

PURCELL

ST PETER & ST PAUL'S CHURCH
BIRCH, COLCHESTER
CONVERSION TO A RESIDENTIAL DWELLING
DESIGN NOTEBOOK
FOR MR & MRS G COTTEE
AUGUST 2016



ALICIA RIDOUT

St Marys Hall, Rawstorn Road, Colchester, Essex, CO3 3JH

alicia.ridout@purcelluk.com

+44 (0)1206 244844

www.purcelluk.com

All rights in this work are reserved. No part of this work may be reproduced, stored or transmitted in any form or by any means (including without limitation by photocopying or placing on a website) without the prior permission in writing of Purcell except in accordance with the provisions of the Copyright, Designs and Patents Act 1988. Applications for permission to reproduce any part of this work should be addressed to Purcell at info@purcelluk.com.

Undertaking any unauthorised act in relation to this work may result in a civil claim for damages and/or criminal prosecution. Any materials used in this work which are subject to third party copyright have been reproduced under licence from the copyright owner except in the case of works of unknown authorship as defined by the Copyright, Designs and Patents Act 1988. Any person wishing to assert rights in relation to works which have been reproduced as works of unknown authorship should contact Purcell at info@purcelluk.com.

Purcell asserts its moral rights to be identified as the author of this work under the Copyright, Designs and Patents Act 1988.

Purcell® is the trading name of Purcell Miller Tritton LLP.

© Purcell 2015

ST PETER & ST PAUL'S CHURCH, BIRCH, COLCHESTER

CONTENTS

1.0 INTRODUCTION

2.0 DESIGN & CONSTRUCTION PROPOSALS

2.1	GROUND FLOOR	6
2.2	STRUCTURAL FRAMING	6
2.3	ROOF, GUTTERS AND ROOF LIGHTS	7
2.4	INTERMEDIATE FLOORS	8
2.5	EXTERNAL WALLS	8
2.6	EXISTING WINDOWS	8
2.7	NEW GLAZING	8
2.8	DRAINAGE AND UTILITIES	9

3.0	CONCLUSION	10
-----	------------	----

	APPENDIX	11
--	----------	----

I.0 INTRODUCTION

This document has been prepared to support the proposal to convert the Grade II listed church of St Peter & St Paul in Birch, near Colchester, into a residential property. The conversion of the church will also save it from demolition, which the Diocese of Chelmsford are seeking to do under the Care of Churches and Ecclesiastical Jurisdiction Measure 1991. Since its closure in 1990, the building has fallen into a severe state of disrepair.

Mr and Mrs G Cottee have become involved with the building through The Colchester & North East Essex Building Conservation Trust and have a clear passion to save the building and convert it to a new use.

The church, and particularly the spire are considered by the vast majority of the local community to be an integral part of the Birch landscape – a key feature providing Birch with its own identity, separate and distinct from Colchester. It is therefore considered by many as a valuable asset that should be retained.

This design notebook, accompanied by Purcell design drawings, presents a viable alternative to demolition – converting the church to a family home – and identifies the design intent and quality of materials for the scheme.

It outlines the proposed modifications required to convert the church, and presents concepts, materials and techniques that will be adopted in the conversion.

This document is to be read in conjunction with Purcell drawings 237464-100 & 200.



2.0 DESIGN & CONSTRUCTION PROPOSALS

St Peter & St Paul's Church has become severely dilapidated since its closure in 1990. Before any work can commence on the conversion, remedial repair works will be undertaken to the fabric to ensure its stability, protection from the weather and longevity.

The design proposal for the conversion into a family home includes the retention of the tower, nave, chancel and north aisle. The south porch and the south aisle will be taken down to the low level string course and plinth, which will be retained to enclose an external terraced area and maintain the legibility of the south aisle and porch. The west end of the south aisle will be enclosed with two new external walls to create a boiler room, which will house a biomass boiler. This enclosure will be tucked behind the west wall of the south aisle, which will be retained to its full height.

A new glazed wall will be installed just within the colonnade which currently separates the nave and south aisle to the easterly four bays. This will become the new external wall, while the most westerly bay will have solid infill.

Internally, a new intermediate floor level will be introduced to much of the nave and the north aisle, which will provide a first floor for sleeping accommodation, bathroom facilities and a library. The nave will be subdivided at the ground floor, becoming a vaulted sitting room with galleried walkway and mezzanine library occupying the volume at first floor. An entrance lobby, small office, games room and WC will be provided in the west end of the nave, beneath the inserted first floor.

The chancel will become a large kitchen area, while the north aisle will be subdivided to create a dining room, games room and snug. The base of the spire will become a cinema room, and two new staircases will provide access to the first floor.

First floor accommodation will provide four bedrooms - three of which will have en-suite bathroom facilities - and a separate bathroom. The bedrooms will be left open to the vaulted roofs of the nave and north aisle. The bathrooms will be enclosed with ceilings; these will become gallery areas accessed from the bedrooms, utilising additional space to make optimal use of the existing volumes within the church.

A further staircase will lead from the first floor into the tower, where another bedroom and bathroom may be provided at second and third floor levels.

The repairs required to stabilise the retained fabric, will be approached in a scholarly manner - utilising materials salvaged from the dismantled south aisle, and traditional repair methods and materials. These repairs will be implemented in line with SPAB philosophy and 'best practice' conservation methodology.

