels) where there is no longer any pointing protecting the mortar. In some of these areas the lime/sand mortar has leeched away or become very soft as a result of the moisture exposure, which has left the brick in these areas with little support.

So, to ensure the building will behave as assumed in the analysis, all deteriorating mortar joints are to be repaired. This can be done by raking out the very soft mortar with a finger (or some other soft tool) and tooling in new lime sand mortar. All of the affected mortar joints are then required to be repointed with a cement based mortar.

Also, the inspection and repair (if necessary) of the roof truss connections at the top of the walls is to be carried out as part of this minimum level of maintenance. See Section 5.3 above.

Important: Our analysis is only valid if this work is done.

6 DSA Assessment

6.1 General Description

An unreinforced masonry building of this configuration, in this location, is unlikely to completely collapse in a design level earthquake. Rather, there are likely to be 'smaller' local failures, such as severely cracked walls, the partial collapse of one of the side walls or perhaps the collapse (outward) of the top half of the gable end wall. So, unlike a modern building, which generally is designed to respond and behave as a 'unit', an URM building of this nature responds more as a group of individual parts. Therefore, for this assessment we have concentrated on each of the individual 'critical' elements to determine the overall seismic capacity of the building.

6.2 Analysis Method

The displacement based design approach, set out in the NZSEE AISPBE (June 2006) Guidelines including Corrigendum No.4, was used for the assessment of this building.

6.3 Design Actions

Earthquake actions were calculated using the following parameters.

Table 2: Design Earthquake Parameters

Item	Assumption	Reference
Building importance level:	IL2	NZS 1170.0
100%NBS design level earthquake:	500 year return period	NZS 1170.0
Soil type:	C	NZS 1170.5
Zone factor Z:	0.13	NZS 1170.5
Near fault factor N(T,D):	1.0	NZS 1170.5
Return period factor R:	1.0	NZS 1170.5
Out-of-plane wall response damping	5% 15%	NZSEE Guidelines When connected to roof
In-plane-wall rocking response damping	5%	NZSEE Guidelines
In-plane-wall shear response damping	5%	NZSEE Guidelines

The in-plane wall capacities were limited to $0.003(h_{eff}/L_w)$% lateral drift for a rocking response and limited to the yield displacement for a shear response, as outline in the *NZSEE Section 10 Revision* document.

Each element of the structure was assessed by checking the capacity of a number of different plausible mechanisms (or modes of failure). The critical mechanism is the one with the lowest %NBS score. Refer to section 6.4 below for a list of the analysis results.

The out-of-plane capacities of the gable end walls were assessed assuming that the connections into the roof do not provide any structural support to the walls, but that they do provide additional damping (15% assumed) and that they link (or couple) the walls on both sides of the building together.

6.4 RESULTS OF THE DSA

The analysis results for the different elements within the building are summarised in Table 4 below:

Table 3: DSA Results Summary

Item	Building Element	%NBS	Notes to Improve Strength
1.	Tower: Parapets (Out-of-plane response)	35%NBS	Brace the parapets back to the tower roof. Note 1.
2.	Tower: Pinnacles (Rocking response)	40%NBS	Brace the pinnacle back to the roof structure to prevent them rocking. Note 1.
3.	Tower: Sidewalls between the buttresses (out-of-plane response)	35%NBS	Tie the brick walls into the existing belfry floor and roof with orthogonal tie rods and bearing plates. Note 1.
4.	Tower: walls both sides of the arched opening into the tower access stairwell, and the NE gable wall (grid F), at the tower junction. (Diagonal tension cracking)	35%NBS	Strengthen the walls to increase their rocking and shear capacity. This is the most challenging area of this building to improve and more time and analysis is required to design a solution. Note 1.
5.	Tower: Upper level belfry piers (in plane rocking response)	100%NBS	Note 1.
6.	Tower: Lower level piers (in plane rocking and shear response)	100%NBS	Note 1.
7.	Tower: (in-plane rocking as a unit)	100%NBS	Note 1.
8.	NE Gable end wall incorporating the Tower (in-plane capacity)	100%NBS	Note 1.
9.	NE Gable end wall incorporating the Tower (out-of-plane capacity)	35%NBS	The out of plane capacity is influenced by the response of the tower in this direction. See item 4.

Item	Building Element	%NBS	Notes to Improve Strength
10.	Buttressed nave side walls on gridlines 1 & 2 at gridline E (out-of-plane rocking about the top of the lower buttress).	60%NBS	The cost of improving this mechanism to 67%NBS would most likely out-weigh the benefits. This is probably not worth strengthening. Note 1.
11.	Buttressed nave side walls on gridlines 1 & 2 at gridline E (in-plane rocking capacity of the piers).	60%NBS	Note 1.
12.	Transept side walls, orthogonal to the nave, on gridlines B & D (in-plane rocking response)	35%NBS	A more detailed investigation of the existing material properties in each wall may show that the walls are more resilient than assumed. If not, then strengthen the walls to increase their rocking capacity. The design is to be confirmed. Note 1.
13.	Transept Gable walls on gridlines 1 & 5 (out-of-plane capacity of gable above ceiling level)	40%NBS	Tie the top of the gables more securely into the existing roof structure and install strap bracing within the roof space to transfer the earthquake forces more effectively to the side walls. Note 1.
14.	Transept Gable walls on gridlines 1 & 5 (in-plane rocking response)	80%NBS	Note 1
15.	Mezzanine floor. Response governed by the NE gable end wall (item 4) and the nave side walls (item 10).	35%NBS	Refer to item 4 & 10. Note 1.

