



General Certificate of Secondary Education

Construction and the Built Environment

Unit 2

Sustainable Construction

[GCN21]
Assessment

INFORMATION FOR CANDIDATES

A copy of the pre-release information for this examination is included in the following pages.

You must use this clean copy of the Pre-release Material in the examination and not your own annotated copy.

Scenario

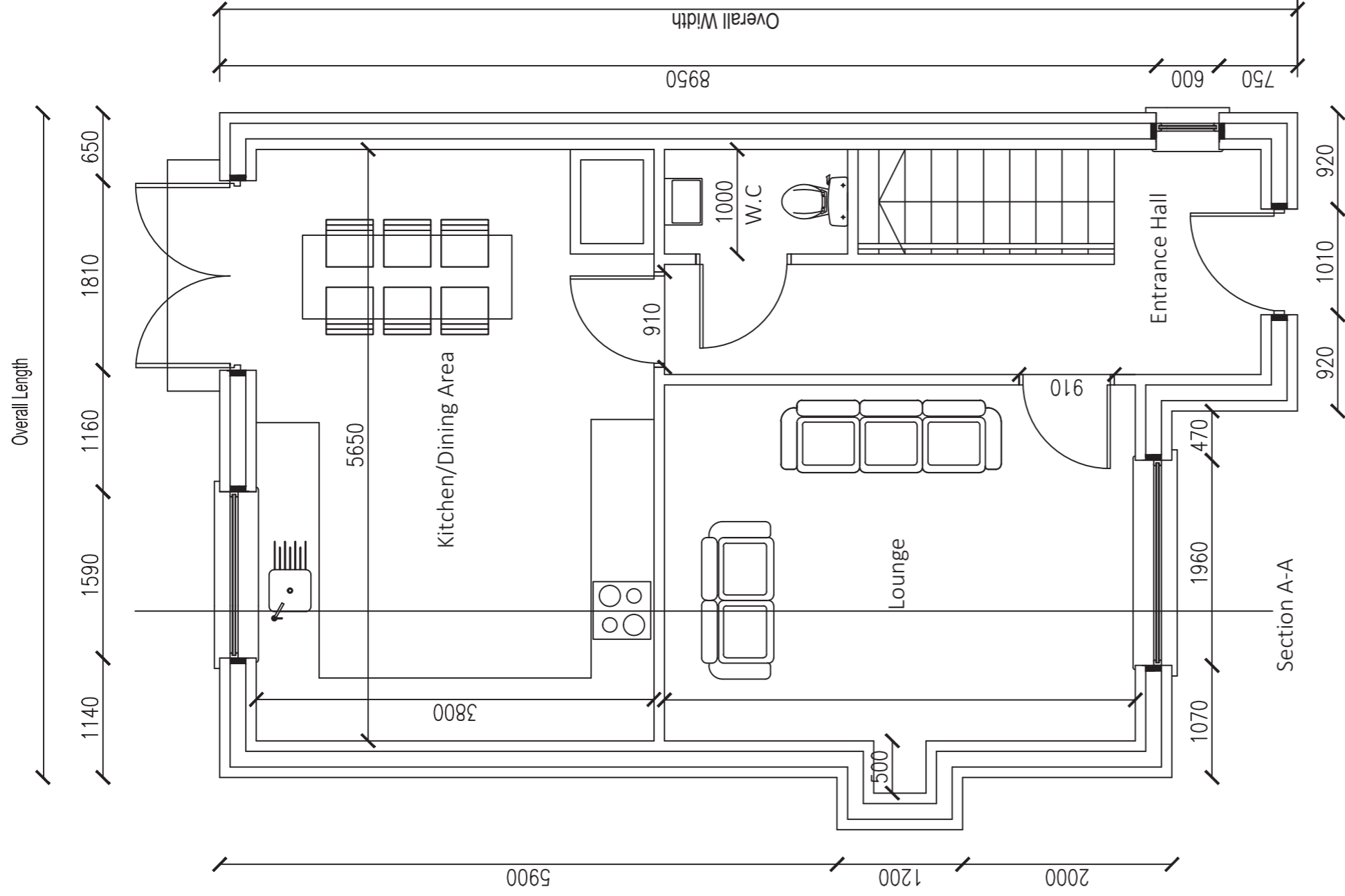
A client has purchased an elevated brownfield site on a coastal location overlooking the stunning coastline to the left side of the site. The site is in an area of modern architectural dwellings. The client has appointed an architect to design a two-storey dwelling. The local planning authorities have indicated the proposals must complement the surrounding area with a maximum ridge height of 7.5 m, to match existing adjacent properties. The site has an elevated platform which is man-made. On investigation the platform has been made up of the spoil from a previous demolition. The spoil consists of topsoil, builder's rubble and excavated subsoil, to a maximum depth of three metres. Soil of a firm bearing capacity was found below this depth. The design team have produced the drawings which will be sufficient to satisfy the requirements of the local planning and building control authorities.

