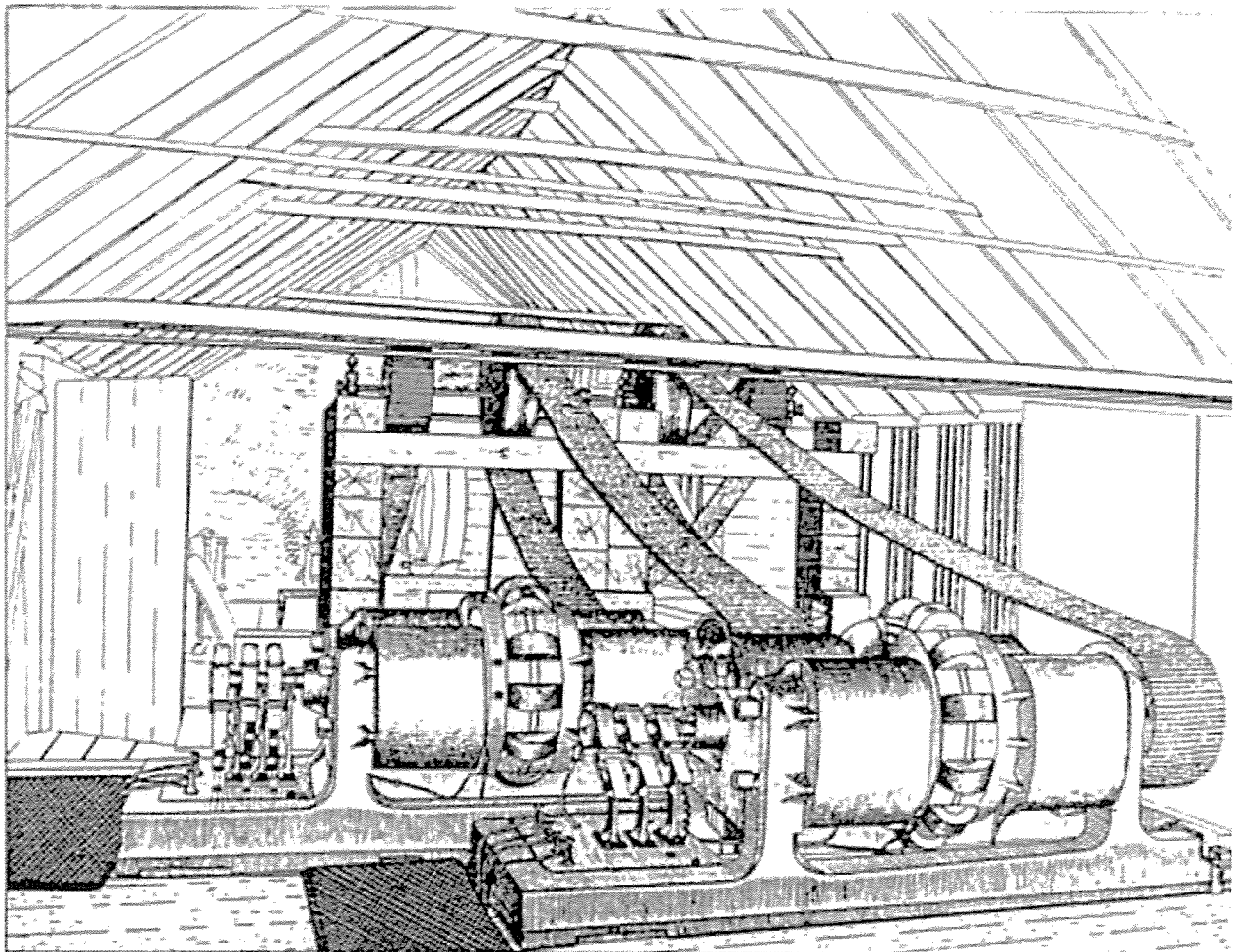




Wakatipu Heritage Trust Bullendale Powerhouse Reconstruction

Design Features Report



Contact Details

Name: Ben Larson

12 Moorhouse Avenue
PO Box 1482, Christchurch Mail Centre,
Christchurch 8140
New Zealand

Telephone: +64 3 377 8797

Mobile: +64 27 550 8797

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Prepared By



Ben Larson
Graduate Structural Engineer

Reviewed By



Andrew Davidson
Senior Structural Engineer

Approved for Release By



Andrew Blacker
Principal Structural and Civil Engineer

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1 General

1.1 Objective

WSP Opus have been commissioned by the Wakatipu Heritage Trust to provide structural design services for the Bullendale Powerhouse Reconstruction at Dynamo Flat, in the Richardson Mountains in Otago. The Design Feature Report (DFR) is a detailed document defining the structure's design criteria and recording the decisions or outcomes. This report outlines the design loading, structural modelling assumptions, material properties, foundation requirements and design standards. The DFR also defines the calculation procedure and checking principles to be followed, providing a clear explanation of the full design.

1.2 Scope

In general terms, the scope of work for this consent is as follows:

- Detailed foundation design
- Detailed design of the superstructure.

1.3 Means of Compliance

The design of the structure is in compliance with the New Zealand Building Code (NZBC) by considering the acceptable solutions and verification methods addressing clauses B1 Structure and B2 Durability.

Compliance with B2 Durability shall be achieved by designing to nominated design standards indicated by B2/AS1 for all structural materials except steel. For steel, B2 Durability compliance shall be achieved with an Alternative Solution.

1.4 Design Life

The structure is designed for a minimum design life of 50 years as specified in the New Zealand Building Code.

The design life of non-structural elements and cladding specification are by others and are not covered by this design features report.

1.5 Design Standards

The following design standards are used for the design of the structure and for the design of any secondary structural items as outlined in B1/VM1:

AS/NZS 1170.0:2002	Structural Design Actions Part 0: General Principals
AS/NZS 1170 1:2002	Structural Design Actions Part 1: Permanent, Imposed and Other Actions
AS/NZS 1170 2:2011	Structural Design Actions Part 2: Wind Actions
AS/NZS 1170 3:2003	Structural Design Actions Part 3: Snow and ice actions
NZS 1170 5: 2004	Structural Design Actions Part 5: Earthquake Actions - New Zealand
NZS 3101 : 2006	Concrete Structures Standard
NZS 3603: 1993	Timber Structures Standard
NZS 3604: 2011	Timber Framed Buildings

The following technical references/documents may also be used:

- The New Zealand Building Code.

The above lists are not exhaustive and other New Zealand Standards and technical references/documents shall be referred to as appropriate and the design and construction of structural elements shall comply with these also.