1. Repair very soft mortar joints and re-point affected areas of the exterior brickwork. Refer to section 5.4.

The overall capacity of the building is 35%NBS (the lowest score noted in Table 3), which corresponds to the lower end of a Grade C building (as defined in Section 7 below). This means that the existing building is <u>not</u> *earthquake prone* and no other work (apart from the repair/repointing of the mortar and confirming the condition of the roof truss connections) is required to meet the requirements of the NZ Building Act 2004 and the DCC Earthquake prone Building Policy. However, the 35%NBS is still considered *earthquake risk* and it may be desirable to improve the building's seismic resistance as funding becomes available.

6.5 IMPROVEMENT OPTIONS FOR BUILDING

The NZSEE recommend that if a building is to be strengthened then a level of at least 67%NBS should be targeted. Table 3 above lists the improvements that can be implemented to achieve a greater level of earthquake resilience.

7 SEISMIC GRADES AND RELATIVE RISK

Table 5, taken from the NZSEE Guidelines, provides the basis of a proposed grading system for existing buildings, as one way of interpreting the %NBS building score. It can be seen that occupants in Earthquake Prone buildings (less than 34%NBS) are exposed to more than 10 times the risk that they would be in a similar new building. For buildings that are potentially Earthquake Risk (less than 67%NBS), but not Earthquake Prone, the risk is at least 5 times greater than that of an equivalent new building. Broad descriptions of the life-safety risk can be assigned to the building grades as shown in Table 5.

Table 4: Relative Earthquake Risk

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

The New Zealand Society for Earthquake Engineering (which provides authoritative advice to the legislation makers, and should be considered to represent the consensus view of New Zealand structural engineers) classifies a buildings achieving greater than 67%NBS as “Low Risk”, and having “Acceptable (improvement may be desirable)” building structural performance.

8 SEISMIC RESTRAINT OF NON-STRUCTURAL ITEMS

During an earthquake, the safety of people can be put at risk due to non-structural items falling on them. Any non-structural items within the building should be adequately seismically restrained, where possible, to NZS 4219:2009 “The Seismic Performance of Engineering Systems in Buildings”

Also, in this case, falling roof slates pose a risk to people exiting the building through the egress doors located at both ends of the transept, during and after an earthquake. Shaking could detach some slates, which will then slide down the roof and on to the ground below.

There are 2 options to mitigate this risk:

1. Replace the slate roof with a new corrugated steel roof; or
2. Construct verandas over the transept egress doors (to protect people from falling slates as they exit the building) and plant gardens along the side of the building to prevent people from standing in the fall zone.

Note that people exiting from the main entrance at the NE end of the building are not at risk from falling slates because the gable walls to the church and the entry foyer will prevent slates from falling in this area.

9 CONCLUSION

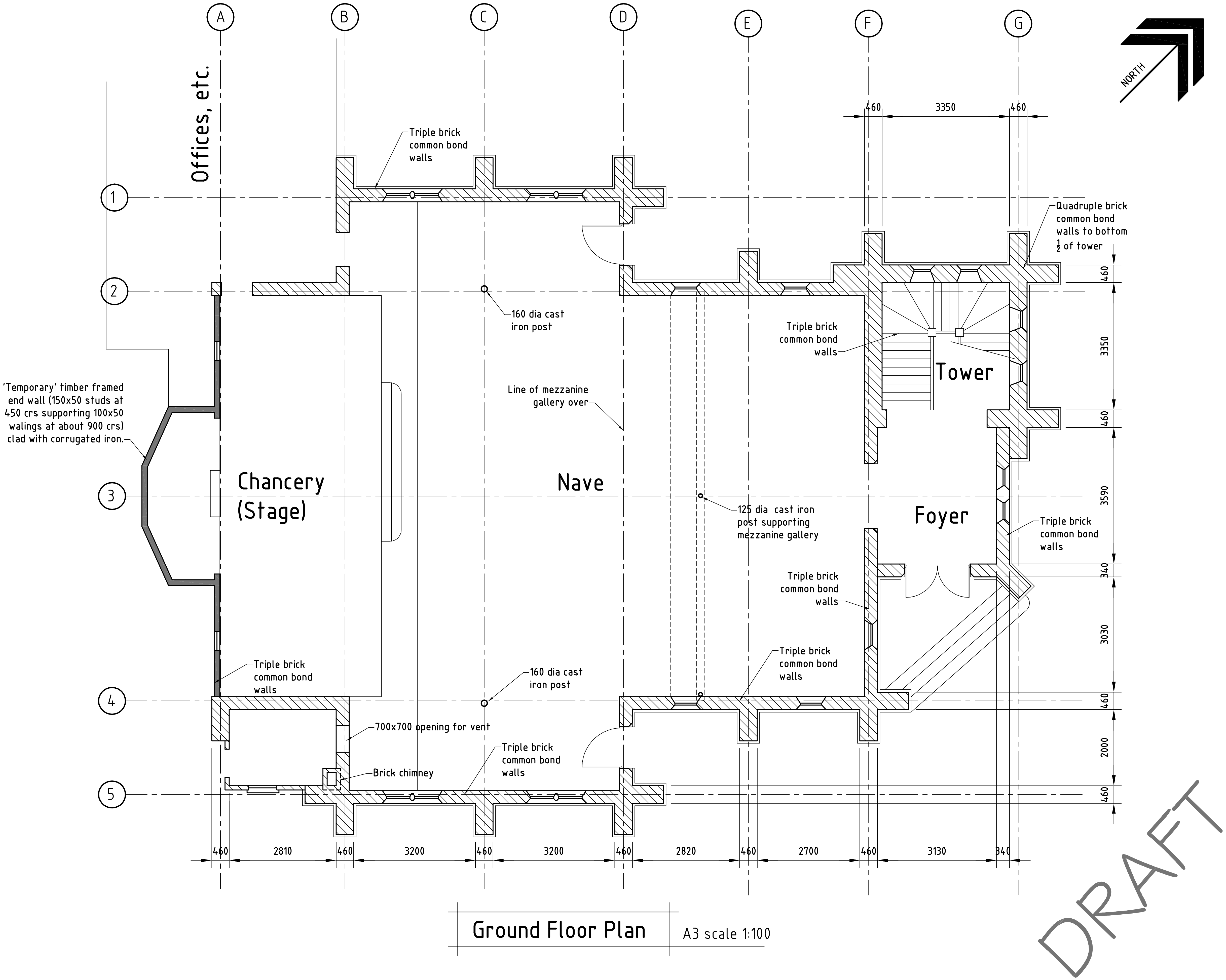
This Detailed Seismic assessment for the Kaikorai Presbyterian Church building indicates an overall score of **35%NBS** which corresponds to a Grade C building, as defined by the NZSEE building grading scheme. This is above the threshold for Earthquake Prone Buildings (33%NBS) and, therefore, the building meets the requirements of the New Zealand earthquake prone building legislation and no other work is required.