The design intent for the conversion is to be honest about the materials and techniques used, which should be contemporary, enabling methods of intervention to be clearly identified and their purpose understood. Interventions will be minimal, in line with best practice conservation philosophy, and reversible wherever possible so that insertions into the listed fabric may be removed in future scenarios if necessary.

There is also a desire to ensure that the new use of the building is efficient. Insulation to floor, walls and roof will improve its thermal performance, while a biomass boiler will provide hot water and heating. Environmentally responsibly sourced materials will also be used in many situations, ensuring that the embodied energy of the building conversion is minimal.

2.1 GROUND FLOOR

The current ground floor structure to the nave and north aisle is not deemed to be sufficient for the loadings that will be imposed by the proposed interventions. The proposal is therefore to stabilise the existing vertical structure and break out the existing ground floor structure in these areas. Excavations will be undertaken to allow for the installation of a new reinforced concrete floor slab, which will be designed to accommodate the loadings of the new intermediate floor.

A damp proof membrane and generous amount of insulation will be provided in the new floor build-up, to provide thermal and moisture barriers. An underfloor heating system, powered by the biomass boiler, will be laid in a sand:cement screed. The floor finish will be variously - stone, engineered timber, and carpet.

There will be no new floor structure inserted into the chancel; and the existing tiled floor to that area will be retained.



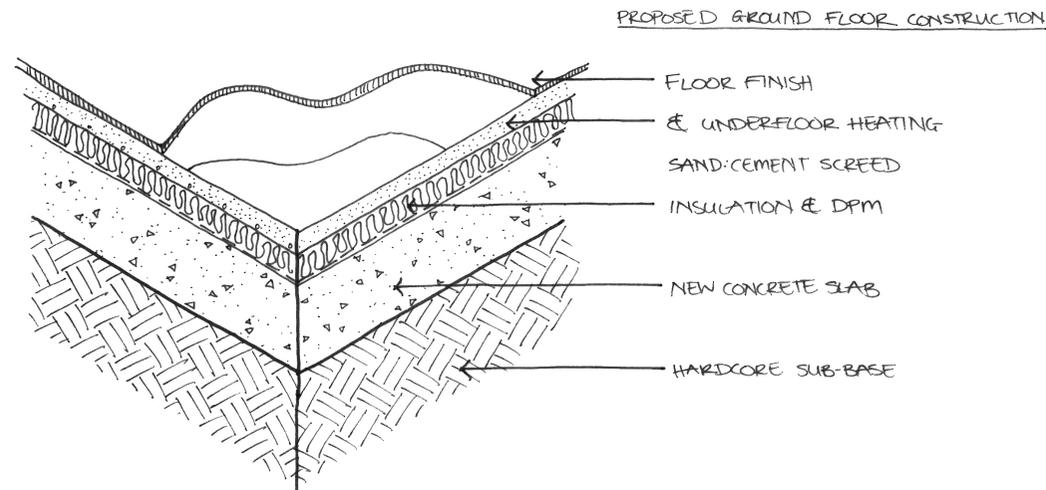
Underfloor heating being installed at St Mary's Church Loughton.



The completed project at St Mary's Church Loughton.

2.2 STRUCTURAL FRAMING

Wherever possible, framing for the insertions of walls and floors will be undertaken in simple timber sections. Where greater support is required – i.e. columns and beams to support the cantilevered first floor structure – circular hollow section columns and rectangular hollow section beams will be utilised and left exposed, finished with intumescent paint to provide fire protection.



2.3 ROOFS, GUTTERS AND ROOF LIGHTS

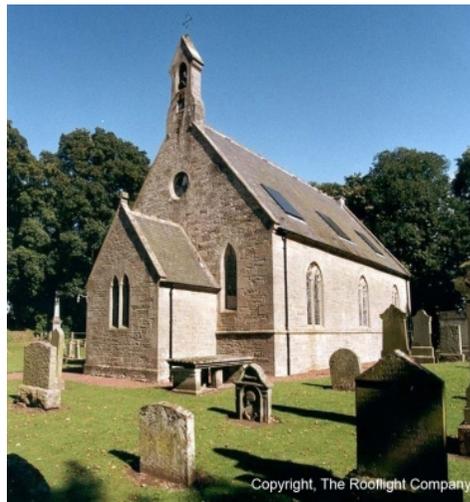
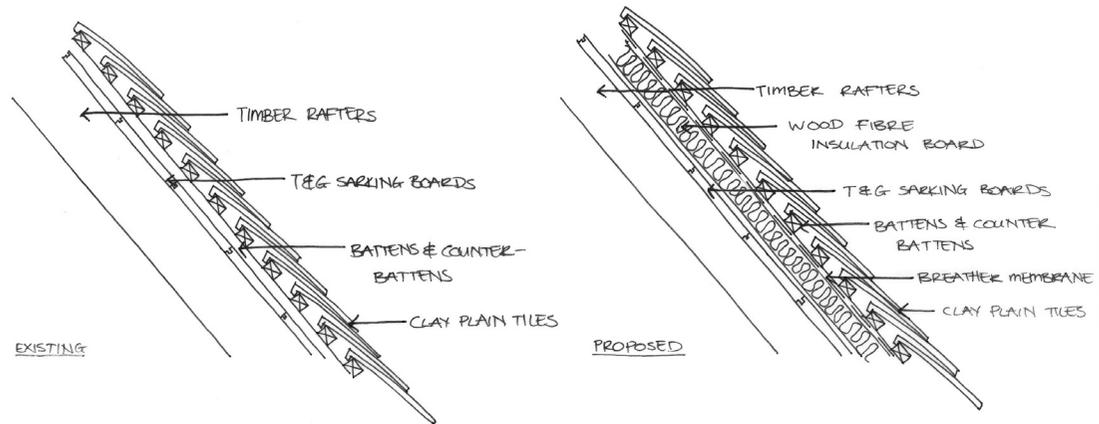
The roof is currently a traditional construction of clay plain tiles on battens and counter battens, with sarking boards fixed to the rafters. There are six timber trusses in the nave, and four in the north aisle, which bear onto columns and brackets in the north wall. Some of these have deteriorated or are damaged.