Specification notes for construction:

- **Walls:** Cavity wall construction comprising: 100 mm outer clay facing brickwork skin, 150 mm cavity with pumped insulation beads, 100 mm inner concrete blockwork skin with plastered finish.
- **Roof:** 35 degree pitched trussed roof comprising: 200 mm × 38 mm trusses spaced at 400 mm centres, 200 mm × 38 mm ceiling joists spaced at 400 mm centres supported on 100 mm × 50 mm timber wall plate. Tegral Thrutone slates.
- **Floor construction:** Solid concrete floor comprising: 100 mm concrete slab, 125 mm Kingspan floor insulation, 25 mm to perimeter of slab, 1200 gauge damp-proof membrane, 100 mm subfloor concrete on 20 mm blinding with 150 mm crusher run hardcore below.
- **First floor construction:** Timber floor joist with T&G floorboards and plasterboard ceiling to underside.
- **Renewables:** Solar panels on the front south facing elevation providing hot water for the heating system.
- **Level threshold external doors:** Ground level to be graded at 1:20 to all external door exits.
- **Windows and doors:** Double glazed engineered timber.
- **Damp-proof course:** Vertical D.P.C. to all window and external door jambs, horizontal D.P.C. behind and under sills and stepped lintels. Wall D.P.C. to external skin, layers at 150 mm minimum above finished ground levels. D.P.C. to internal walls to overlap and be bonded to floor D.P.M. by a minimum of 215 mm.

NOTE Students will require the use of a scale ruler and calculator during the examination.