This analysis is only valid if a minimum level of building maintenance is undertaken. This includes the repair and repointing of deteriorated mortar joints and a more detailed inspection of the (difficult to access) timber roof truss connections, where they fix into the top of the unreinforced masonry walls (these will have to be repaired if there has been any significant decay of the timbers that are pocketed into the brickwork). **Important**: This analysis is only valid if this work is done.

The building has been assessed to be at the lower end of seismic Grade C, which although it is not earthquake-prone, it is classified as an *earthquake risk* (i.e. has an assessed capacity less than 67%NBS). It is recommended that the modifications, summarised in Section 6.4 of this report, are implemented as funding becomes available, to improve the capacity of the whole building to a level closer to 67%NBS.

People exiting the building during an earthquake are at risk of being hit by falling roof slates. This risk can be mitigated by either: replacing the roof slates with a new corrugated steel roof; or by constructing 'protection' verandas over the egress doors located at both ends of the transept and constructing barriers (garden plots perhaps) to keep people clear of the roof slate fall zone.

Appendix A – Existing Building Plans and Sections



Ground Floor Plan

A3 scale 1:100

STEVENSON BROWN LTD
Structural and Fire Engineers
373 Rattray Street,
PO Box 5004, Dunedin.
Phone 021 481 195.
Email peter@ structures.co.nz

All dimensions to be checked on site
Do not scale off these drawings
Any discrepancies between drawings to be notified to the consultants

No.	Revision	Date
A.	Mearsure-up	25/08/15

STRUCTURAL
Drawing

Contract Title :
Kaikorai Presbyterian Church

Cnr Nairn St & Taieri Road, Dunedin

Designed : PLS
Checked :
Drawn : PLS
Date : August 2015
Scale : As Shown
CAD file :
Sheet Title :
Existing Plan

Contract No : 14083
Sheet : S1
Revision A
Date Issued :

SE Elevation A3 scale 1:100

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No.	Revision	Date
A.	Mearsure-up	25/08/15