2 The site

2.1 Seismic Design Parameters

The site has been classified as Site Class D – Deep or Soft Soil, in accordance with NZS 1170.5. An Importance Level of 2 has been adopted for the building due to the potential of being used as a shelter in a storm event.

2.2 Geotechnical Information

No geotechnical information has been received for the site, however it is assumed that “good ground” in accordance with NZS3604: 2011 will be achieved. This assumption will need to be confirmed onsite prior to any work taking place.

2.3 Access and Constructability Issues

The site is in a very remote location, materials will have to be flown in and concrete mixed onsite.

2.4 Foundations

The foundation system consists of anchor and ordinary piles designed to NZS3604: 2011.

3 The Structure

The proposed structure comprises of a single building of approximately 90 m², built as close as possible to match the original structure.

3.1 Gravity Load Resisting Structure

The gravity loads are transferred through the rafters of the roof structure to the timber framed walls which carry the loads through the foundations and into the ground. Floor loads are transferred through floor joists to bearers and into the foundations.

3.2 Lateral Load Resisting Structure

The structure relies on a plywood roof diaphragm, walls and cantilever posts to resist wind and seismic loads. Due to the rear wall being completely open the cantilever posts are designed to take the lateral load of half the building in the across direction.

4 Design Actions

The occupancy of this buildings is less than 250 people, and it is therefore considered as Importance Level 2, in line with the requirements of NZS 1170.

- Seismic return period of 500 years
- Wind return period of 500 years
- Snow return period of 150 years

4.1 Gravity Loads

4.1.1 Self-Weight (Dead Load)

The self-weight of the building was calculated by considering weights of architectural and structural elements. Standard material weights have been used for materials such as reinforced concrete and timber framing.

4.2 Imposed Loads

Table 1 below summarizes all vertical loads including both superimposed dead and live loads. These are in accordance with AS/NZS 1170.1:2002 and either meet or exceed the requirements for the various occupancy/activity categories.

Table 1 - Superimposed Actions

Level/Area	Use	Live Load (kPa)
Floor	General Area	2
Roof (general)	Maintenance only	0.25

4.3 Wind Loads

Wind loads were derived in accordance with AS/NZS 1170.2:2002.

The natural frequency of the structure is expected to be greater than 1Hz, therefore the structure is not wind sensitive. A static analysis procedure is applicable.

4.3.1 Site Wind Speed Profile

To AS/NZS 1170.2:2002

Importance Level	IL2	
Region:	A7	
$V_R = V_{500}$:	45	m/s (ULS)
$V_R = V_{25}$:	37	m/s (SLS)
M_d , wind direction multiplier:	1.0	Any Direction
Terrain category:	2	ULS/SLS
Height, z:	5	m
$M_{z,cat}$, terrain multiplier:	0.91	
M_s , shielding multiplier:	1.0	
M_t , topographic multiplier:	1.11	
$V_{sit,\beta}$ site wind speed (ULS)	45.0	m/s
$V_{sit,\beta}$ site wind speed (SLS)	37.0	m/s

4.4 Snow Actions

Snow actions are determined as defined in AS/NZS 1170.3:2003. Table 2 shows site snow parameters used to determine snow loads.

The structure is in Region N5, and the elevation is approximately 750m above sea level.

Table 2 - Site Snow Parameters

Property	Value
Region	N5
Exposure Category	Sub Alpine
Site elevation, Z (m)	~750 m
S_{ULS}	0.5 kPa
S_{SLS}	0.4 kPa

4.5 Seismic Loads

The seismic design of the Powerhouse has been completed in accordance with NZS 3604:2011 where applicable and checked to NZS 1170.5. Wind loads govern over seismic loads for lateral design of the structure.

4.5.1 Site Parameters

In accordance with NZS3604:2011.

Site subsoil class: D

Earthquake Zone: 3

4.5.2 Analysis Methodology

The seismic analysis will be completed in accordance with NZS 1170.5, factored to resist a seismic return period of 500 years.

5 Design Criteria

5.1 Seismic Deflections

General seismic deflections are designed in accordance with NZS 3604:2011. Particular elements are designed to the recommended serviceability deflection limits of AS/NZS 1170.0:2002, Table C1.

5.2 Wind Deflections

Particular elements are designed to the recommended serviceability deflection limits of AS/NZS 1170.0:2002, Table C1.

5.3 Gravity Deflections

Particular elements are designed to the recommended serviceability deflection limits of AS/NZS 1170.0:2002, Table C1.

6 Durability

6.1 Durability Design Life

Foundations: 50 years

Superstructure: 50 years

6.2 Durability Provisions

Durability provisions are achieved by:

New Zealand Building Code Acceptable Solutions – B2/AS1

- Timber: NZS 3602:2003 Part 1 is an acceptable solution for meeting durability through treatments in accordance with the standard.
- Light Timber Framing Structures: NZS 3604:1999 is an acceptable solution for meeting durability requirements of buildings within its scope and includes framing and metal fixings.

Alternative Solutions to the New Zealand Building Code

- Structural Steel: There is no acceptable solution available in the New Zealand Building Code for corrosion protection of structural steel. Protection is provided through surface treatment in accordance with NZS/AS 2312:2002

6.3 Summary of Surface Treatments

Table 3 below outlines the typical surface treatments to be specified for the materials used:

Table 3 - Surface Treatments

Element	Design Life	Corrosivity Zone (NZS3404.1:2009)	Surface Treatment in accordance with NZS/AS 2312:2014	Time to first major maintenance
Bolts	50	Zone 1	Hot-dip galvanised	25+yrs

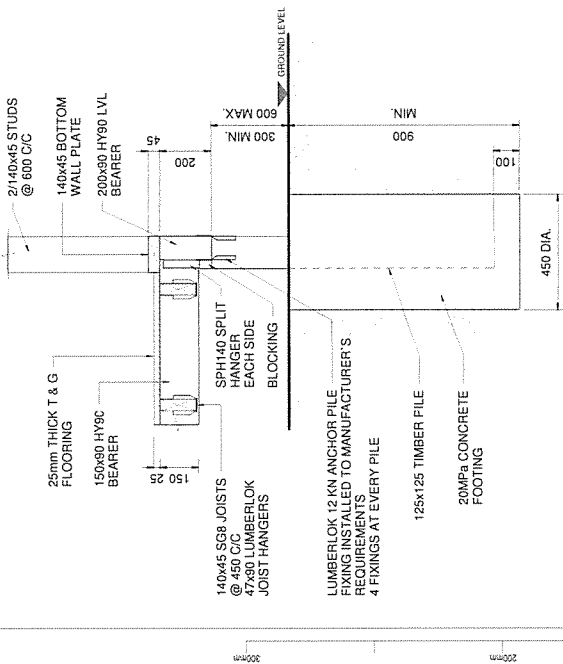
6.4 Fire Resistance Ratings

This design has not considered fire resistance ratings.