Where possible, material salvaged from the demolition of the south aisle will be utilised to repair the retained rafters and trusses. Where there is insufficient material, or strengthening of existing fabric is required, steel flitch plates will be used in the timber, so that repairs and strengthening can be clearly interpreted as modern intervention.

The roof construction will be reinstated largely as it is now, however with insulation and a breathable membrane added. Existing sarking boards will be salvaged, painted and reinstated. Above this a 52mm thick Steico Universal wood fibre board will be installed. This is a sustainably sourced, ecological, recyclable and breathable wood fibre product, which features both high compressive strength and thermal insulation properties. Over this will be fixed battens and counter battens, a breathable membrane, and clay plain tiles salvaged from the existing roof will be reinstated.

The valley gutter between the nave and north aisle roofs will be reinstated using a single ply membrane, such as Sarnafil, on a stepped timber substrate, that will be designed to mimic the appearance of a lead valley gutter, adequate access will be provided for future maintenance.

A series of conservation roof lights will be installed in the north facing slope of the nave roof, to provide natural light to the galleried walkway at first floor level. Their location within the valley between the two roofs will prevent them from being visible ground level.



Conservation roof lights at Wiston Church, Lanarkshire (residential conversion) Copyright: The Rooflight Company

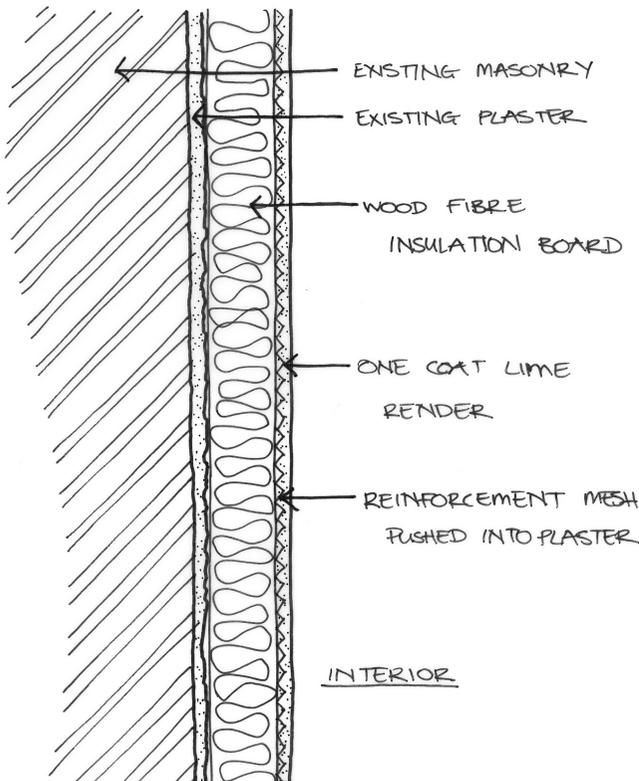


Conservation roof light detail Copyright: The Rooflight Company



Single Ply membrane valley gutter Copyright: Owlsworth Roofing

PROPOSED EXTERNAL WALL TREATMENT



2.4 INTERMEDIATE FLOOR

The new first floor extends throughout the north aisle, and through the two western-most bays of the nave. The floor structure will bear on the ground floor timber framed stud partitions, as well as being hung from the external masonry walls and a steel frame to support the cantilever over the living area.

Joists will be timber, with an acoustic isolation sheet beneath a tongue and grooved floor deck, and acoustic insulation will be provided between the joists. Beneath the joists the floor will be finished with plasterboard to provide fire resistance, with a plaster skim as the ceiling finish.

2.5 EXTERNAL WALLS

The flint facing to the retained external walls will be repaired as necessary. Reusing salvaged material from the south aisle.

Internally, the walls will be lined with a 60mm thick tongue and grooved Wood Fibre board. This board is a recyclable and breathable wood fibre product, which features high thermal insulation properties and is open to the movement of water vapour, and has been developed as a retrofit product to insulate solid masonry external walls.

Lime Green Solo one coat lime render will be applied over a mesh reinforcement directly onto the wood fibre boards. This render works with the boards to provide a breathable internal finish, ensuring not only a more thermally efficient building but that the movement of moisture is maintained, which will be particularly important in this instance as the building has been vacant for such a long period of time, and will require some time for the external walls to reach a sustained moisture level.

