

# HOLLY HALL BARN

## PRESENTATION BOARD 01

**Location:** Sandhoe, Northumberland  
**Approximate Projects Cost:** 500k  
**Architect:** JDDK Architects  
**Project Technologist:** Tristan Cooper MCIAT  
**Year Completed:** 2022  
**Structural Engineer:** Fairhurst  
**M&E Engineer:** Armstrong Rhead

### Introduction

Holly Hall Barn was built sometime before 1860 when it was a traditional Northumberland "hemmel" where animals were kept on the lower level where access to the fields was through the arched openings. Grain and hay and other produce would have been stored on the upper level. The barn is on a steeply sloping south facing hillside, looking over the Tyne valley. The hemmel was converted into a dwelling in 1974. Entry to the house is from the upper level on the north side where the house appears to be single storey. The main living area is on the bottom level facing south looking over the Tyne Valley. There is a single storey wing on the western side of the main barn.

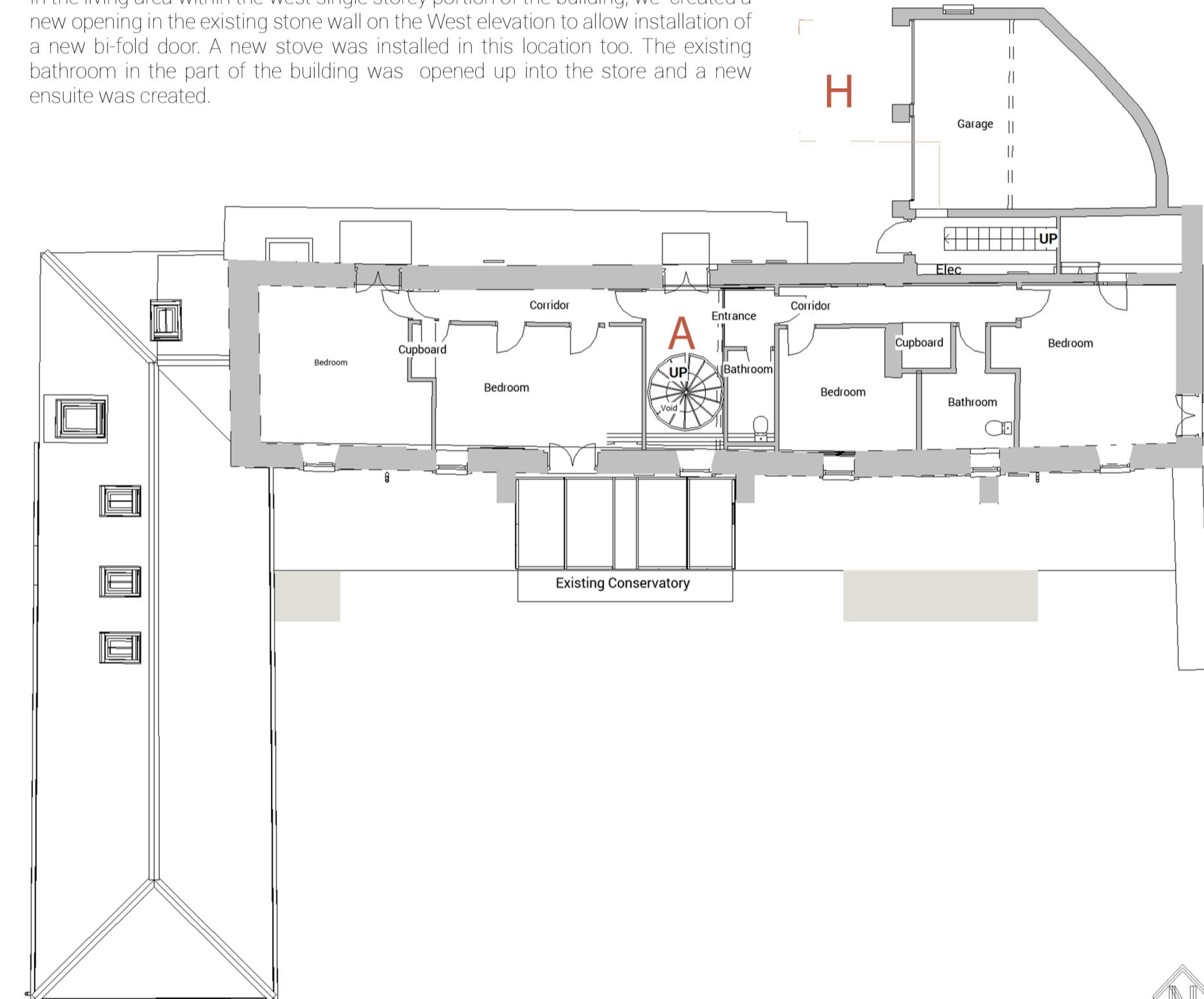
### Brief

JDDK were appointed as Architects to refurbish the main building and create a new extension to the north of the property, extending the existing garage and creating a new hobby workshop.

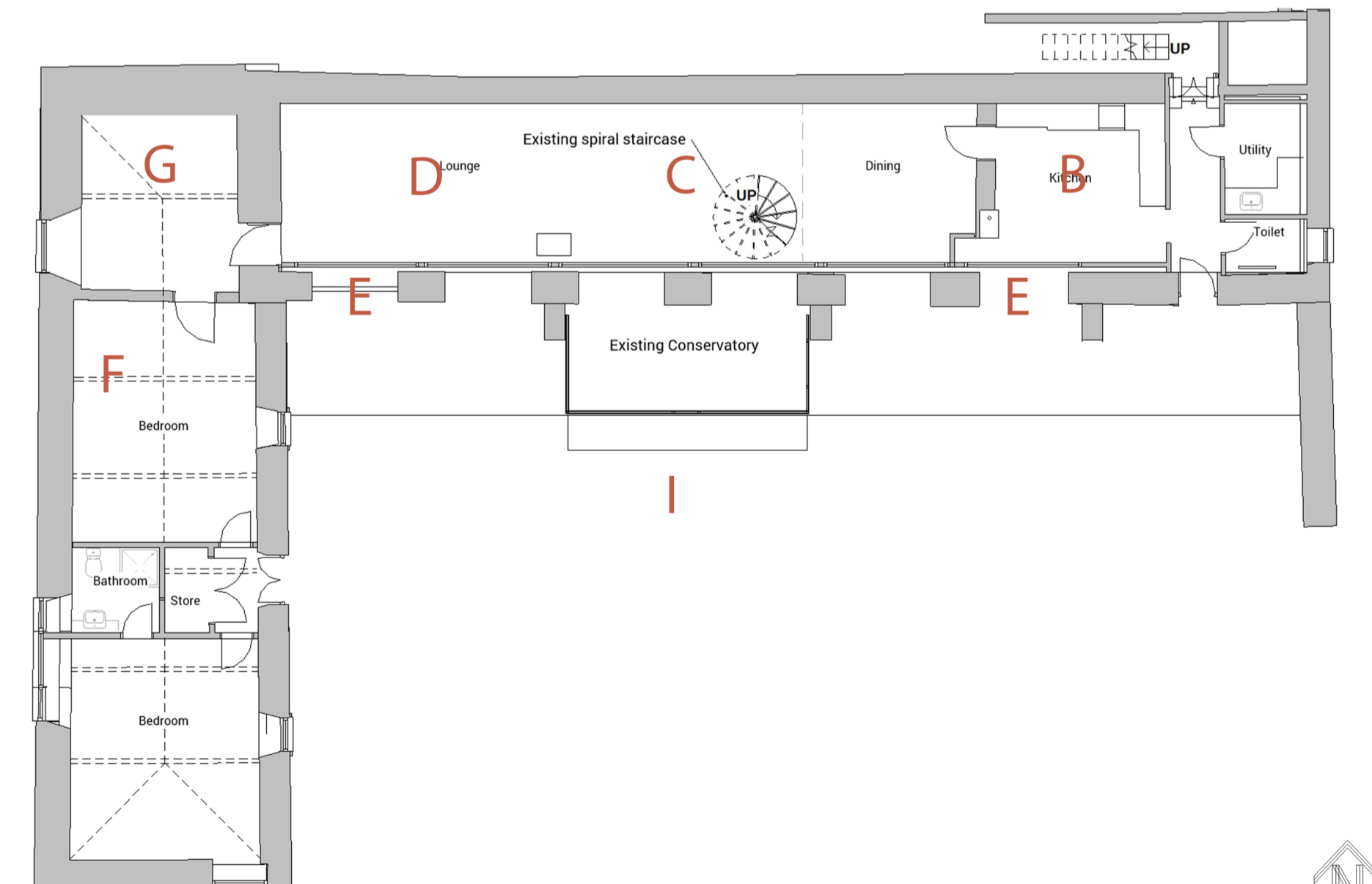
The refurbishment consisted of opening up the entrance hall on the upper floor, creating a large landing to the new straight zig zag staircase which replaced the existing spiral stair. There were some internal reconfigurations to the upper floor which included the addition of a new shower room.