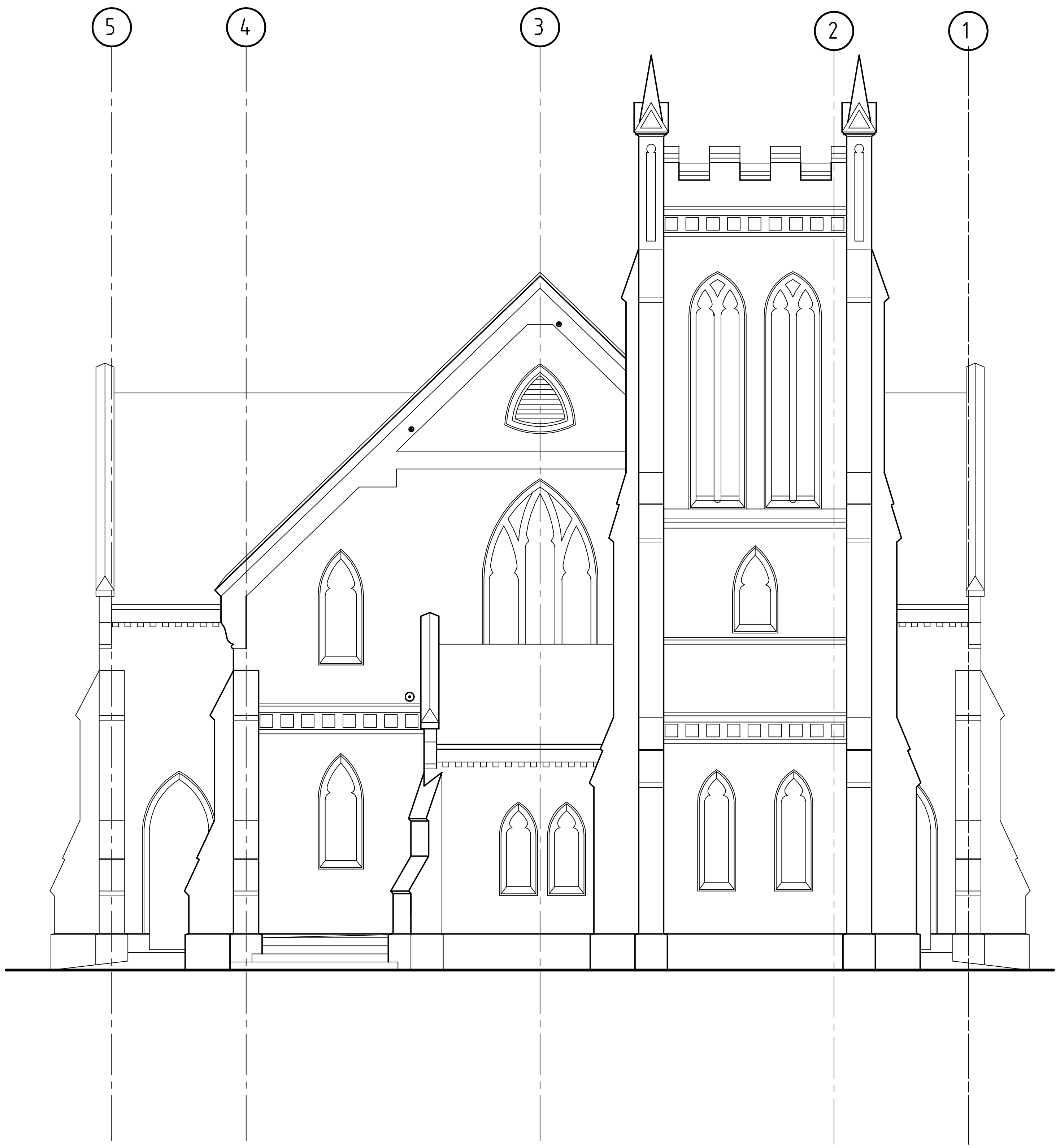
STRUCTURAL
Drawing

Contract Title :
Kaikorai Presbyterian Church
Cnr Nairn St & Taieri Road, Dunedin

Designed : PLS
Checked :
Drawn : PLS
Date : August 2015
Scale : As Shown
CAD file :

Sheet Title :
Existing South East Elevation

Contract No : 14083
Sheet : S2
Revision A
Date Issued :



NE Elevation

A3 scale 1:100

DRAFT

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All dimensions to be checked on site

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No.	Revision	Date
A.	Mearsure-up	25/08/15

STRUCTURAL
Drawing

Contract Title :

Kaikorai Presbyterian Church

Cnr Nairn St & Taieri Road, Dunedin

Designed : PLS
Checked :
Drawn : PLS
Date : August 2015
Scale : As Shown
CAD file :

Sheet Title :

Existing North East Elevation

Contract No : 14083

Sheet : S3

Revision A

Date Issued :

NW Elevation

A3 scale 1:100

DRAFT

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All dimensions to be checked on site

Do not scale off these drawings

Any discrepancies between drawings to be notified to the consultants

No.	Revision	Date
A.	Mearsure-up	25/08/15

STRUCTURAL
Drawing

Contract Title :

Kaikorai Presbyterian Church

Cnr Nairn St & Taieri Road, Dunedin

Designed : PLS
Checked :
Drawn : PLS
Date : August 2015
Scale : As Shown
CAD file :

Sheet Title :

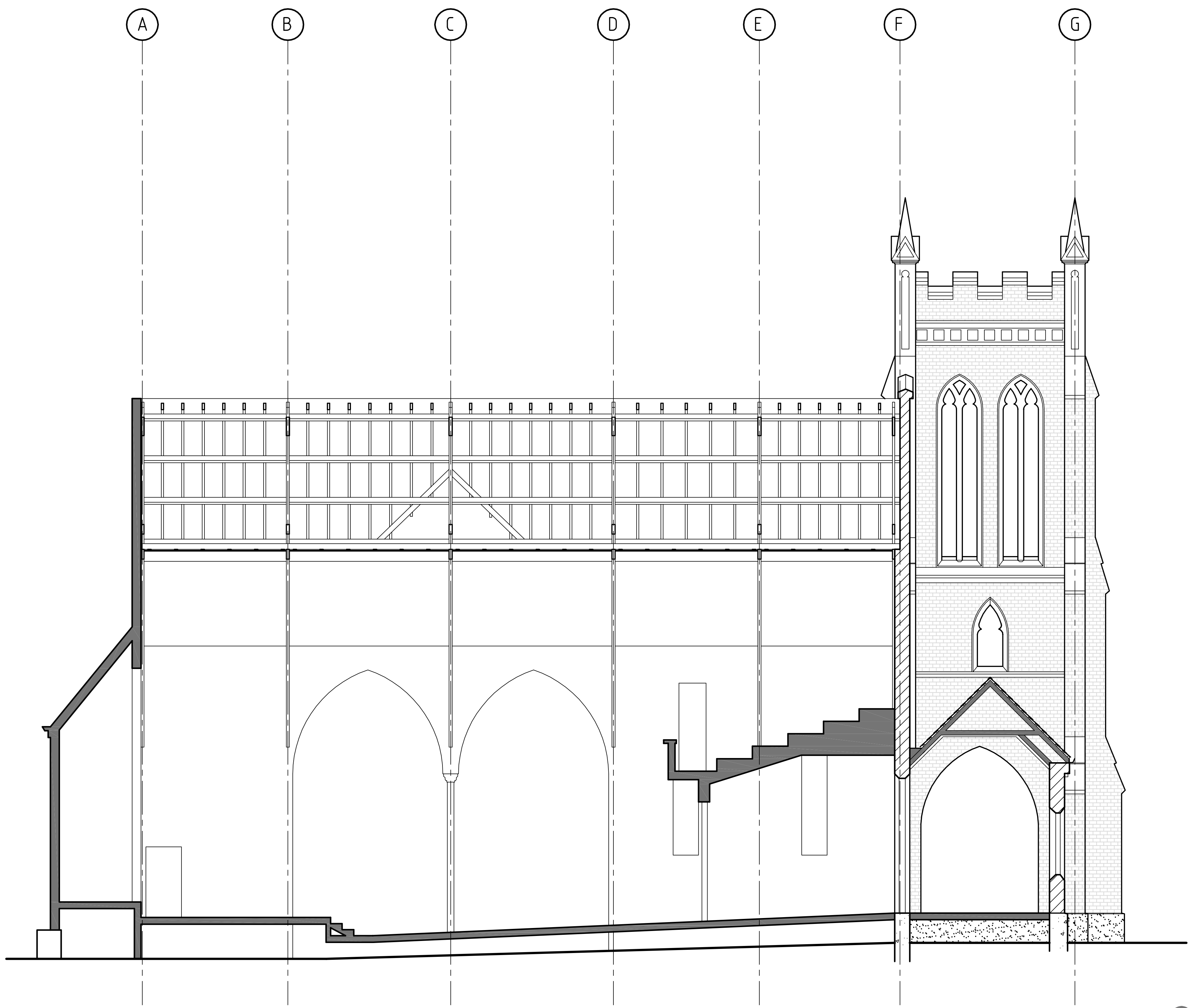
Existing North West Elevation

Contract No : 14083

Sheet : S4

Revision A

Date Issued :