(End of Report)

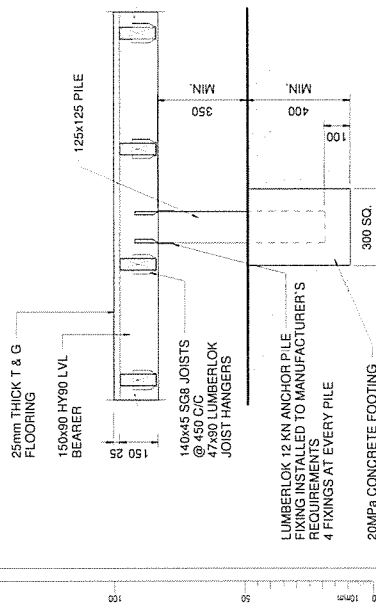
NOTES:

- 1. REFER TO GENERAL NOTES FOR ADDITIONAL INFORMATION
- 2. WIND ZONE AS PER NZS 3604:2011 EXTRA HIGH



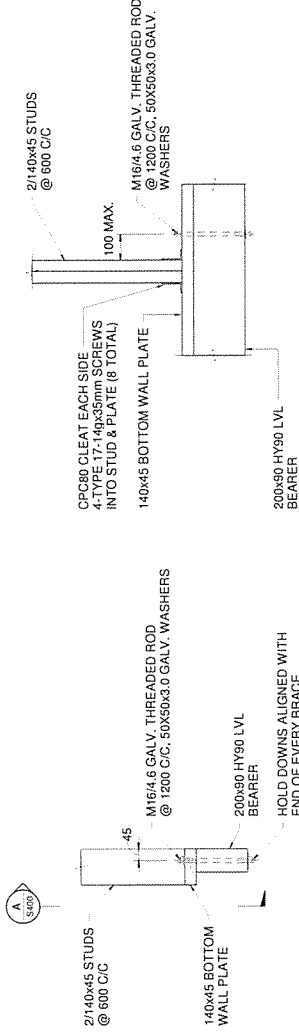
TYP. PILE (P1) BEARER DETAIL

SCALE 1:10



TYP. PILE (P2) DETAIL

SCALE 1:10

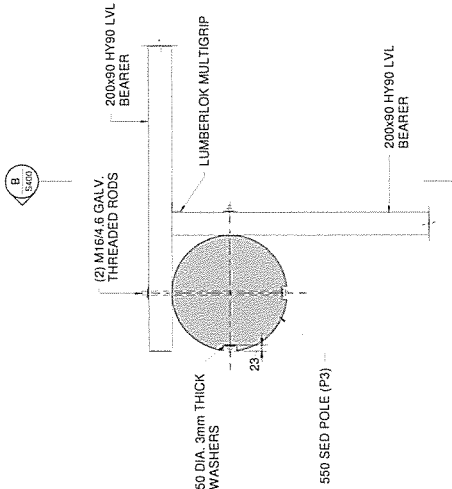


TYP. BEARER BOTTOM WALL PLATE

SCALE 1:10

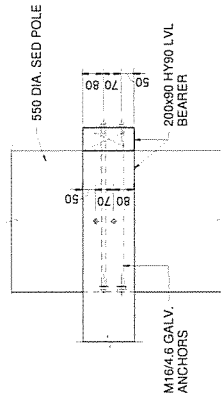
SECTION A

SCALE 1:10 S400



SED POLE (P3) / BEARER PLAN DETAIL

SCALE 1:10



SECTION B

SCALE 1:10 S400

REVISION / AMENDMENT	APPROVED	DATE
P1 BUILDING CONSENT	AB	13/01/18

wsp | OPUS
 PO Box 1482
 Christchurch 8140
 +64 3 563 5400
 Christchurch Office

SCALE	ORIGINAL SIZE
As indicated @ A1	A1

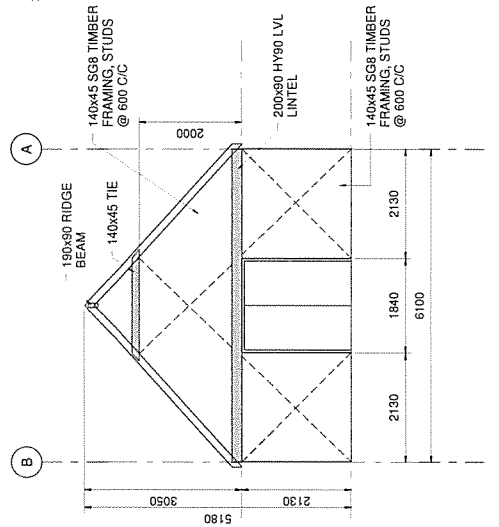
DRAWN	DESIGNED	APPROVED
S. MACA	B. LARSON	A. BLACKER

DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
A. DAVIDSON	A. DAVIDSON	13/01/18

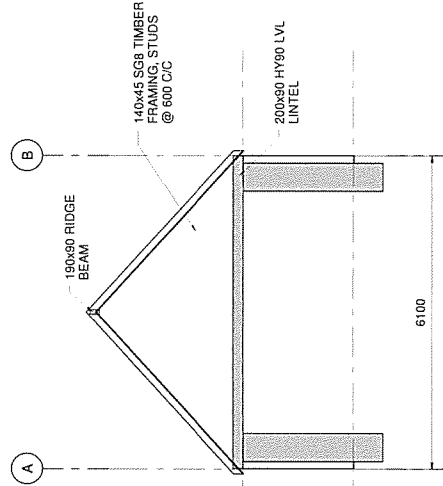
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 BULLENDALE POWERHOUSE RECONSTRUCTION
 TITLE: DETAILS
 DRAWING PROJECT NO: 6-CM481.00
 SHEET NO: S400
 SUBMITALY: P1
 REASON: P1