On the lower floor the kitchen/dining room were opened up and new kitchen units were installed. The utility was also opening up and new utility units were installed. The existing sliding doors that sat inward of the arches were replaced with high performance triple glazed sliding doors. The remain 2no. arches were infilled with new arched windows with oak cheeks installed to the arches.

In the living area within the west single storey portion of the building, we created a new opening in the existing stone wall on the West elevation to allow installation of a new bi-fold door. A new stove was installed in this location too. The existing bathroom in the part of the building was opened up into the store and a new ensuite was created.



Existing - Upper Floor Plan



Existing - Lower Floor Plan

### New Build - Specification

#### External Walls

The new hobby workshop is built from an 140mm insulated timber frame with 40mm isolair insulation to the inside preventing thermal bridging. The U-value achieves 0.2W/m2.K which allows for 12% repeating timbers in the 140mm insulation layer.

#### Roof

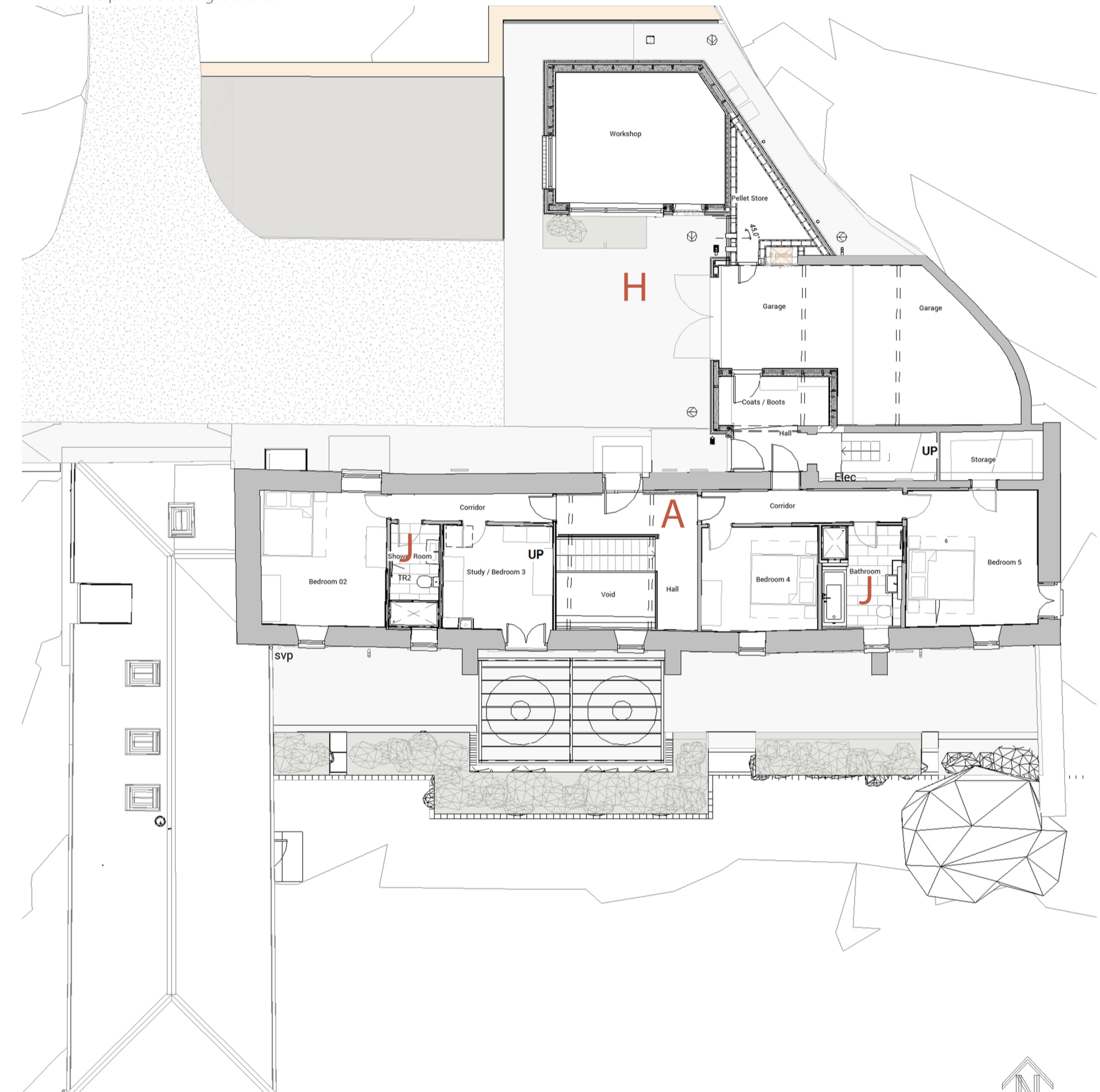
The warm roof is made up of 250mm Bauder PIR insulation on a plywood deck. Green roof vegetation layer is installed on top of the insulation. The U-value achieved is 0.12W/m2.K