Section A-A

A3 scale 1:100

DRAFT

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No.	Revision	Date
A.	Mearsure-up	25/08/15

STRUCTURAL
Drawing

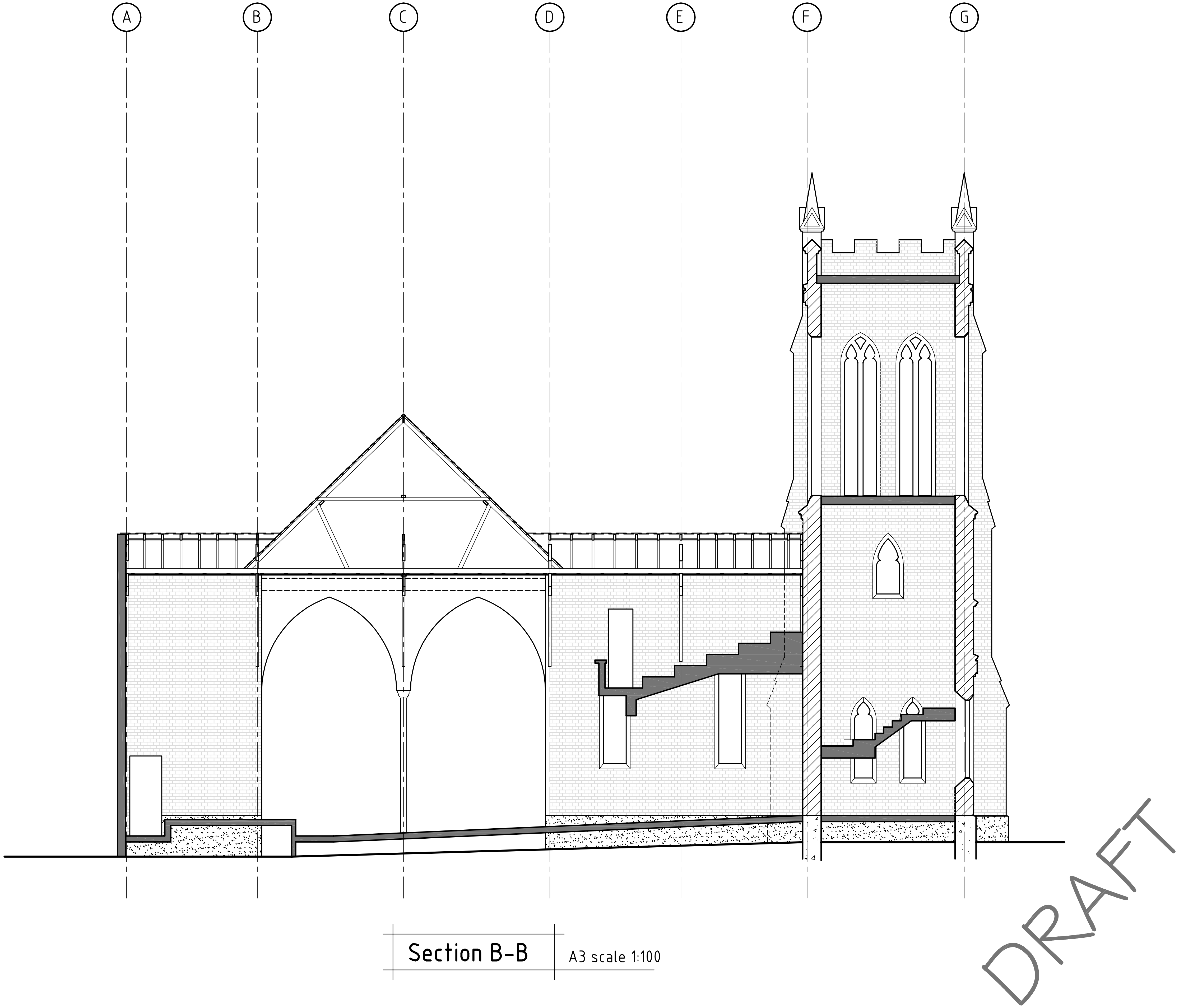
Contract Title :
Kaikorai Presbyterian Church
Cnr Nairn St & Taieri Road, Dunedin

Designed : PLS
Checked :
Drawn : PLS
Date : August 2015
Scale : As Shown
CAD file :

Sheet Title :
Section A-A

Contract No : 14083
Sheet : S5
Revision A

Date Issued :



Section B-B

A3 scale 1:100

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Structural and Fire Engineers
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Phone 021 481 195.
Email peter@ structures.co.nz

All dimensions to be checked on site

Do not scale off these drawings

Any discrepancies between drawings to be notified to the consultants

No.	Revision	Date
A.	Mearsure-up	25/08/15

STRUCTURAL
Drawing

Contract Title :

Kaikorai Presbyterian Church

Cnr Nairn St & Taieri Road, Dunedin

Designed : PLS
Checked :
Drawn : PLS
Date : August 2015
Scale : As Shown
CAD file :