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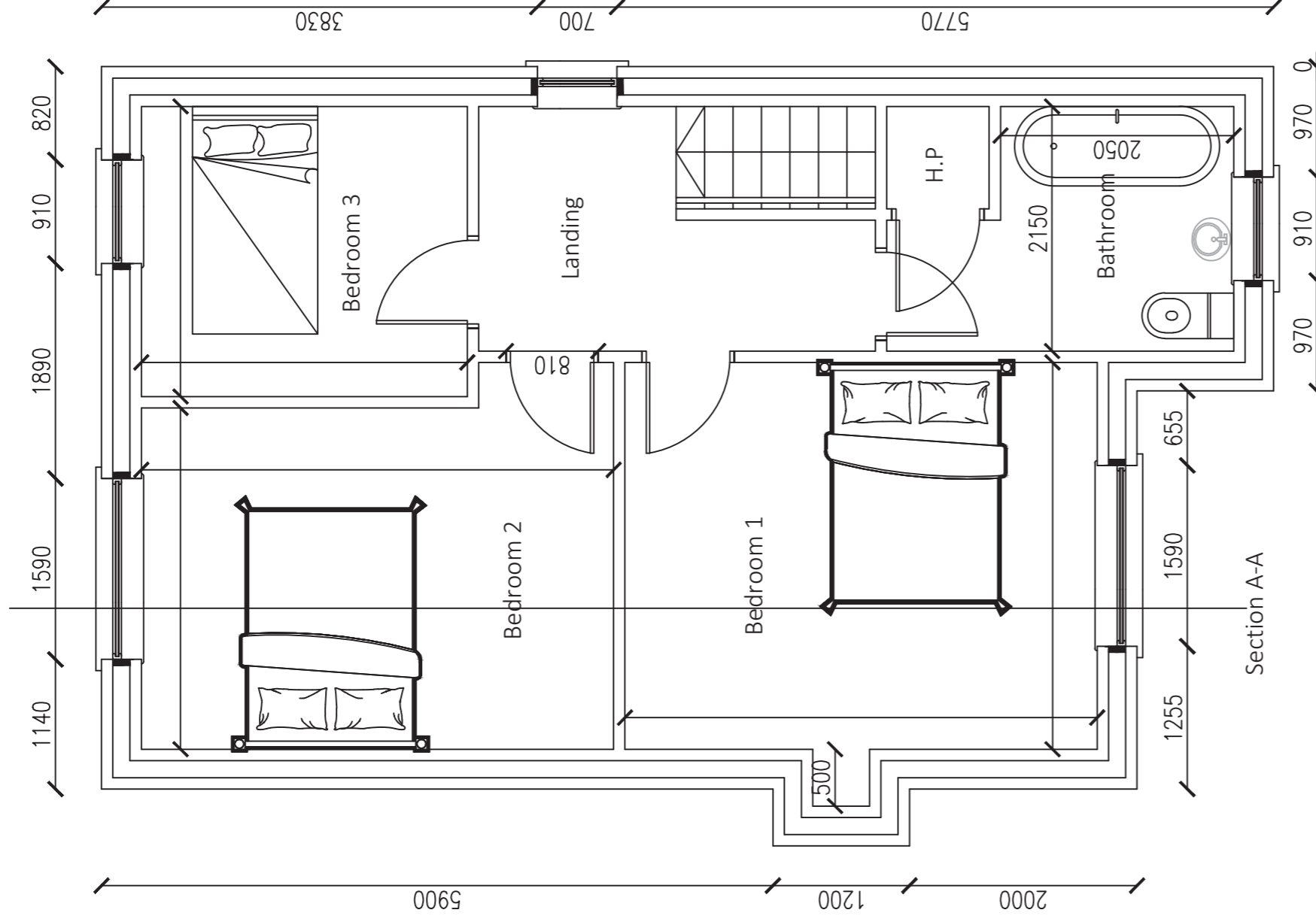
Proposed Ground Floor

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Unit 2 - Sustainable Const.
Pre-Release Materials

DRAWING DETAILS:

Drwg Nr: 01
Title: Ground Floor Plan
Scale: 1:50
Date: Summer 2020



Proposed First Floor

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DRAWING DETAILS:

Drwg Nr: 02
Title: First Floor Plan
Scale: 1:50
Date: Summer 2020



Rear Elevation



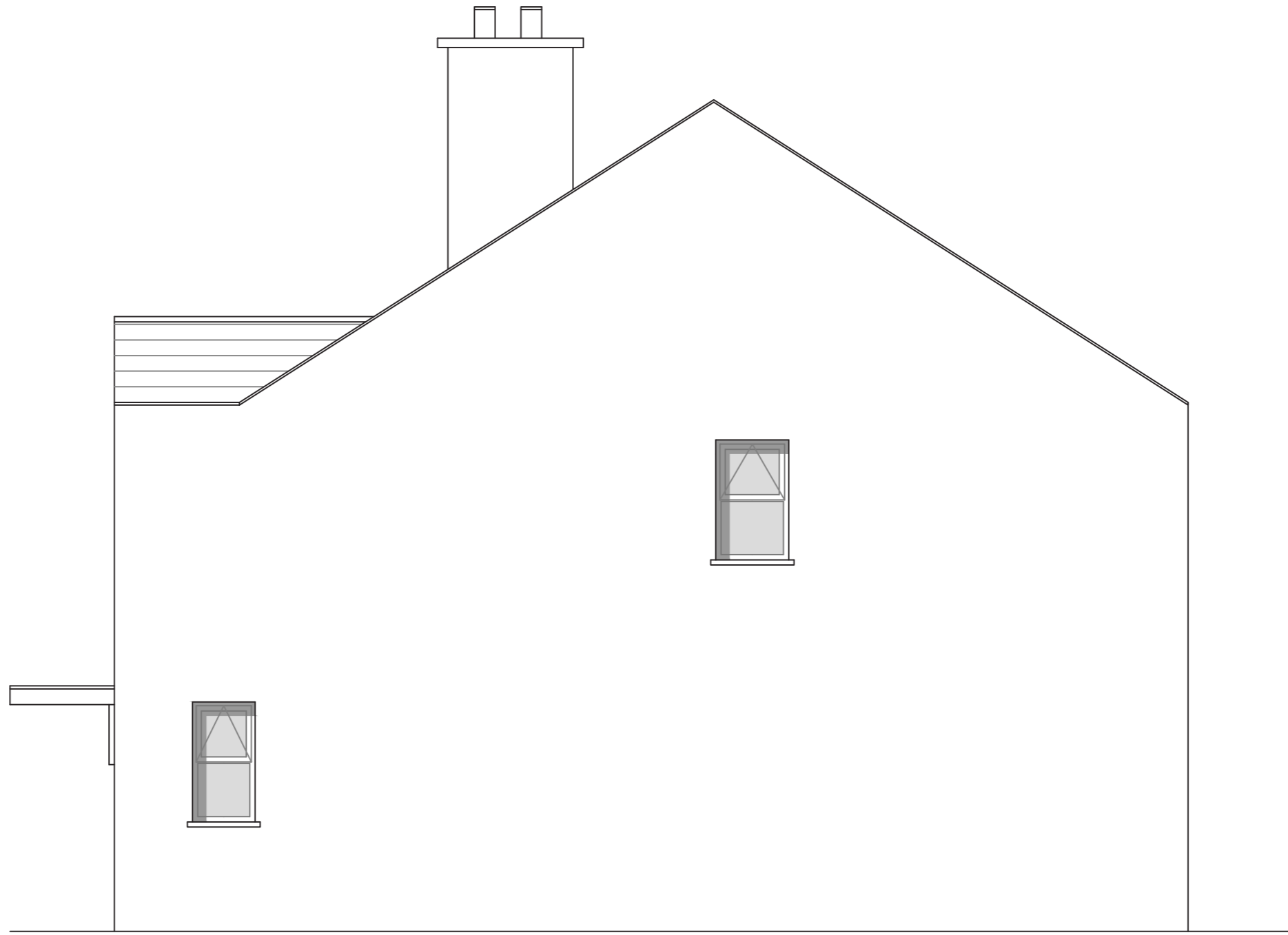
Front Elevation

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DRAWING DETAILS:

Drwg Nr: 03
Title: Front & Rear Elevation
Scale: 1:50
Date: Summer 2020



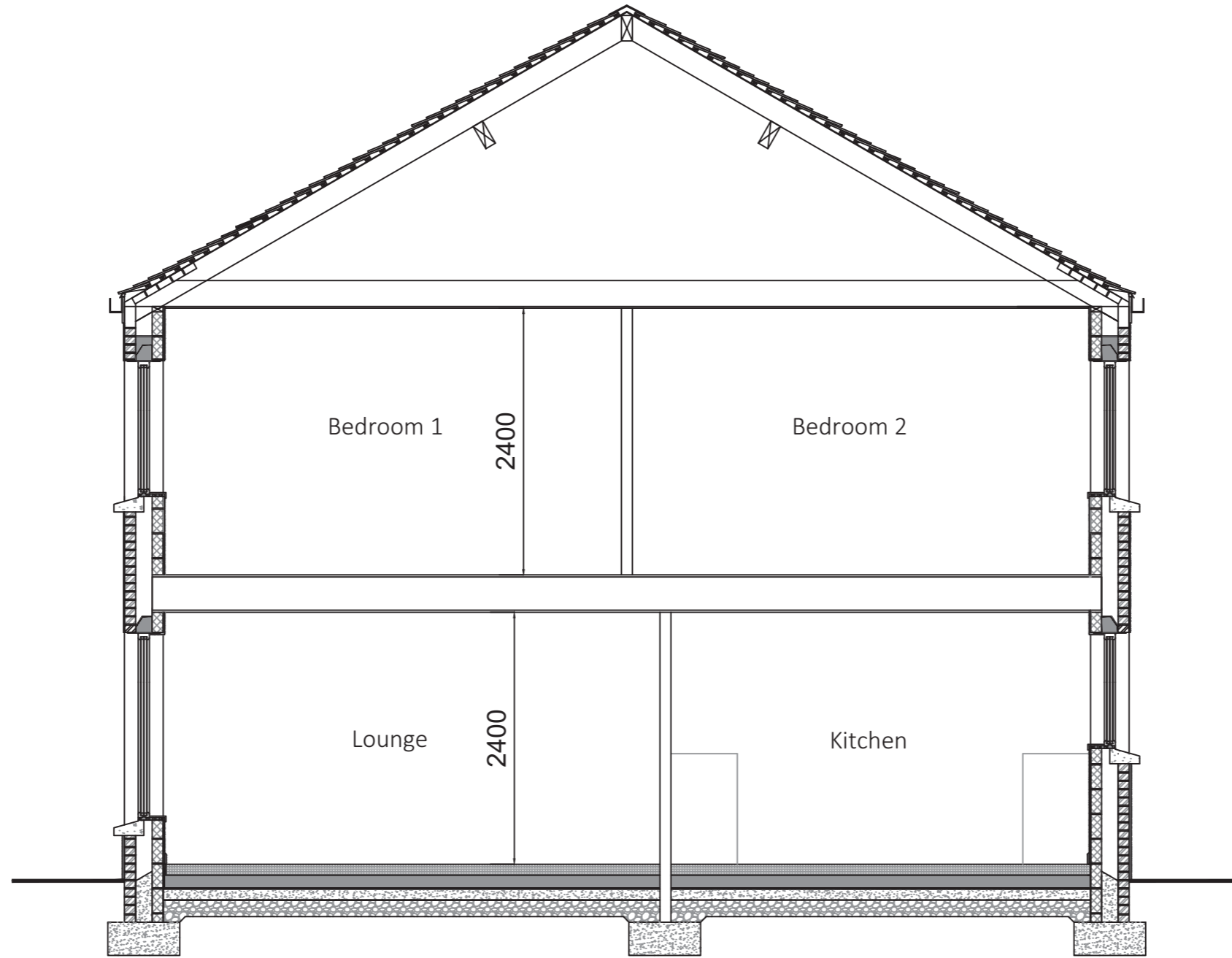
Side Elevation

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DRAWING DETAILS:

Drwg Nr: 04
Title: Side Elevation
Scale: 1:50
Date: Summer 2020



Section A-A

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DRAWING DETAILS:

Drwg Nr: 05
Title: Section A-A
Scale: 1:50
Date: Summer 2020

100mm facing bricks
in sand cement
mortar 1:3

Damp Proof Course
min 150 above G.L.

Weep holes spaced at
600mm c/c

Existing/
Proposed Ground
Level

Lean mix concrete fill to
cavity up to ground level,
haunched at 30 degrees
with fall towards outside
face

150mm thick Xtratherm Cavitytherm full fill insulation.
Wall ties spaced at 900mm horizontal & 450mm vertical centres

100 thick concrete internal
blockwork leaf with skim finish

100 mm thick 20N/10mm
aggregate Concrete Slab

125mm Kingspan TF70 floor
insulation to underside of floor
slab, 25mm to perimeter of slab

1200 gauge Damp Proof
Membrane

20mm sand blinding

150mm min well compacted
hardcore 25mm Crusher Run
Stone

600 x 300 Concrete pile
ring beam grade
20N/10mm aggregate.

Short bored pile foundation. 20N/10mm
aggregate with steel reinforcing. Note:
Satisfactory ground bearing strata to be
reached to satisfaction of Building Control
officer

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Unit 2 - Sustainable Const.
Pre-Release Materials

DRAWING DETAILS:

Drwg Nr: 06
Title: Foundation Detail
Scale: 1:5
Date: Summer 2020