#### Floor

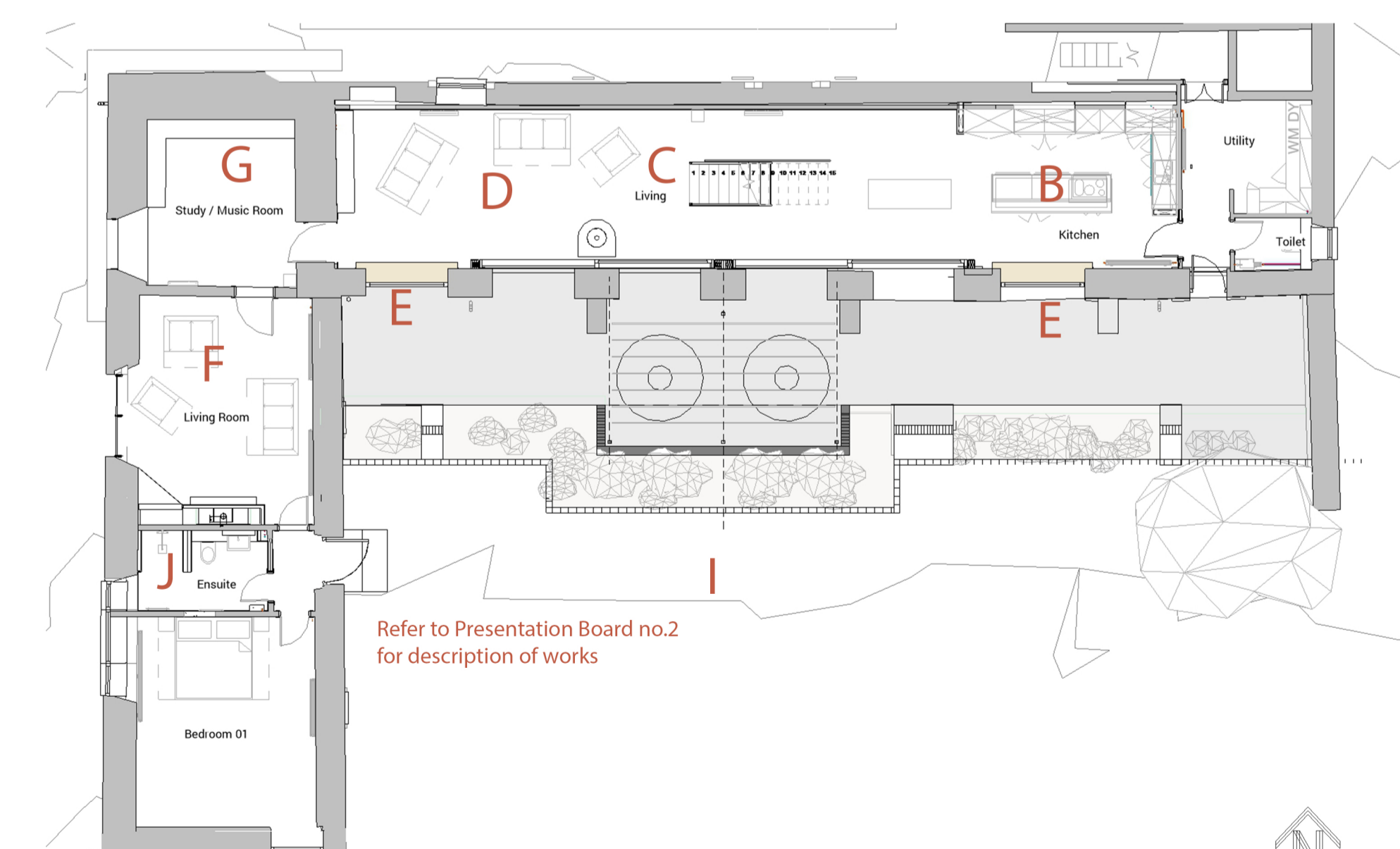
The new floor is made up of 100mm PIR insulation on a sand blinding layer. A power floated concrete slab sits directly on the insulation layer with a dust control paint finish applied to it. The U-value achieved is 0.17W/m2.K