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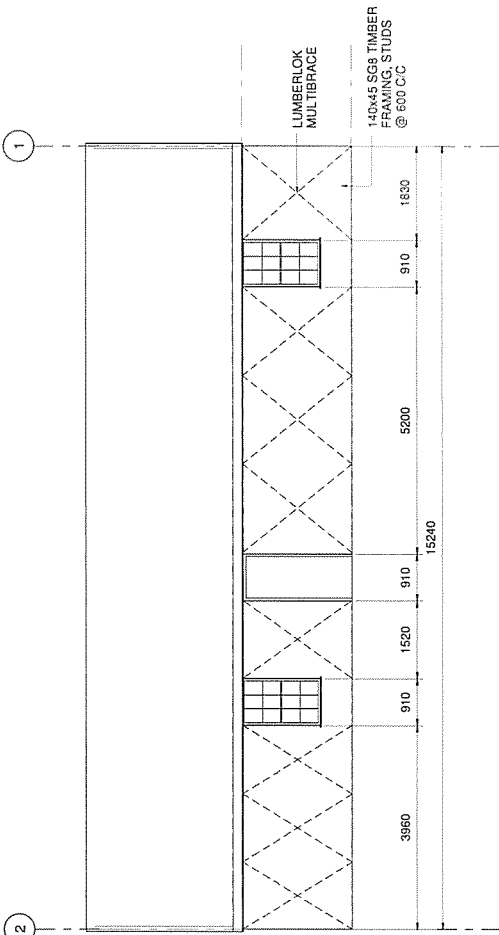
1. REFER TO GENERAL NOTES FOR ADDITIONAL INFORMATION
2. WIND ZONE AS PER NZS 3604:2011 EXTRA HIGH



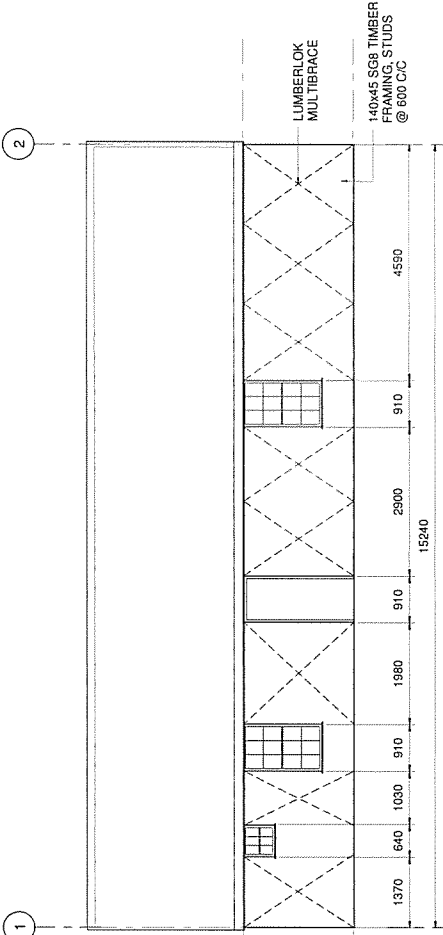
NORTH-EAST ELEVATION
SCALE 1:50



SOUTH-WEST ELEVATION
SCALE 1:50



NORTH-WEST ELEVATION
SCALE 1:50



SOUTH-EAST ELEVATION
SCALE 1:50

REVISION / AMENDMENT	DATE	APPROVED	DATE
P1 / BUILDING CONSENT	13/03/18	AB	13/03/18

SCALE	As indicated @ A1	DESIGNED	B. LARSON	APPROVED	A. BLACKER
DRAWN	S. MACA	ENGINEERED	A. DAVIDSON	APPROVED DATE	13/03/18
CHECKED	A. DAVIDSON	DRAWING VERIFIED	A. DAVIDSON		

PROJECT	WAKATIPU HERITAGE TRUST	ORIGINAL SIZE	A1
BULLENDALE POWERHOUSE RECONSTRUCTION			
ELEVATIONS			
PROJECT NO.	6-CM481.00		
PROJECT NO. (REV. NO.)			
PROJECT NO. (REV. TYPE)			
SHEET NO.	S300	SUSTAINABILITY	P1
RELATION			

