


SmartBio-C

Innovative Biobased Solutions

Aims to speed up the uptake of circular biobased materials to provide zero-carbon, healthy and socially and economically viable solutions for the construction industry.

SmartBioC is redefining performance indicators used to assess sustainable building choices.

TRADITIONAL WALL

Its internal leaf is built with blockwork and finished with a Gypsum plasterboard whilst its external leaf is brickwork. The wall cavity has PIR insulation, supported on wall-ties

Natural 100	Manufactured 200
Social 300	Financial 400
Human 133	



TRADITIONAL FLOOR

Is a beam and block suspended floor system which comprises of concrete beams) 'infilled' with concrete blocks . A floor screed (3) is placed on top of a Damp Proof Membrane (DPM) (4) and polyisocyanurate (PIR) insulation beneath

Natural 100	Manufactured 200
Social 300	Financial 400
Human 100	



TRADITIONAL ROOF

As with most domestic roofs of traditional buildings in the UK, this build-up is composed of use wood trusses supported on cavity brick and block walls. Concrete tiles provide the roof covering, whilst glasswool ceiling insulation is key to contain the warmth inside the house.

Natural 200.	Manufactured 400
Social 300	Financial 400
Human 300	

HOW TO PLAY

1. Ensure each player around the table has an equal number of cards.
2. Each player is to shuffle and place their own cards face down, in a pile, in front of them.
3. Choose who in your group is to start.
4. The first player (1) turns over their top card and looks at it, but doesn't show anyone else. They will be battling with the player on their left (2).
5. Player 1 chooses a category/capital that they believe will beat their component.
6. Player 2 picks up their top card and looks at it.
7. Player 1 announces their chosen category/capital, followed by the result on their card.
8. Player 2 announces their equivalent result for the same category/capital and the player with the best result wins the battle.
9. The winner takes the card from their opponent and places the two cards on the bottom of their pack.
10. Player 2 now battles with the player on their left, player 3, moving around the table.



FAST GROWING WALL

It has an engineered timber I-joist structure infilled with wood fibre insulation and an airtight OSB behind a two-layered gypsum plasterboard lining in the interior. Externally, a wood insulation board is provided along with thermally modified cladding mounted in timber battens.

Natural 367	Manufactured 300
Social 350	Financial 400
Human 300	



FAST GROWING FLOOR

An engineered bamboo 'I-joist' box provides the structural support for this suspended floor. The 'I-joist' boxes are infilled with hemp-flax insulation and a breathable membrane protects them from raising water or humidity. A high-density laminated bamboo floor with a cork underlay is laid over rigid wood insulation boards .

Natural 367	Manufactured 350
Social 350	Financial 300
Human 400	



FAST GROWING ROOF

An engineered bamboo 'I-joist' box provides the structural support for this warm roof. The 'I-joist' boxes are infilled with hemp-flax insulation and closed-up internally with compressed hemp boards, whilst externally they are protected by a breathable roofing membrane . A thermally modified bamboo cladding provides the roof covering allowing ventilation and removal of moisture.