Sheet Title :

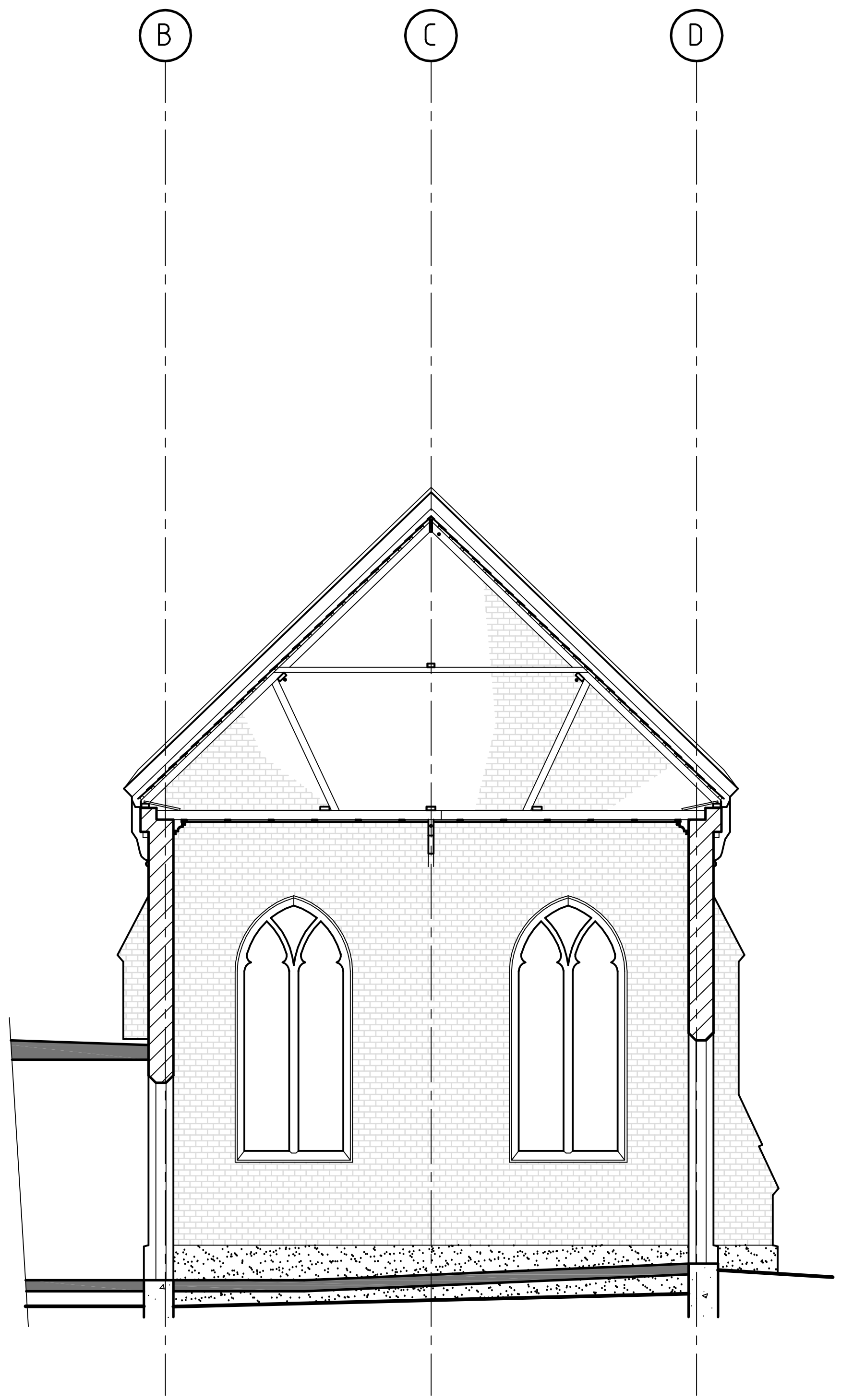
Section B-B

Contract No : 14083

Sheet : S6

Revision A

Date Issued :