BUILDING CONSENT

OPUS
PO Box 1482
Christchurch 8140
+64 3 363 5400

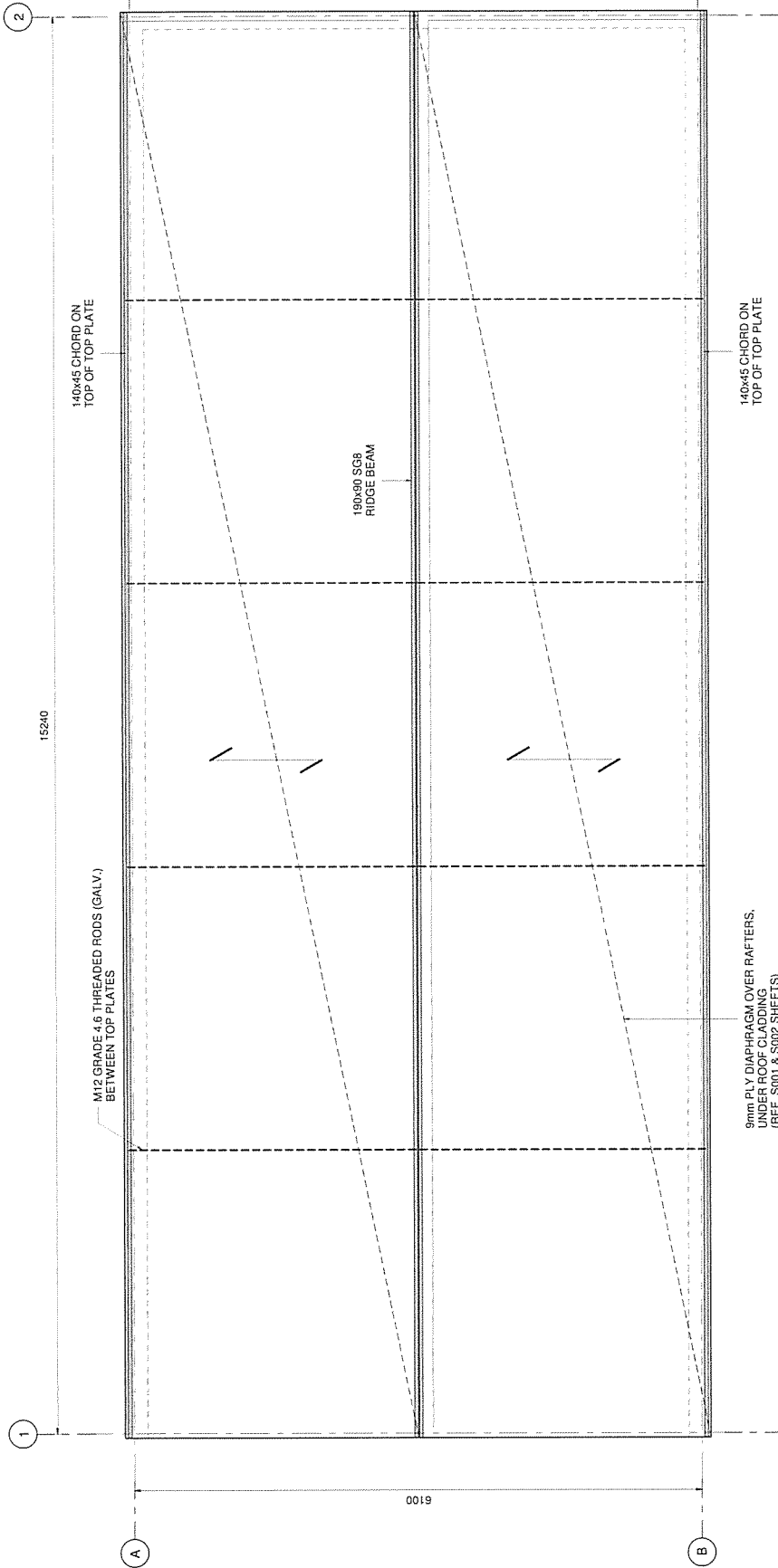
Christchurch Office

NOTES:

1. REFER TO GENERAL NOTES FOR ADDITIONAL INFORMATION
2. WIND ZONE AS PER NZS 3604:2011 EXTRA HIGH

2/140x45 SGR RAFTERS @ 600mm C/C
 MID HEIGHT & BOTTOM 140x45 TIES BETWEEN
 WITH 4 - M12 GRADE 4.6 (GALV.) THREADED RODS
 BETWEEN TOP PLATES

KEY:





9MM PLY DIAPHRAGM OVER RAFTERS,
 UNDER ROOF CLADDING
 (REF. S001 & S002 SHEETS)
 5.16 DIA. NAILS @ 75 C/C

ROOF FRAMING PLAN
 SCALE 1:25

REVISION / APPROVAL P1 BUILDING CONSENT		APPROVED / DATE / MONTHS
PROJECT WAKATIPU HERITAGE TRUST BULLENDALE POWERHOUSE RECONSTRUCTION		
TITLE ROOF FRAMING PLAN		
OPUS PROJECT NO 6-CM481.00	ORIGINAL SIZE A1	SHEET NO S200
DESIGNER S. MACA	APPROVED A. DAVIDSON	REVISION P1
DRAWING VERIFIED A. DAVIDSON	DESIGN VERIFIED A. DAVIDSON	DATE 13/09/18
BUILDING CONSENT		
SCALE As indicated @ A1		
OPUS CHRISTCHURCH OFFICE PO Box 1482 100 Waterfront Drive New Zealand +64 3 352 5400		

KEY:

-  125x125mm H5 ANCHOR PILE ENCASED IN 450mm DIA. x 900mm DEEP CONCRETE FOOTING
-  125x125mm H5 PILE ENCASED IN 300mm SQUARE x 400mm DEEP CONCRETE FOOTING

550mm DIA. SED H6 TIMBER POLE EMBEDDED 1.8m DEEP IN GROUND

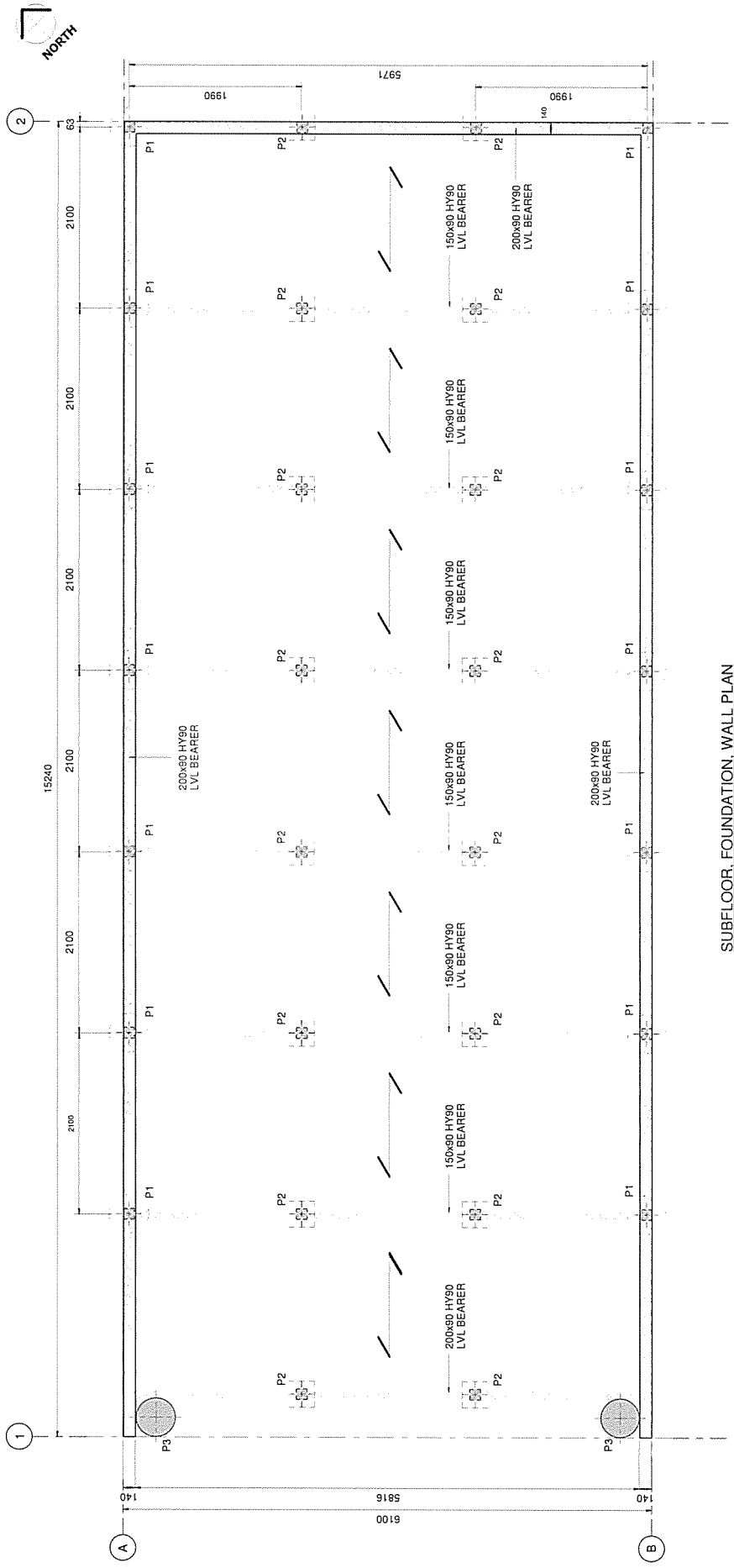


140x45 SGB H3.2 JOISTS @ 450mm C/C HUNG FROM BEARER WITH 47x90 LUMBERLOK JOIST HANGER

2140x45 SGB H3.2 TIMBER FRAMED WALL STUDS @ 600mm C/C WITH LUMBERLOK MULTIFLEX (G10) AND 47x90 LUMBERLOK WALL (G10) GRADE 4-8 THREADED RODS BETWEEN TOP PLATES.

