### **3D Concept design**

Drawing prepared by Matthew Fox November 2019. Drawing 01.

Three windows on south elevation to be set at different depths within wall. •

Large eves overhang to protect CobBauge and give shelter to people sitting on the plinth.

- Strips of different external render. To trial performance of natural renders. Possible renders to trial:
  - 1. Lime
  - 2. Clay
- 3. Insulated render

Exposed structural and thermal sections of cobbauge to be on more sheltered elevation.

 External wall could be a notice board / display about CobBauge / other research.

## **Project Summary**

These drawings present the initial concept design for a single room building on Plymouth University Campus. Adjacent to Kirkby Lodge. The building shall be formed predominantly out of CobBauge, a new earth based monolithic wall material being researched by Plymouth University under an Interreg funded project. The building shall therefore serve two functions:

1. To provide an opportunity for the CobBauge team to build one of the first buildings out of this new material. This building will enable the team to monitor the performance of this new material and help to demonstrate how CobBauge could be used on other buildings.

2. To provide a class room and feature building within the campus that can be used to showcase sustainable activities being undertaken at Plymouth University. The building will sit within a garden setting, which could also serve as an outdoor training space.



Plinth below CobBauge. To be formed from something resilient to moisture. To trial a low plinth for some of the building - minimum of 150mm. Plinth no higher than 600mm else where. The plinth could also double up as seating. Connecting with the surrounding garden.

> This protruding nib could have glazing / perspex to reveal the twin layer composite structure of a CobBauge wall.

Exposed cobbauge low wall / garden seat. To explore how material weathers when left with limited protection.

 Simple mono-pitch roof design. Gutter to rear / north elevation.

- Providing one curved wall will help the CobBauge team to explore how the material could be used to form more curved shapes.
- The curve also helps to lead people Into the building

Sections of internal wall to have different finishes. Trialing exposed internal CobBauge and various insulating plasters / renders.







- Thermal CobBauge layer to be approximately 50% hemp shiv fibre by dry weight to a slay slip.

- Structural CobBauge layer to be approximately 2.5% hemp or wheat straw fibres by dry weight to clay based subsoil.

It is the intention of this project to use the subsoil extracted from the immediate site for the CobBauge walls. However should the soil prove low in clay content, alternative options will need to be considered.







site :	Kirkby Lodge, University of Plymouth
drawing title:	Ground Floor Plan
roject number:	drawing number: <b>02</b>
scale: 1:50 @ A3	date & revision: November 2019







Other material considerations:

- Building to be serviced with electricity and data only. These are to be brought into the building via a pop-up in the slab.
- Electric sockets and lighting throughout room.
- Surface water drainage to drain into soakaway or sewer. TBC.
- Perimeter aco / land drains required to help shed water from close proximity to building.
- Landscaping to be designed by others.
- Many of the details and material decisions are still to be made / confirmed as part of the ongoing CobBauge project.
- It is anticipated that there will be an element of self-build to the CobBauge walls.
- Earth material to be sourced from the site excavations if possible.



Roof to be finished with either: 1. Corrugated metal roofing 2. Standing seam zinc 3. Natural slate 4. Grass roof

 Insulated warm roof construction. To be wood fibre insulation or similar natural material.

- Aluminium gutter and down pipe to rear of monopitch roof.
- Foundations to be designed by structural engineer.
- Floor to be finished with either:
- 1. Timber boarding (with service cavity)
- 2. CobBauge / compacted earth (To be investigated)
- Sub-floor to be either:
- 1. Concrete with insulation and DPM
- 2. CobBauge / earth / limecrete flooring on a
- layer of foam glass insulation

### Drawing prepared by Matthew Fox

Kirkby Lodge, University of Plymouth
Section AA
drawing number: <b>03</b>
date & revision: November 2019











# Timber wall plate to top of CobBauge wall. To be designed by structural engineer.

Triple glazed door and windows. Timber framed aluminium composite construction.

CobBauge cross section to be presented via an

 Plinth to base of CobBauge wall. Exact construction to be determined / designed. Will exceed UK thermal building regulations. Could be brick / stone / block construction.

site :	Kirkby Lodge, University of Plymouth
drawing title:	South & West Elevations
roject number:	drawing number: <b>04</b>
scale: 1:50 @ A3	date & revision: November 2019









# • Timber structure to roof. To be designed by

site :Kirkby Lodge, University of Plymouthdrawing title:North & East Elevationsroject number:drawing number: 05scale:date & revision: November 2019		
drawing title:North & East Elevationsroject number:drawing number:0505scale:date & revision:1:50 @ A3November 2019	site :	Kirkby Lodge, University of Plymouth
roject number: 05 scale: date & revision: 1:50 @ A3 November 2019	drawing title:	North & East Elevations
scale: date & revision: 1:50 @ A3 November 2019	roject number:	drawing number: <b>05</b>
1:50 @ A3 November 2019	scale:	date & revision:
	1:50 @ A3	November 2019