2.6 EXISTING WINDOWS

The existing windows will be retained and repaired, maintaining the stained glass leaded lights throughout.

The intermediate floor bisects the windows of the north aisle, where a secondary glazing detail has been devised to allow the floors to run past the windows without cutting into them. This also maintains separation between the ground and first floor rooms and will allow light from the windows to be enjoyed by both the ground and first floor rooms.

2.7 NEW GLAZING (SOUTH COLONNADE)

A curtain wall of glazing will be provided as the southern external wall of the eastern four bays of the nave. The glazing will be a steel framed system, Crittall W20 or similar, that will be aligned regularly within the spacing of the arches that currently separate the nave from the south aisle. The glazed wall will extend vertically past the head of the Gothic arches, where it will return to meet the interior face of the external wall to close the external envelope of the building.

By setting the glazing back, it becomes a more discreet intervention, and gives a reduced impact upon the historic fabric than if the glazing was set within each arch. The offset also provides an element of solar shading over the south-facing glazing, helping to reduce the potential for solar heat gain in the summer.

2.8 DRAINAGE AND UTILITIES

A biomass boiler will be installed to provide hot water and heating. This will be accommodated in a boiler house located within the footprint of the south aisle, in a purpose-built enclosure which is bounded to the west by the west wall of the south aisle (which will be retained up to eaves level), and to the south by the south wall of the south aisle (which will be retained to the width of the boiler house up to the first string course). The boiler house will be a contemporary intervention within the enclosure of the south aisle's west end, with a flat roof and cladding to contrast with the flint finish of the church. There will be a 1st floor terrace accessed from the outside, over this area.

The boiler house will accommodate both the biomass boiler and storage of the wood pellets required to feed it. The boiler (a Windhager product or similar) is completely automated, with a vacuum system feeding the boiler from the pellet store in accordance with demand and loading. Vehicular access will be required to the south of the boiler house to deliver pellets directly into the pellet store.

The biomass boiler will provide hot water heating to an underfloor heating system that will be installed throughout. Log burners will also be provided to the snug and sitting room to provide additional heating in the colder months. A heat recovery system may also be employed where mechanical ventilation is required.

For drainage purposes, a new connection will be made to the main foul sewer, which is understood to be located in School Hill. Surface water drainage will be provided by the existing and reinstated rainwater goods and valley gutters from the roofs, and discreet linear slot drains in the terrace – both connected to a new soakaway located within the churchyard.

The church is already connected to the electricity mains, and a gas connection is not deemed necessary, as the biomass boiler will provide heating and hot water, and cooking appliances will be electric.



Example of Crittall steel framed curtain walling
Copyright: Crittall Windows

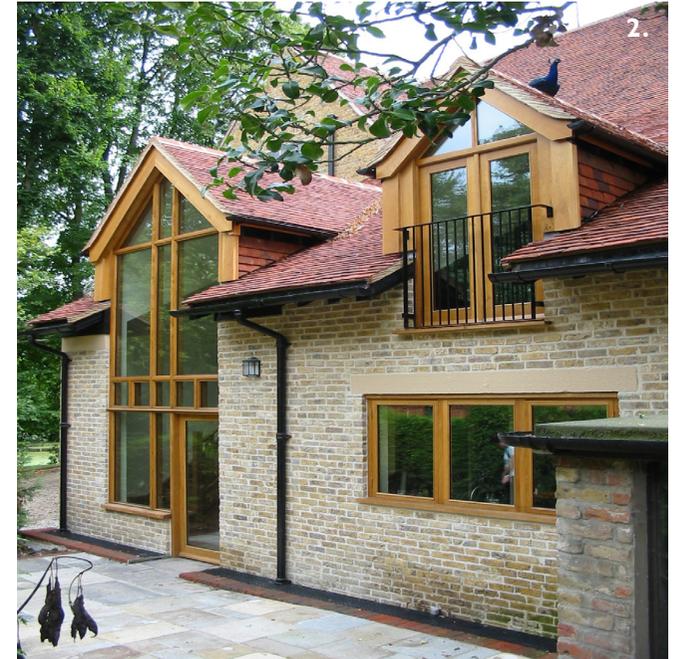


Glazed screen behind arched colonnade at St
Ethelburga's Centre for Reconciliation & Peace

3.0 CONCLUSION

This design notebook has set out the proposals for the methods and materials for conversion of St Peter & St Paul Church into a residential dwelling. The proposals will allow this Grade II listed church, which is also an important local landmark, to be saved from demolition. Mr & Mrs Cottee are determined to save the church, and hope that this proposal can be supported by the local authority.

This document is a work in progress, and as such is subject to change and improvement as the proposals for the conversion are finalised.