NOTES:

1. REFER TO GENERAL NOTES FOR ADDITIONAL INFORMATION
2. WIND ZONE AS PER NZS 3804:2011 EXTRA HIGH



SUBFLOOR FOUNDATION WALL PLAN
SCALE 1:25

REVISION / APPROVAL	DATE
P.1 - BUILDING CONSENT	13/09/18

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PO Box 1482
Christchurch 8140
+64 3 333 5400
Christchurch Office

SCALE	ORIGINAL SIZE
As indicated @ A1	A1

DESIGNED	APPROVED
B BARBON	A BLACKER

DRAWINGS VERIFIED	APPROVED DATE
A DAVIDSON	13/09/18

PROJECT: WAKATIPU HERITAGE TRUST
BULLENDALE POWERHOUSE RECONSTRUCTION
SUBFLOOR, FOUNDATION, WALL PLAN
DRAWING NO: 6-CM481.00
PROLOGS VOL 111, TYPE

SHEET NO: S100
SUBMITTY
REVISION: P1

BUILDING CONSENT

GENERAL NOTES (STANDARD)

- UNLESS OTHERWISE SHOWN GENERAL CONSTRUCTION DETAILS SHALL COMPLY WITH THE REQUIREMENTS OF NZS 3603
- CHECK ALL DIMENSIONS ON SITE
- STRUCTURAL DRAWINGS TO BE READ IN CONJUNCTION WITH OTHER DRAWINGS (MECHANICAL, ELECTRICAL, MECHANICAL AND BUILDING SERVICES)
- THESE STANDARD DETAILS ARE NOT COMPLETE IN THEMSELVES AND REFERENCE SHOULD BE MADE TO SPECIFIC DETAILS WITHIN THE CONTRACT DRAWINGS

ABBREVIATIONS

LVL LAMINATED VENEER LUMBER
 CSK CSK SCREW
 COACH SCREW COACH SCREW
 DPM DAMP PROOF MEMBRANE
 DPM DAMP PROOF MEMBRANE
 SPC SPC
 TRIC TRIC
 TREATED TREATED
 SINGLE SIDED SINGLE SIDED
 TOOTH PLATE CONNECTOR TOOTH PLATE CONNECTOR
 PRESSED METAL PLATE CONNECTOR PRESSED METAL PLATE CONNECTOR
 NIP NIP

PLYWOOD DIAPHRAGM NAILING

- ALL NAILS SENGCO H D GALVANISED FLATHEAD POWER DRIVEN FLUSH
- DIAPHRAGM TO BE 12mm THICK C-D STRUCTURAL GRADE CONSTRUCTION PLYWOOD (SAP SPECIFIED BY MANUFACTURERS RECOMMENDATIONS) NAILS TO BE 100mm GRS AT INTERSECTIONS
- TYPICAL NAILS: * SENGCO 90x3.55 DIA. FRAMING TO * FRAMING * SENGCO 60x2.70 DIA. (SHEET TO FRAMING) TYPICAL BOLTS: * M12 GRADE 4.6 AT 600 GRS UNLESS SHOWN OTHERWISE
- TRIM DIAPHRAGM FOR LIFT DUCT PENETRATIONS ETC

PENETRATION OF NAILS & SCREWS

- ALL NAILS IN WALLS, PARTY WALLS AND OTHER SHEET MATERIALS SHALL BE FLATHEAD UNLESS OTHERWISE SHOWN
- NAILS SHALL BE FULLY DRIVEN
- SKEW NAILS SHALL BE INSTALLED AS SHOWN
- THE MINIMUM PENETRATION OF A NAIL INTO THE PIECE OF TIMBER DIAMETER OF THE NAIL SHOULD BE 10 TIMES THE SHANK DIAMETER OF THE NAIL
- THE MINIMUM PENETRATION OF A SCREW INTO THE PIECE OF TIMBER BEING THE SCREW POINT SHOULD BE 7 TIMES THE SHANK DIAMETER

SYMBOLS FOR TIMBER FASTENERS AND MEMBERS

SYMBOLS FOR BOLTS, NAILS, SCREWS AND CONNECTORS	PLAN	SECTION
BOLTS	—○—	—○—
SHEAR PLATE CONNECTOR	—○—	—○—
SPLIT RING CONNECTOR	—○—	—○—
TOOTH PLATE CONNECTOR SINGLE SIDED	—○—	—○—
TOOTH PLATE CONNECTOR DOUBLE SIDED	—○—	—○—
NAILS AND SCREWS	—○—	—○—
BRACING ANCHORAGE	—○—	—○—
NAIL PLATES (PRE-DRILLED METAL BOLTS)	—○—	—○—
PRESSED METAL PLATE CONNECTOR	—○—	—○—

SYMBOLS FOR TIMBER MEMBERS IN SECTION

CONTINUOUS MEMBER	—
DRESSED	—
BLOCKING	—

WASHERS

BOLT DIA. mm	MIN. WASHER SIZE
20x20x1.5 mm	20x20x1.5 mm
35x35x3 mm	35x35x3 mm
50x50x5 mm	50x50x5 mm
65x65x5 mm	65x65x5 mm

IF ROUND WASHERS ARE USED THEY SHALL BE OF A THICKNESS AND LENGTH AS SHOWN. IF BOLTS IN TENSION WASHER SIZE TO BE INCREASED BY 1.3

COACH SCREW & BOLT INSTALLATION

COACH SCREW
 DIMENSIONS SHOW EXTENT OF PRE-DRILLED HOLES
 A: LENGTH OF SHANK
 B: LENGTH OF THREAD
 C: 2 x ROOT DIAMETER

BOLT

MINIMUM EDGE DISTANCES FOR NAILS, SCREWS AND BOLTS (NZS 3603)