#### Windows & Doors

High performance timber composite double glazed windows were installed with average U-value of 1.4 W/m2.K with trickle ventilation to provide background air.



Proposed - Upper Floor Plan



Proposed - Lower Floor Plan

### Refurbishment - Specification

#### External Walls

Early in the process we explored thermal upgrades to the existing fabric which included the installation of a 40mm breathable wood fibre board (Pavadyr from ecological building systems) to the external walls to give a U-value of 0.63W/m2.K however due to the cost of the system this was removed from the contract in lieu of a breathable mineral wool.

#### Roof

The cold roof was upgraded with 300mm of mineral wool to achieve a U-value of 0.15W/m2.K ventilators were introduced to ensure the loft space remained well ventilated.

#### Floor

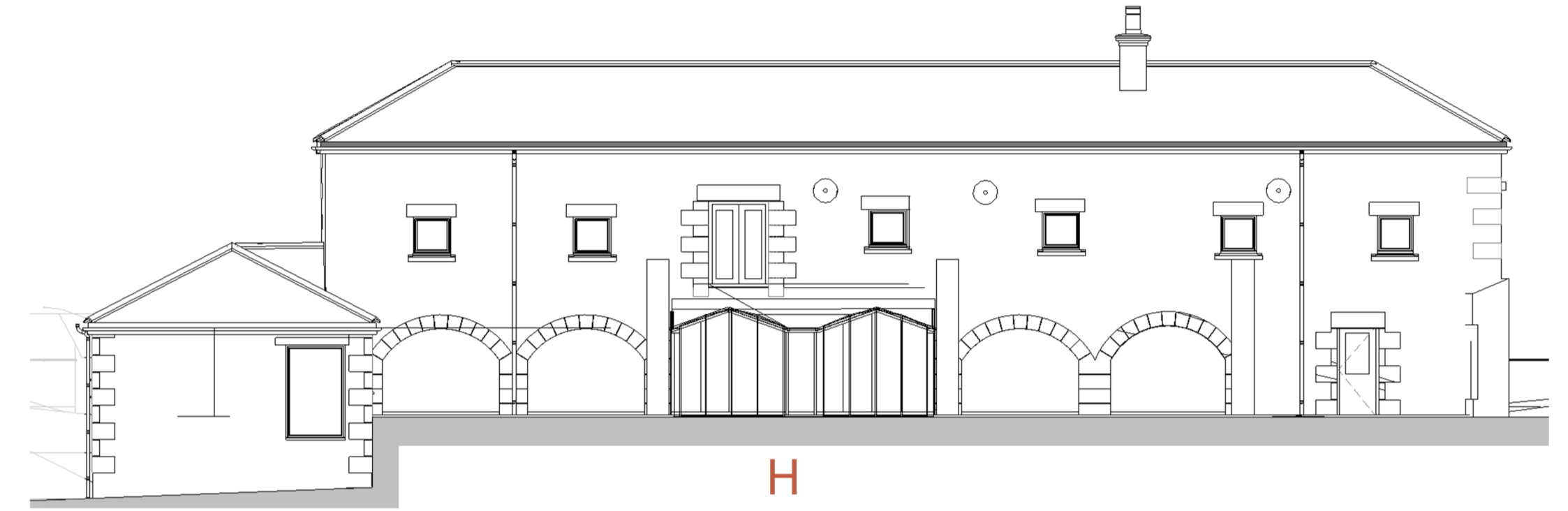
The existing tiles and screed were removed on the lower ground floor and an PIR insulation carrier board was installed to allow the installation of underfloor heating and a proprietary screed system