Natural 367	Manufactured 300
Social 350	Financial 200
Human 300	

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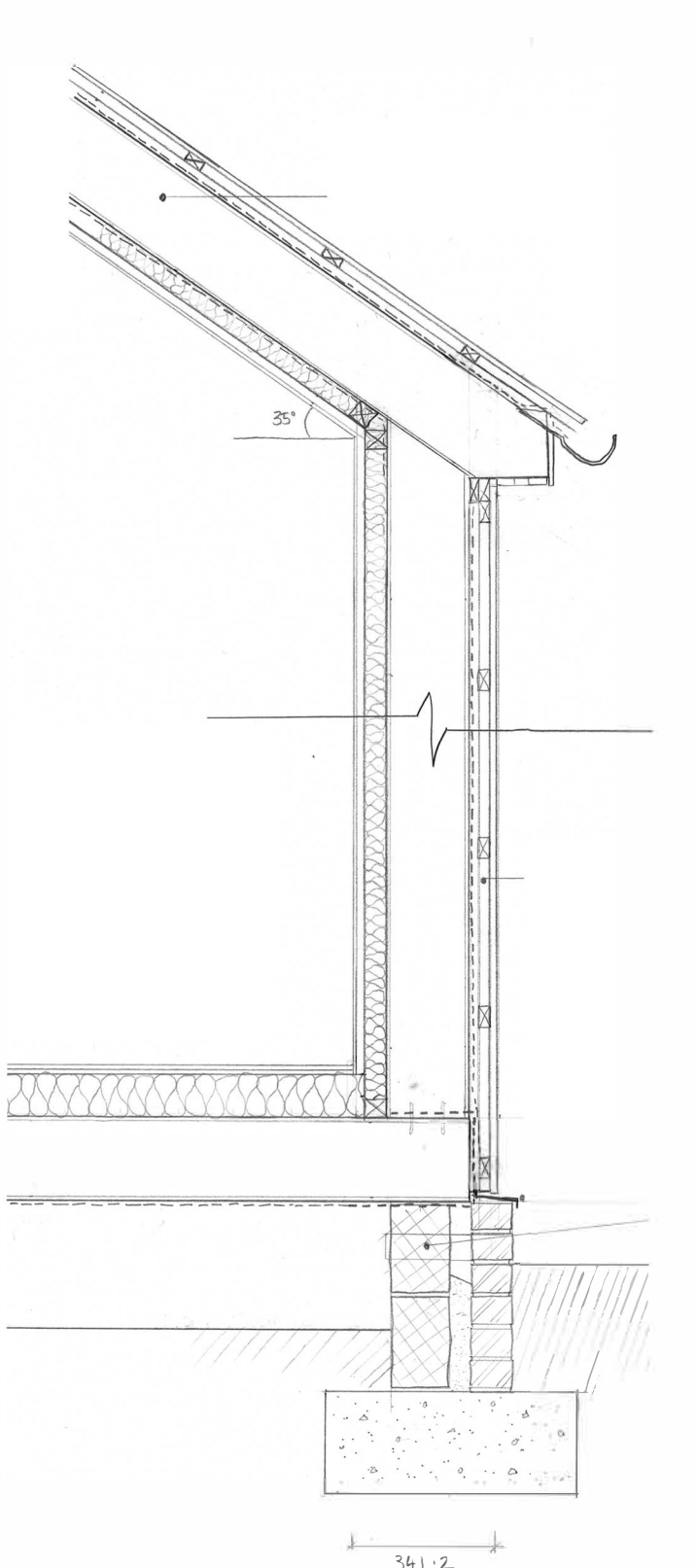
SmartBioC has developed a series of build-ups - or basic components of a building - (i.e. walls, floors and roofs) using different biobased materials which can help in building a sustainable future and achieving net-zero carbon goals.



SmartBioC's Fast Growing build-ups

SmartBioC's Fast-Growing build-ups are mainly composed of short or fast-rotation plant-based materials which take between 5-months (hemp) and 6 years (bamboo) to mature, and to be ready for durable construction applications

The 'five capitals' model by Johnathon Porritt (2012) including natural, human, social, manufactured and financial capitals has served as the backdrop to assess the build-ups' overarching sustainability and net-zero potential.



It is our believe that 21st century buildings users are better informed, globally connected and seek a series of environmental, human and social values (capitals) in the products and services they consume that go beyond technological advancement (manufactured) and economic value (financial). These capitals simplify the wealth of data on sustainability and encompass all the UN Sustainable Development Goals (SDGs).

Reference:

Porritt, J.: *Capitalism as if the world matters. Capitalism as if the World Matters*, pp. 1– 360 (2012). <https://doi.org/10.4324/9781849770675/CAPITALISM-WORLD-MATTERS.JONATHON-PORRITT>