MINIMUM SPACING OF NAILS
 BRACKETS FOR RADIAL PINE ONLY

MINIMUM SPACING OF NAILS AND SCREWS HOLES PREBORED TO 0.8 dia

MINIMUM SPACING OF BOLTS LOAD PERPENDICULAR TO GRAIN

LAYOUT AND NAILING OF SHEET MATERIALS FOR FLOOR OR ROOF DIAPHRAGMS AND SHEET BRACED WALLS

TYPICAL PLYWOOD DIAPHRAGM PLAN

1 SECTION N.T.S.
 2 SECTION N.T.S.
 3 SECTION N.T.S.

BRACING WALL/ROOF JUNCTION

ROOF DIAPHRAGM
CEILING DIAPHRAGM

BRACING WALL/FLOOR JUNCTION

WALL FRAMING

WALL DIAPHRAGM
 INTERNAL - EXTERNAL

NOTE: UNLESS OTHERWISE SPECIFIED OR DETAILED ON THE DRAWINGS, THESE STANDARD DETAILS AND NOTES SHALL APPLY. INCLUSION OF THIS SHEET DOES NOT IMPLY THAT ALL THE DETAILS OCCUR IN THIS CONTRACT.

PROJECT
 WAKATIPU HERITAGE TRUST
 BULLENDALE
 BULLENDALE POWERHOUSE RECONSTRUCTION

TITLE
 STANDARD DETAILS AND NOTES

DISCIPLINE
 STRUCTURAL

PROJECT NO.
 6-CM481.00

SHEET NO.
 S002

REVISION
 P1

SCALE
 1:20 @ A1

DESIGNED BY
 S WACA

APPROVED
 A DAVIDSON

DATE
 13/03/18

ORIGINATOR
 WAKATIPU HERITAGE TRUST

PROJECT NO.
 6-CM481.00

REVISION
 P1

WSP | OPUS

Christchurch Office
 PO Box 1487
 Christchurch 8140
 Tel: 3 363 5400

APPROVED
 A10 10/3/18

DATE
 10/3/18

PROJECT NO.
 6-CM481.00

SHEET NO.
 S002

REVISION
 P1

FILE NO.
 2008/2018-45224-PN

GENERAL:

1. READ STRUCTURAL DRAWINGS WITH ALL OTHER CONTRACT DRAWINGS AND THE SPECIFICATION NOTIFY ANY DISCREPANCY AND OBTAIN WRITTEN INSTRUCTION BEFORE PROCEEDING.
2. CHECK AND VERIFY EXISTING DIMENSIONS AND LEVELS ON-SITE BEFORE COMMENCING CONSTRUCTION OFF-SITE FABRICATION.
3. DEMOLISH EXISTING WORK AS INDICATED BUT OTHERWISE TO THE MINIMUM EXTENT POSSIBLE. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED AND MAINTAINED. ALL NEW WORK SHALL BE DELINEATED BY STRAIGHT AND REGULAR SAWCUT LINES. MAKE GOOD ON COMPLETION OF NEW WORK. PROVIDE TEMPORARY PROPPING/BRACING OF EXISTING AS NECESSARY.
4. FOUNDATION CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF NZS3904:2011 SECTION 6, UNLESS NOTED OTHERWISE.
5. FOUNDATION SIZES AND DETAILS INDICATED ARE BASED ON A DEFENDABLE ULTIMATE BEARING CAPACITY OF 100kPa. WHEN SUBJECT TO SERVICEABILITY LOADS, CONTRACTOR TO VERIFY ACTUAL SOIL BEARING CAPACITY WITH SCALA PENETROMETER AT LOCATIONS, INTERVALS & DEPTHS AS AGREED WITH ENGINEER.

TIMBER:

1. ALL TIMBER TO BE SGR GRADE RADIIATA PINE COMPLYING WITH NZS 3602 AND GRADED TO NZS 3601 AND TREATED TO NZS 3640.
2. MOISTURE CONTENT OF FRAMING TIMBER SHALL NOT EXCEED 20% AT TIME OF INSTALLATION NOR 18% AT TIME OF ENCLOSURE.
3. UNLESS SHOWN OTHERWISE GENERAL CONSTRUCTION DETAILS SHALL COMPLY WITH REQUIREMENTS OF NZS 3604.
4. PROVIDE WASHERS FOR BOLTED CONNECTIONS IN LOCATIONS AND TO SIZES REQUIRED BY NZS 3603. RE-TIGHTEN NUTS PRIOR TO ENCLOSURE OF JOINTS.
5. PLYWOOD SHALL BE C-D SURFACE GRADE AND F8 STRESS GRADE MIN. U N O CONFORMING TO AS/NZS 2269.0.
6. ALL TIMBER INCLUDING PLYWOOD TO BE H3.2 TREATED.
7. PROVIDE METALX TO ALL CUT TIMBER SURFACES FOR TREATMENT.
8. ALL TIMBER TO TIMBER GLUE USE POLYURETHANE GLUE ENSURE SURFACE IS WIPED CLEAN BEFORE APPLYING GLUE.
9. TIMBER PILES SHALL COMPLY WITH NZS 3602 AND BE IS TREATED IN ACCORDANCE WITH NZS 3640.

STANDARD ABBREVIATIONS

ALT.	ALTERNATIVE
BL/WK	BLOCKWORK (ONLY)
BPM	BOTTOM (NOT REIN)
C	CENTRAL
C D S	CENTRAL ON SITE
C J	CONSTRUCTION JOINT
CPR	COVER BOARD IN mm
D	DIAMETER IN mm
D 1	DEFORMED BARS (GRADE 500E)
D 2	DAMP PROOF COURSE
D P M	DAMP PROOF MEMBRANE
E	EACH WAY
E W	EXISTING
EXTG	EXTENDING
FFL	FINISHED FLOOR LEVEL
FL	FLOOR
INT	INTERNAL
LAP	LAPPED AT RANDOM
LAR	MANUAL
M N	NO OFFICE
N F	NO OFFICE
OPF	OPPOSITE
PP	PROPOSED
RB	REINFORCING BARS (GRADE 500E)
REIN	REINFORCING
S F L	STRUCTURAL FLOOR LEVEL
S L	STRUCTURAL LEVEL
STD	STANDARD
TOP	TOP
THRU	THROUGH
TRM	TYPICAL
VR	VERTICAL
VR	VERTICAL
U N O	UNLESS NOTED OTHERWISE
U S	UNDERSIDE
XCBS	CROSS CENTRES
?	GREATER OR EQUAL
?	LESS OR EQUAL

NOTE: UNLESS OTHERWISE SPECIFIED OR DETAILED ON THE DRAWINGS, THESE STANDARD DETAILS AND NOTES SHALL APPLY.