#### Windows & Doors

New triple glazed composite windows and doors were installed to the west elevation where wind infiltration was an issue, new triple glazed internorm sliding doors were also installed to the long living room. High performance timber composite double glazed windows were installed everywhere else.

#### Air tightness

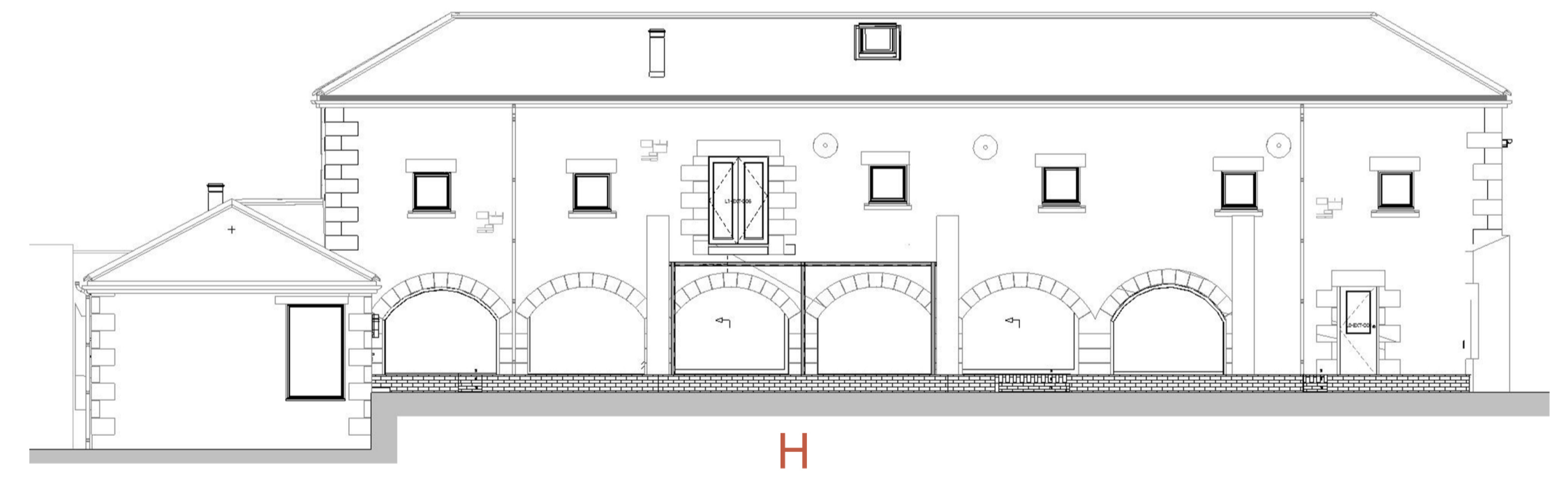
The solid walls were plastered using a breathable lime plaster. High performance triple glazed windows were installed to the West elevation. The ends of the timber floor joists were re-pointed with mortar.