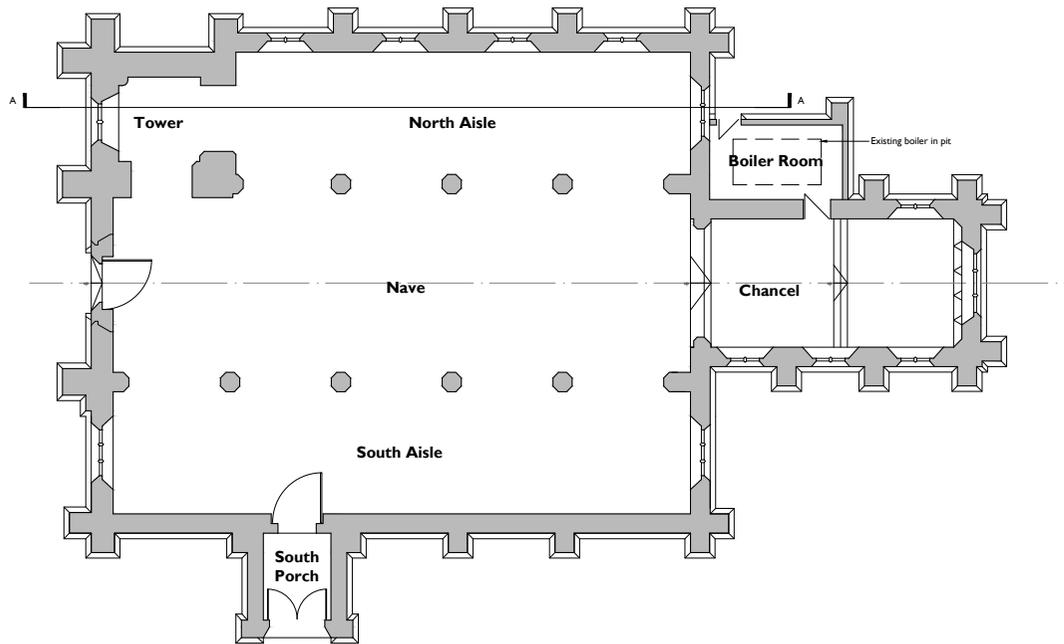


Sensitive Conversions:

- 1. *Listed cottage in Oxfordshire*
- 2. *Beeleigh Abbey in Essex*
- 3. *Listed barns in Kent*

APPENDIX A

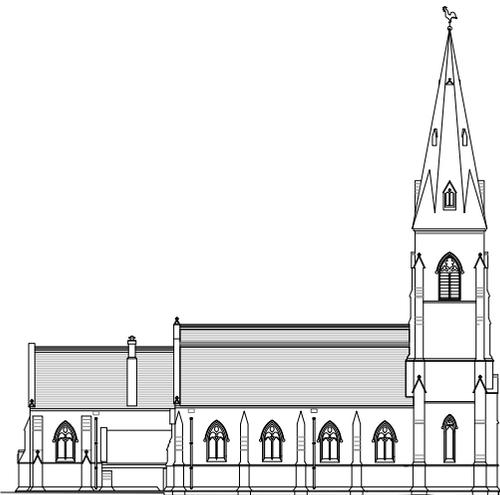
Purcell Drawings 237464_100, 200 & 201



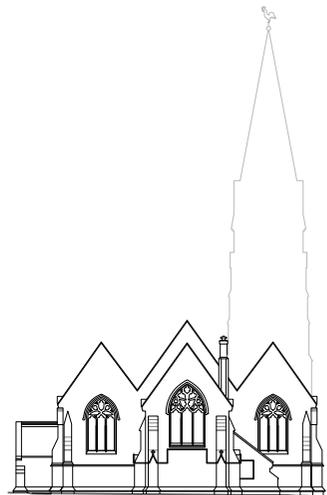
1 Ground Floor Plan
100 1:100 @ A1



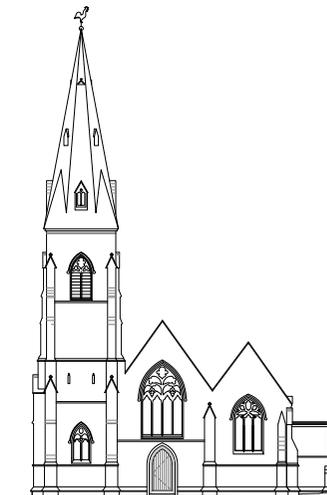
4 Section A-A
100 1:200 @ A1



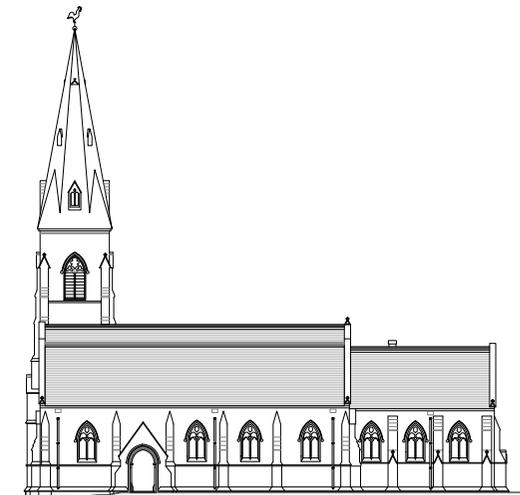
1 North Elevation
100 1:200 @ A1



3 East Elevation
100 1:200 @ A1



4 West Elevation
100 1:200 @ A1



5 South Elevation
100 1:200 @ A1

Notes:
Do not scale from this drawing. All dimensions are to be verified on site before proceeding with the work.
All dimensions are in millimeters unless noted otherwise.
Purcell shall be notified in writing of any discrepancies.