<p>REVISION / AMENDMENT</p> <p>P1 - BUILDING CONSENT</p>	<p>APPROVED</p> <p>AB</p>	<p>DATE</p> <p>02/01/18</p>
<p>SCALE</p> <p>1:1 @ A1</p>		
<p>DRWNR</p> <p>S MACA</p>		
<p>REGISTERED</p> <p>B LARSON</p>		
<p>DESIGN VERIFIED</p> <p>A DAVIDSON</p>		
<p>APPROVED DATE</p> <p>13/09/18</p>		
<p>APPROVED</p> <p>A BLACKER</p>		
<p>ORIGINAL SIZE</p> <p>A1</p>		
<p>PROJECT</p> <p>WAKATipu HERITAGE TRUST</p> <p>BULLENDALE POWERHOUSE RECONSTRUCTION</p> <p>STANDARD DETAILS AND NOTES</p>		
<p>GENERAL NOTES</p>		
<p>PROJECT NO</p> <p>6-CM481.00</p>		
<p>PROJ. LOG VOL. UN. TYPE</p>		
<p>SHEET NO</p> <p>S001</p>		
<p>STABILITY</p> <p>P1</p>		

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PO Box 1482
Christchurch 8140
+64 3 363 3400

Christchurch Office

**WAKATIPU HERITAGE TRUST
BULLENDALE
BULLENDALE POWERHOUSE
RECONSTRUCTION**

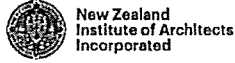
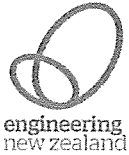
BUILDING CONSENT

Project No: 6-CM481.00

Date: 13/08/18

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DRAWING LIST	
SHEET NUMBER	CURRENT REVISION
STANDARD DETAILS AND NOTES	1
FOUNDATION WALL PLAN	1
STRUCTURAL TIMBER	1
ROOF FRAMING PLAN	1
ELEVATIONS	1
DETAILS	1



Building Code Clause(s) B1 and B2

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance on use of Producer Statements (formerly page 2) is available at www.engineeringnz.org)

ISSUED BY: Opus International Consultants Limited
(Design Firm)

TO: Wakatipu Heritage Trust
(Owner/Developer)

TO BE SUPPLIED TO: Queenstown Lakes District Council
(Building Consent Authority)

IN RESPECT OF: Bulldendale Powerhouse
(Description of Building Work)

AT: Bulldendale, (former Phoenix Quartz Mine) Skippers Creek
(Address)

Town/City: Queenstown LOT..... DP..... SO.....
(Address)

We have been engaged by the owner/developer referred to above to provide:
Structural Engineering design and drawings for the construction of a replica powerhouse at this site.

(Extent of Engagement)

services in respect of the requirements of Clause(s) B1 and B2 of the Building Code for:

All or Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

Compliance Documents issued by the Ministry of Business, Innovation & Employment B1/VM1 and B2/AS1 or
(verification method/acceptable solution)

Alternative solution as per the attached schedule.....

The proposed building work covered by this producer statement is described on the drawings titled:

Bulldendale Powerhouse Reconstruction and numbered 6-481.00 S001 & 2 S100,200 & 300, together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions Good Ground to NZS 3604
- (ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

CM1 CM2 CM3 CM4 CM5 (Engineering Categories) or as per agreement with owner/developer (Architectural)

I, Andrew James Blacker am: CPEng 1013739 # Reg Arch #
(Name of Design Professional)

I am a member of: Engineering New Zealand NZIA and hold the following qualifications: BSc(Hons), CEng (UK), MICE

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000*.

The Design Firm is a member of ACENZ:

SIGNED BY: Andrew James Blacker (Signature)
(Name of Design Professional)

ON BEHALF OF Opus International Consultants Limited Date 29/08/2018
(Design Firm)

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000*.

This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.
THIS FORM AND ITS CONDITIONS ARE COPYRIGHT TO ACENZ, ENGINEERING NEW ZEALAND AND NZIA

Form 2: Application for project information memorandum and/or building consent
 Section 33 or 45, Building Act 2004



1. THE BUILDING [Complete all applicable sections]

Street address of building: Maiti Aumau recreational reserve
 5.7km north-west of Skippers
 [If no street address - details of nearest intersection] branches intersection

Legal description of land where building is located: Lot DP.....
 Site area (m²) Sec 148 Block XI

Building name: Valuation Number Skippers Lake Survey District

Location of building within site/block number: [Include nearest street access]

Number of levels: [Above & below ground] one Level /Unit Number:

Floor area: 93 (m²) [Indicate area affected by the building work]

Current, lawfully established, use: Pygmy Building Year First Constructed: 1835
 [Add no. of occupants per level and per use if more than 1] NIL

OFFICE USE ONLY:

Consent Number:

PIM Number:

Compliance Schedule No:

Date received:

2. APPLICATION [Nominate as applicable]

I request that you issue a: (for the building work described in this application)

Project Information Memorandum (PIM)
 Project Information Memorandum (PIM) and Building Consent (BC)
 Building Consent The existing PIM No [if applicable] is:

Amendment to an existing Building Consent. The existing BC No is:

Staged Consent - Being stage of stages

State the reference number if this application involves a National Multiple Use Approval:

Name: Grant Hyllon Hensman Signature: [Signature] Date: 22, 1, 19

The signature is that of the Owner OR the Agent on behalf of and with the approval of the Owner

I/we acknowledge that some communications may be by email

3. THE PROJECT

DESCRIPTION OF BUILDING WORK: (Provide sufficient information below to enable scope of work to be fully understood)
Reconstruction of pygmy power house to preserve
The remaining historical equipment
supported by DOC & Heritage NZ

Current use of building: NA not standing [E.g. Home, implement shed, office]

Will the building work result in a change of use of the building? Yes No. If Yes, provide details of the new use of the building:

Intended life of the building if less than 50 years: [Years]

List Building Consents previously issued for this project (if any): NA

Estimated value of the building work on which the building levy will be calculated (including goods and services tax):
 \$ 186000 [State estimated value as defined in section 7 of the Building Act 2004]

Is prescribed energy work to be part of this Building Consent (tick if applicable) Gas Electricity