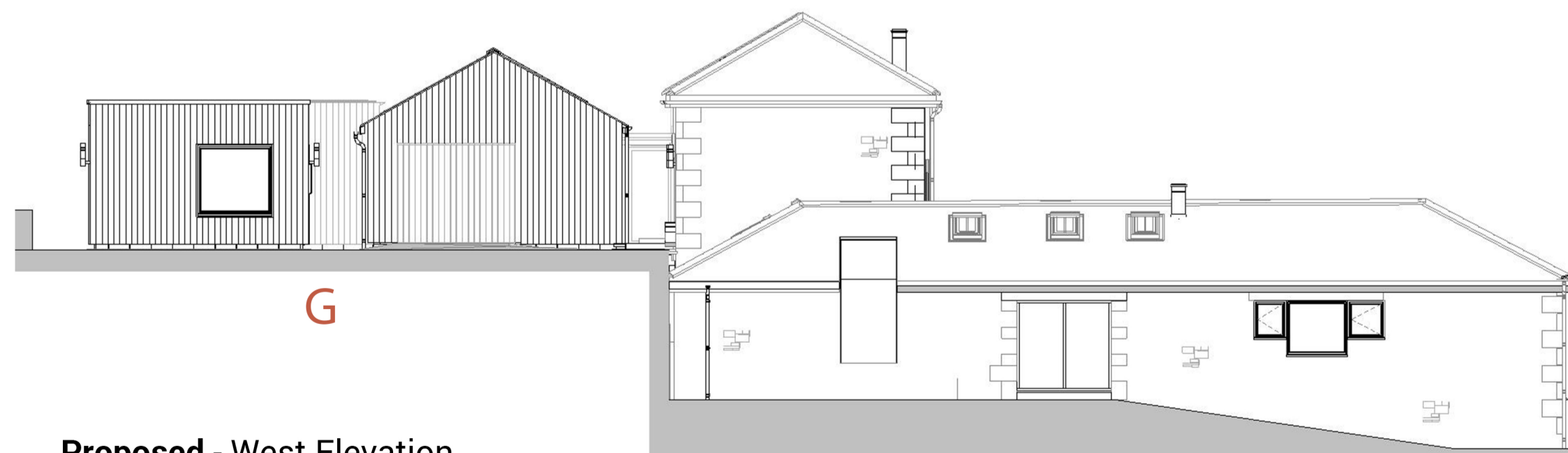
Existing - South Elevation



Existing - West Elevation



Proposed - South Elevation



Proposed - West Elevation

# HOLLY HALL BARN

PRESENTATION BOARD 02

## A - Entrance Hall



**Existing - Entrance Hall**      **New - Entrance Hall**

Entrance Hall and Staircase - The existing hall was removed, the spiral staircase was removed and the floor was opened up to accommodate the new staircase. The flat ceiling was removed and the existing trusses and purlins were exposed, the sloping ceiling was insulated and 2no. new roof lights were installed.

## B - Kitchen



**Existing - Kitchen**      **New - Kitchen**

The existing load bearing partition between the existing kitchen and dining rooms was demolished which opened up the kitchen space. A new kitchen was installed. A new arched window with a clear spanning oak seat was installed in the existing arch and the cheeks were lined with oak.

## C - Staircase



**Existing - Staircase**      **New - Staircase**

The original spiral staircase was removed and in its place we installed a clear spanning 'zig zag' staircase. The staircase was centred in the room and help delineate between the living room and the dining room.

## D - Long Living Space



**Existing - Long Living Space**

The long room was stripped right back to stone and insulated where possible while maintaining breathability.

The first floor joist were repaired where needed and a new opening was created within the ceiling for the staircase. New timber framing was formed around the arches to support the new glazed sliding doors and new electrics and plumbing were installed.

**New - Long Living Space**



## E - Window Seats



**Existing - Arched Window**

**New - Arched Window and Seat**

The existing window which sat within the living room was removed and replaced with a fixed, arched double glazed window. The stone cheeks were insulated at the jambs with aerogel to provide a better surface temperature factor and then wrapped with a flexible oak veneer plywood. The bench clear spans the stone cheeks which was achieved by installing steel 2no. RHS bearing onto steel angle brackets.