This drawing is based upon Hoopers Architects drawings 3545 01A & 02A.

Key:
Existing Structure

ISSUE	DATE	DRAWN	CHECKED	DESCRIPTION
A	18/08/2016	AR	AR	Chancel steps added
	First Issue 01 Aug 2016	KA	AR	

CLIENT Mr & Mrs G Costee
PROJECT St Peter & St Paul Church, Birch, Colchester

DRAWING TITLE Existing Drawings

SIZE & SCALE A1L As Shown

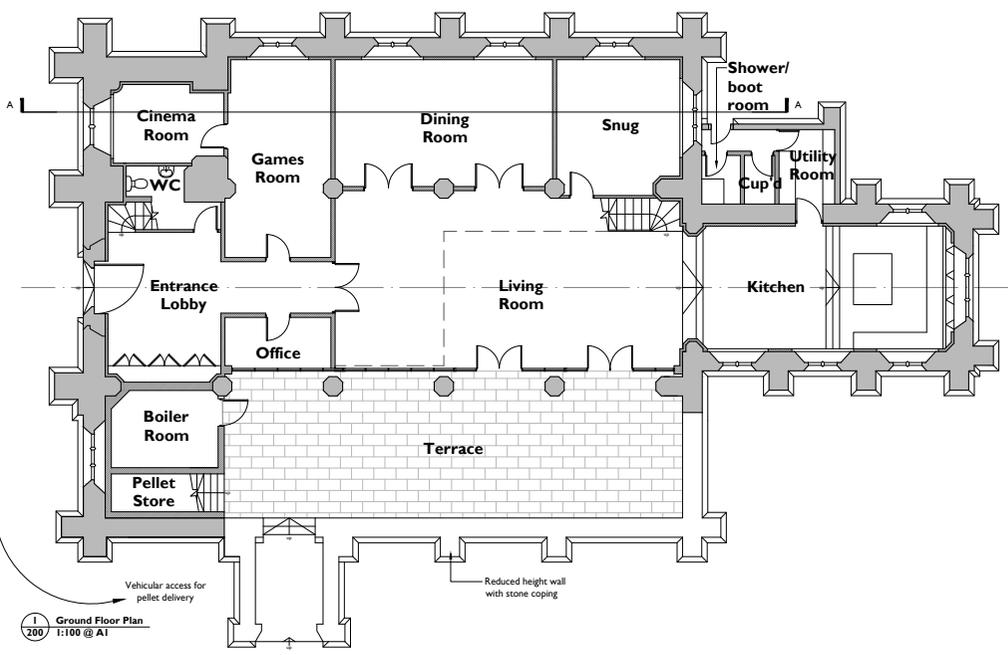
DRAWING STATUS ISSUED FOR INFORMATION

JOB NUMBER 237464

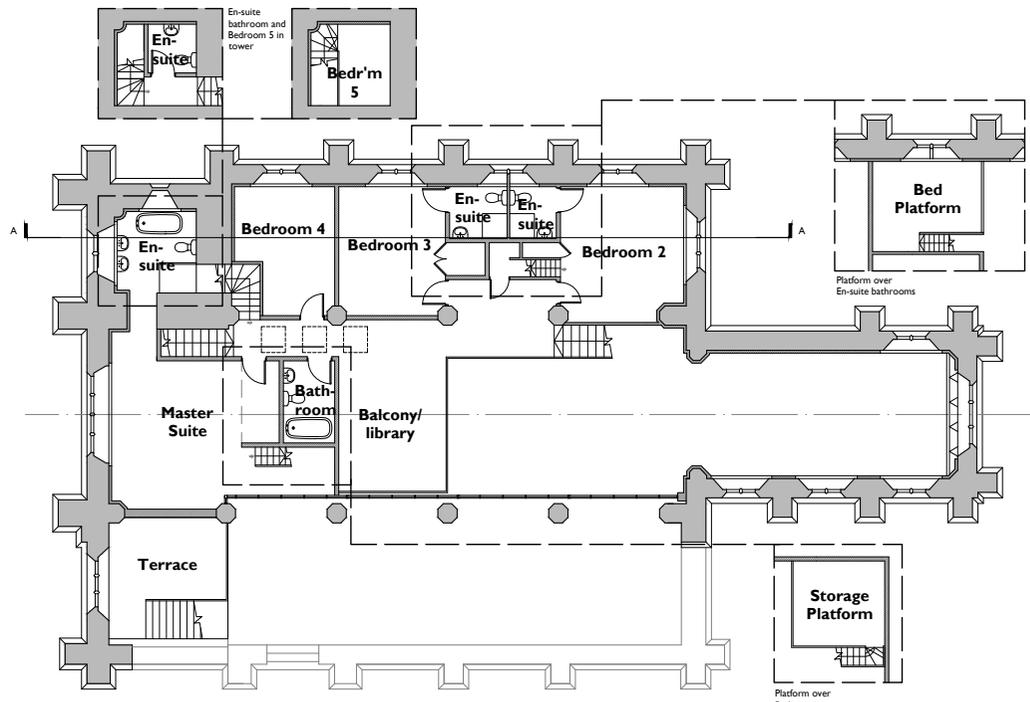
DRAWING NO. 100

REVISION A

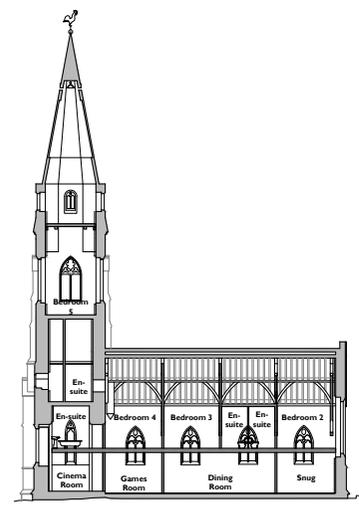




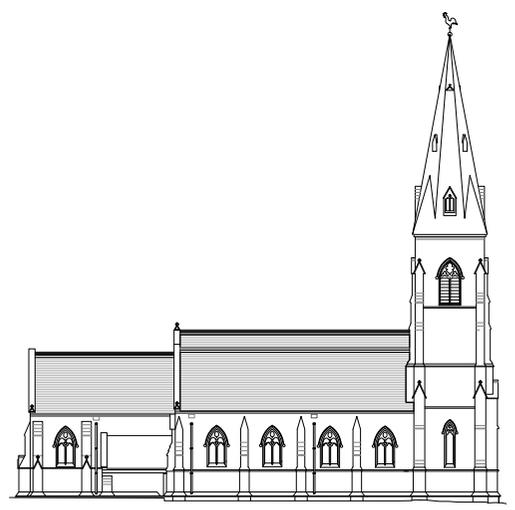
1 Ground Floor Plan
1:100 @ A1



2 First Floor Plan
1:100 @ A1



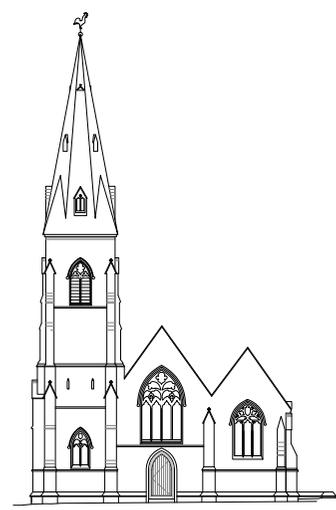
3 Section A-A
1:200 @ A1