Section C-C
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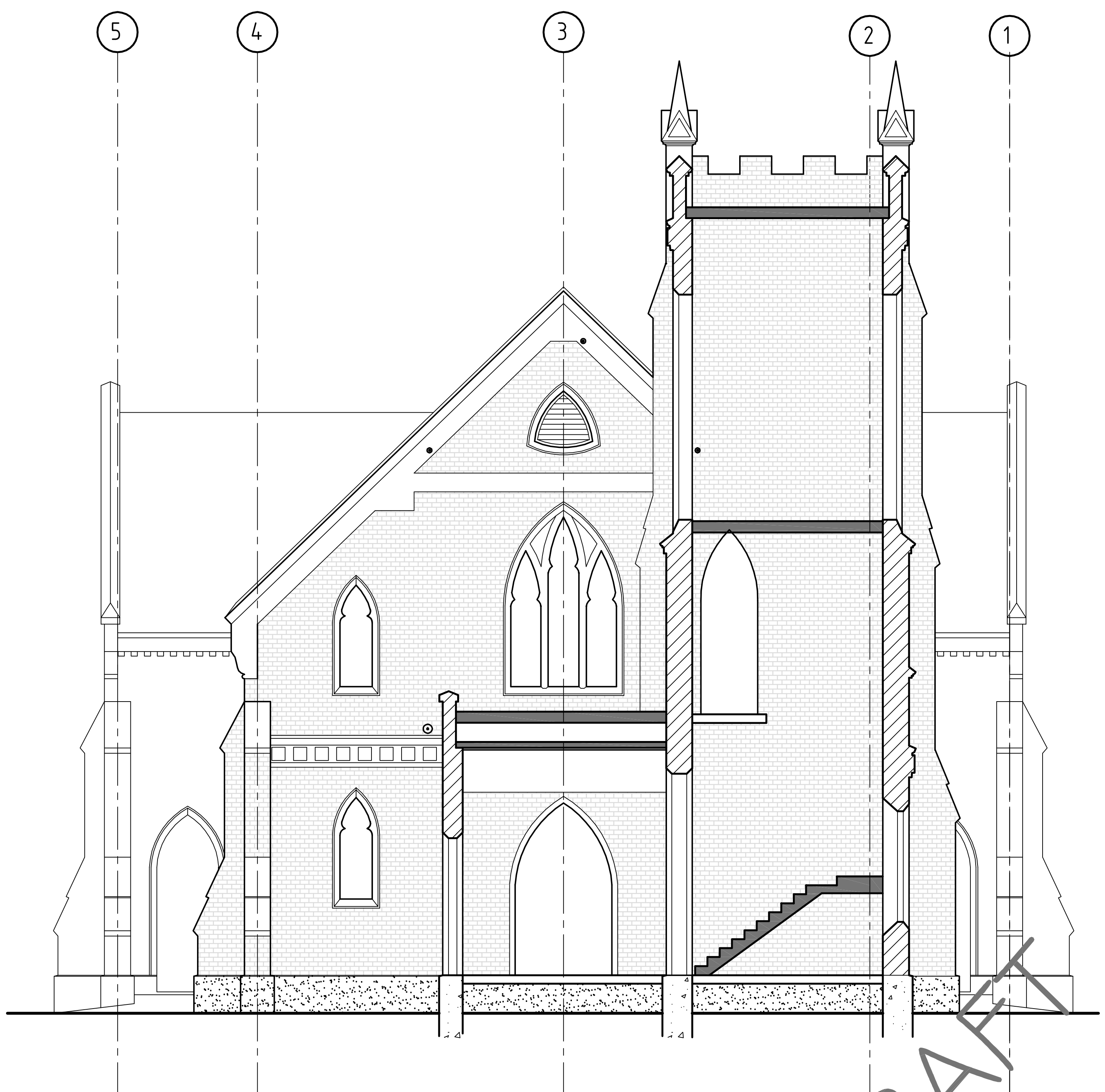

Section D-D
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No.	Revision	Date
A.	Mearsure-up	25/08/15

STRUCTURAL
Drawing

Contract Title :
Kaikorai Presbyterian Church
Cnr Nairn St & Taieri Road, Dunedin

Designed : PLS
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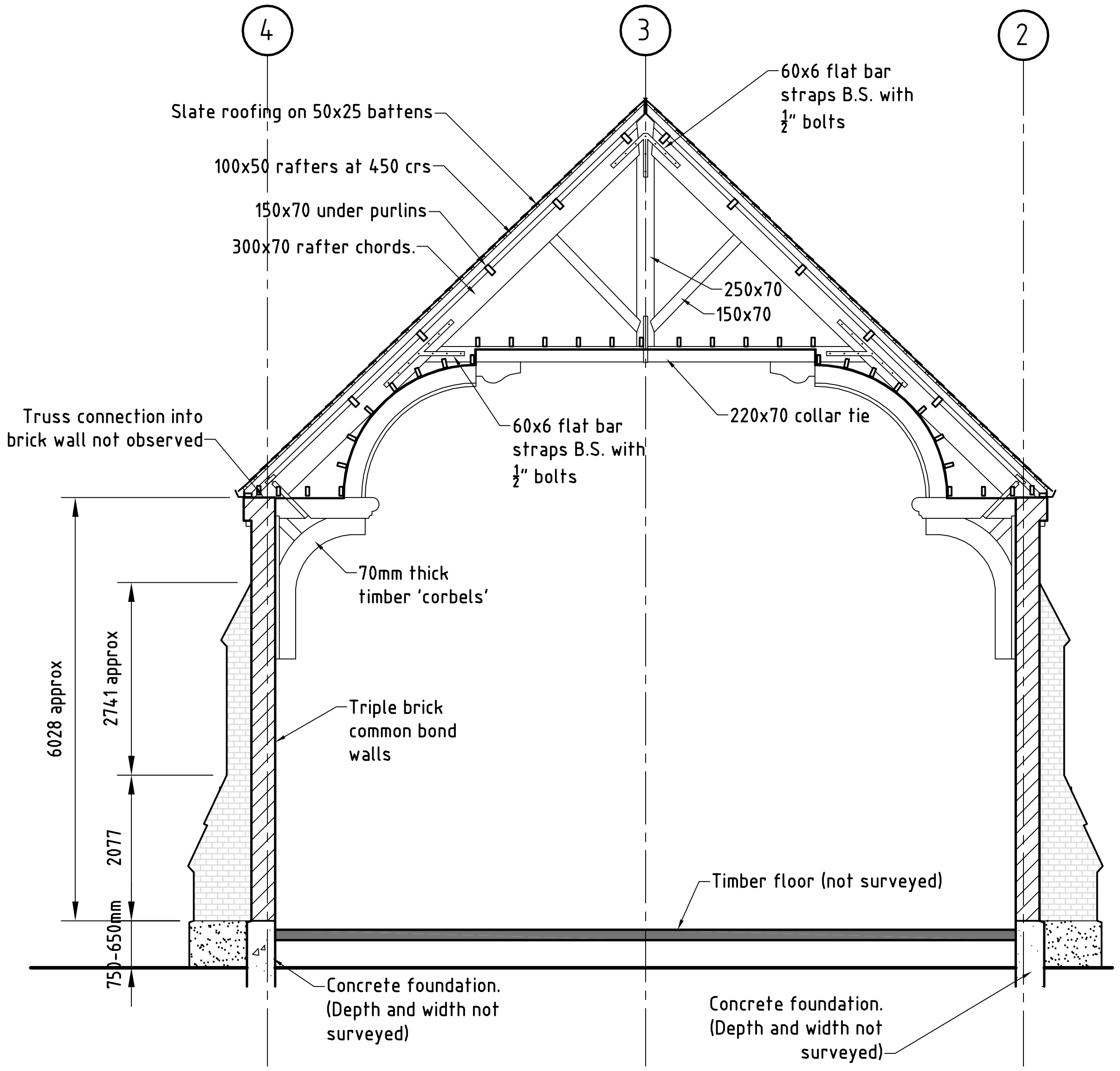
Drawn : PLS
Date : August 2015
Scale : As Shown
CAD file :
Sheet Title :
Section C-C & Section D-D