## F - Living Room



**Existing - Living Room**

**New - Living Room**

In the living area within the west single storey portion of the building, we created a new opening in the existing stone wall on the West elevation to allow installation of a new bi-fold door. A new stove was installed with a site formed surround that accommodated the log store, book case and TV location. All the existing flooring was replaced with timber.

## G - Study / Music Room

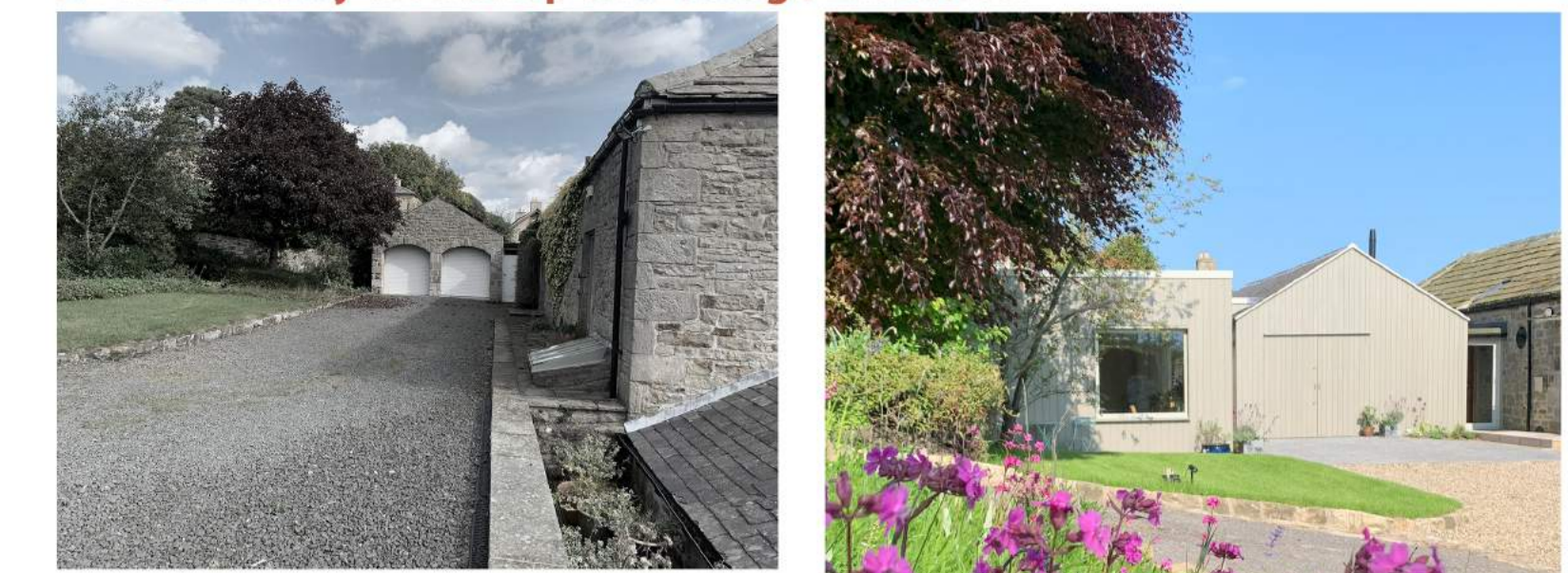


**Existing - Study**

**New - Study / Music Room**

In the Study / Music room the floor existing floor was dug up and installation, screed and a new underfloor heating system was installed. The existing window was replaced with a new glazed eaves system.

## H - New Hobby Workshop and Garage Extension



**Existing - Garage**

### Garage

A new side door would be installed next to the garage, the existing garage was enlarged by extending it forward, and a wood pellet store was installed between the garage and the new hobby workshop.

### Hobby Workshop

A new hobby workshop was to be built next to the existing garage, this was designed as a timber frame construction with timber cladding, and a sedum green roof.

**New - Garage and Hobby Workshop**



## I - External



**Existing - South Garden**

**New - South Garden**

On the upper level a new gravel drive was installed with new paving laid around the workshop, pellet store and garage. On the lower level the existing conservatory was to be demolished and a new installed pergola in its place. A new patio was detailed and laid using the original clay paviours.

## J - New Bathrooms & Ensuites