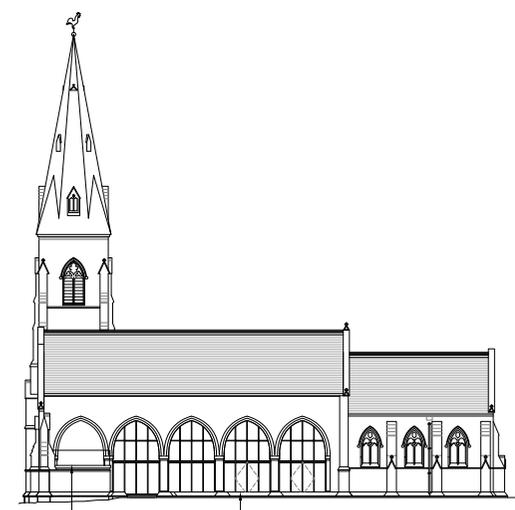
4 North Elevation
1:200 @ A1



5 East Elevation
1:200 @ A1



6 West Elevation
1:200 @ A1



7 South Elevation
1:200 @ A1

Notes:
Do not scale from this drawing. All dimensions are to be verified on site before proceeding with the work.
All dimensions are in millimeters unless noted otherwise.
Purcell shall be notified in writing of any discrepancies.

This drawing is based upon Hoopers Architects drawings 3545 01A & 02A.
Key:

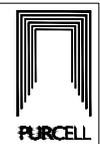
 - Existing Structure
 - Proposed Structure (refer to design notebook for construction proposals)

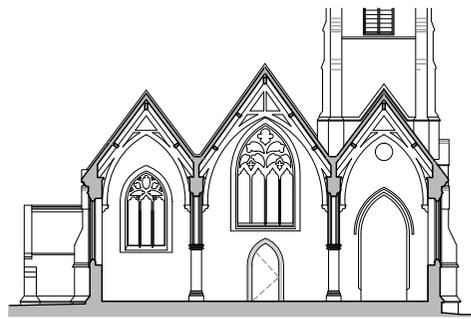
A	18/08/2016	AR	AR	Wall build-up added to section
ISSUE	DATE	DRAWN	CHECKED	DESCRIPTION
	First Issue 01 Aug 2016	KA	AR	