Contract No : 14083
Sheet : S7
Revision A
Date Issued :



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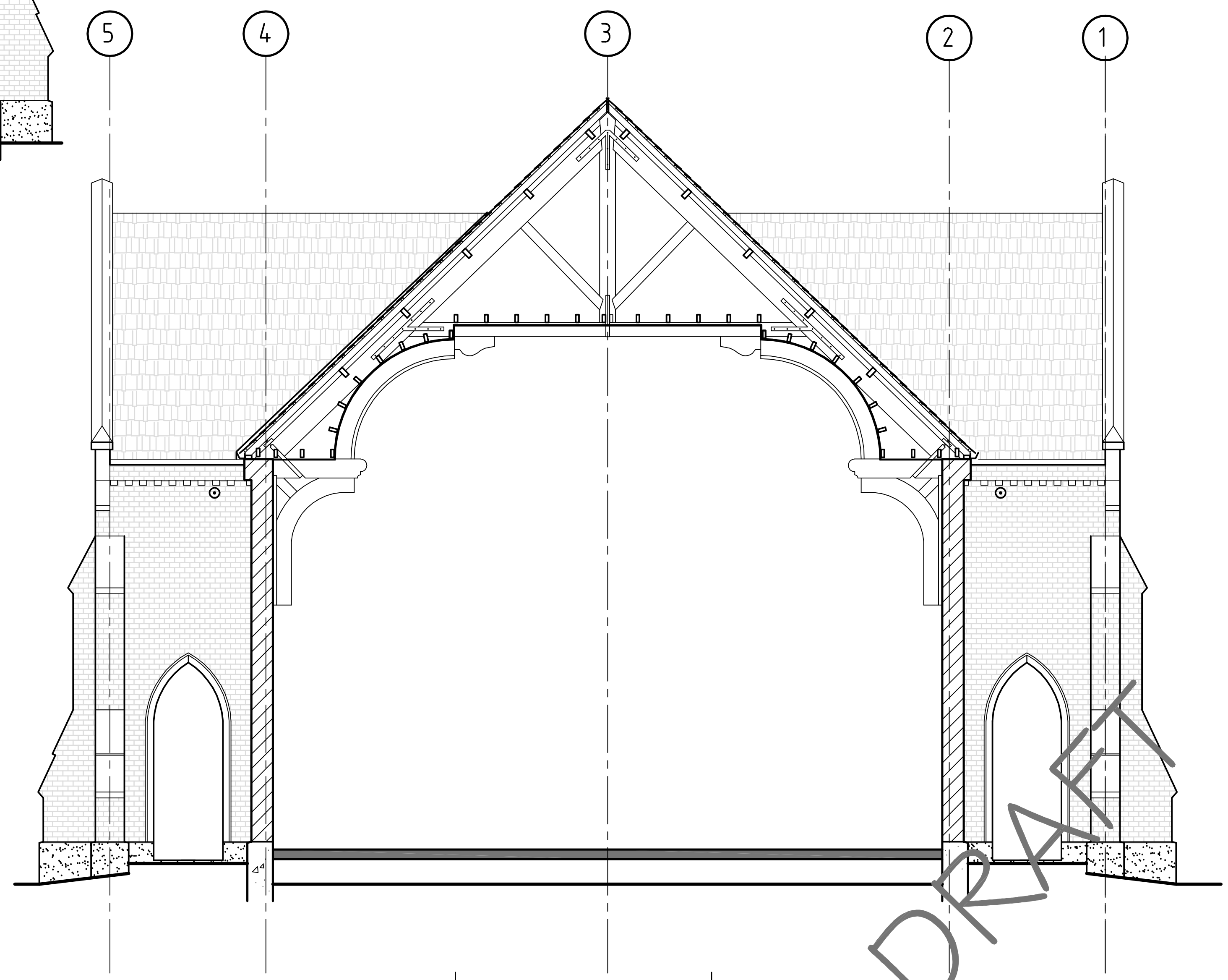

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No.	Revision	Date
A.	Mearsure-up	25/08/15

STRUCTURAL
Drawing

Contract Title :
Kaikorai Presbyterian Church

Cnr Nairn St & Taieri Road, Dunedin

Designed : PLS
Checked :
Drawn : PLS
Date : August 2015
Scale : As Shown
CAD file :

Sheet Title :
Section E-E & Section F-F

Contract No : 14083
Sheet : S8
Revision A
Date Issued :

Appendix B – Photographs of Existing Building

View for Taieri Rd

Top of Side walls

Transept egress door

Transept gable end wall

Bell Tower.

Timber framed gable end wall at SW end of Church

View down NW side of Church

Mezzanine floor Gallery

Roof structure detail below ceiling

Roof Truss Apex Connection.

Roof Truss collar tie to rafter connection

Roof structure at transept gable end.

Roof structure at timber gable end wall.

Typ. Underpurlin connection to gable end wall Detail.

Truss connection to top of brick walls.