CLIENT Mr. & Mrs G Costee
PROJECT St Peter & St Paul Church, Birch, Colchester

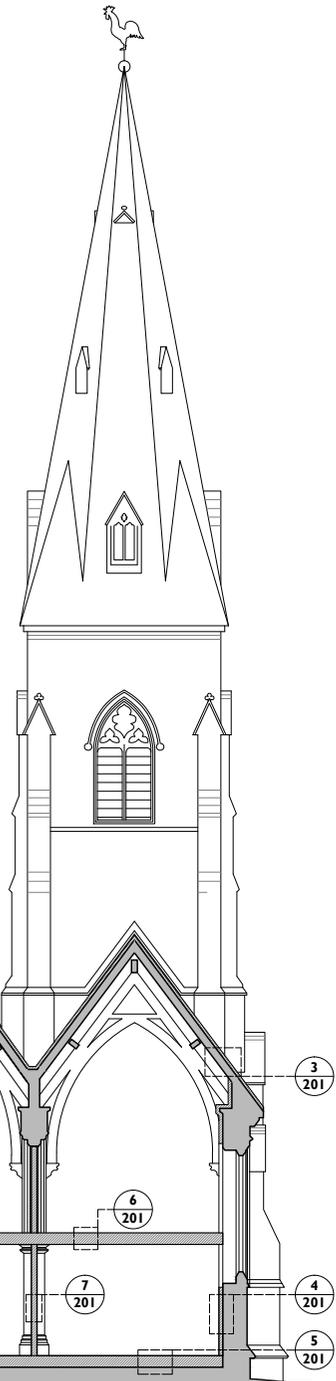
DRAWING TITLE Proposed Drawings
SIZE & SCALE A1L As Shown
DRAWING STATUS ISSUED FOR INFORMATION

JOB NUMBER 237464
DRAWING NO. 200
REVISION A

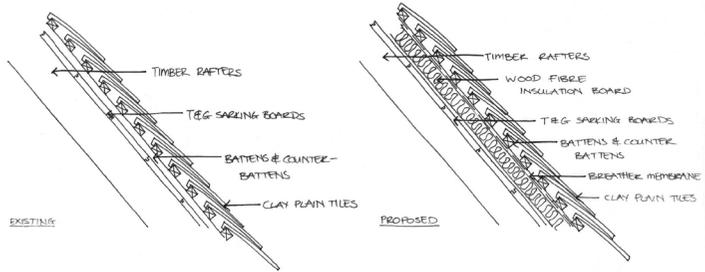




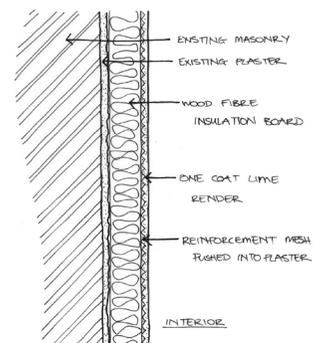
1 Section B-B As Existing
201 1:200 @ A2



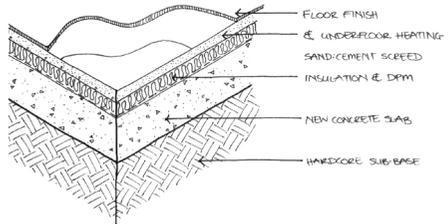
2 Section B-B As Proposed
201 1:100 @ A2



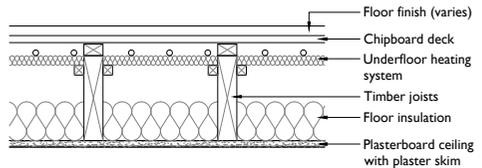
3 Existing & Proposed Roof Construction
201 N.T.S.



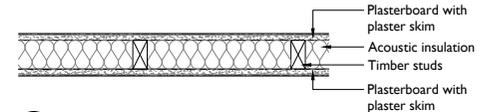
4 Proposed External Wall Construction
201 N.T.S.



5 Proposed Ground Floor Construction
201 N.T.S.

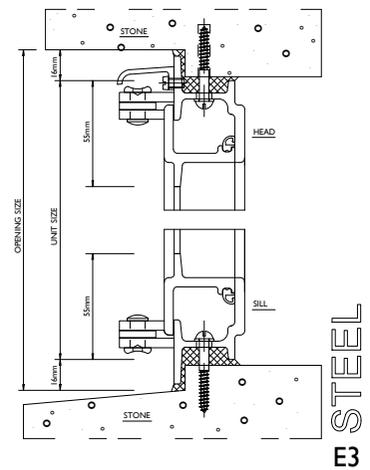


6 Proposed First Floor Construction
201 N.T.S.



7 Proposed Typical Internal Wall Construction
201 N.T.S.

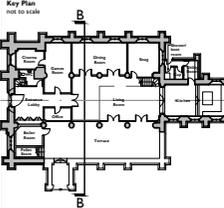
Corporate W20
Stone Boundary



© CRITTALL WINDOW LTD 2003

8 Typical Crittall Corporate W20 Head & Sill Detail at Stone Junction
201 N.T.S.

Notes:
Drawings are based on survey data and may not accurately represent what is physically present.
Do not scale from this drawing. All dimensions are to be verified on site before proceeding with the work.
All dimensions are in millimeters unless noted otherwise.
Parcel shall be notified in writing of any discrepancies.



This drawing is based upon Hoopers Architects drawings 3545 01A & 02A.

Key:
 - Existing Structure
 - Proposed Structure (refer to design notebook for construction proposals)

ISSUE	DATE	DRAWN	CHECKED	DESCRIPTION
1	18 Aug 2016	AK	AK	
CLIENT: St Peter & St Paul Church, Birch, Colchester				
PROJECT: St Peter & St Paul Church, Birch, Colchester				
DRAWING TITLE: Section B-B As Existing & Proposed				
SIZE & SCALE: A2L As Shown				
DRAWING STATUS: ISSUED FOR INFORMATION				
JOB NUMBER: 237464				
DRAWING NO.: 201				
REVISION: -				

