

4.2.6. DnA House

Location:	Asse, Belgium
Architect:	Blaf Architecten, Leuven, Belgium
Completion:	2013
Client:	private
Use:	Residential
Phase:	1-8

Description: The single-family residential building in the suburbs of Brussels, Belgium, aims to lower its energy and resource consumption through a passive house concept, the use of reused bricks and a load-bearing timber framework construction. The design of the ground plan with its symmetrically composed, same-sized rooms bears similarities to the Renaissance period of Palladio (Grafe, 2013). With its reused bricks, the outer wall has a rustic appearance and contributes to the image of an “intelligent ruin” (BLAF, 2018). The building consists of two façades: 1) one outer façade with reused bricks and 2) an inner load-bearing timber framework construction. This construction enables easy disassembly, adaptability and transformation. The architects avoided complicated construction solutions and made the element connections visible.

Circular Design Principles:

The main goals of the design regarding circularity can be grouped into the three scenarios presented in chapter 3.2.2:

1. Reuse (re), 2. Recycling (rc), 3. Design for disassembly (dfd). The use of renewable resources has not been determined as a circularity scenario as this research focuses on the use of mineral building materials. However, it is a principle that further reduces the environmental impact (e.g. CO₂ emissions) and is marked here as an additional scenario of reduction (according to Potting et al. (2017). It applies to “reduce” of the R-ladder.

Case Study principle	circularity scenario			
	re	rc	dfd	Others
“Hybrid façade”: Use of two load-bearing façades for future adaptability or recyclability			x	
Use of reused material (bricks)	x			
Easy disassembly through a low-tech approach and visible connections			x	
Use of renewable material				reduce

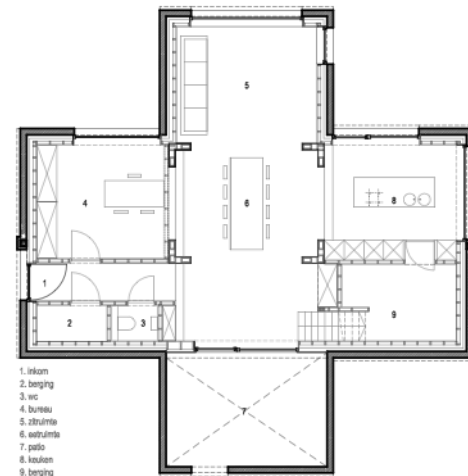
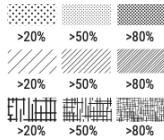


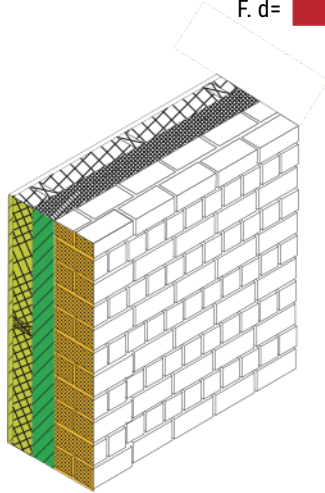
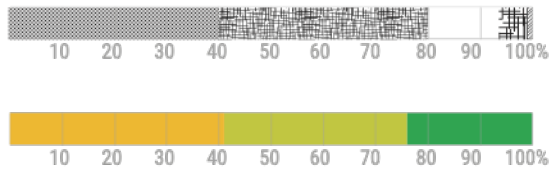
Figure 77: Interieur

Figure 78: Ground floor plan

Reuse=
 Recycled=
 Renewable=

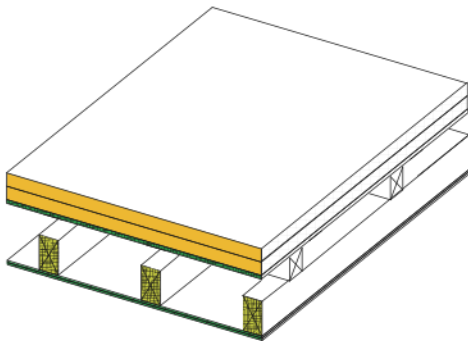
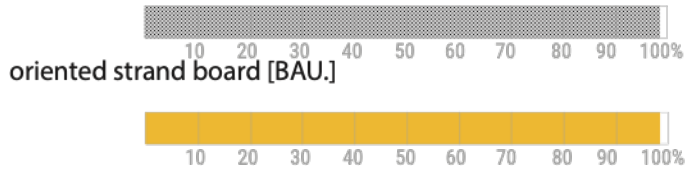


F. a=
 F. b=
 F. c=
 F. d=



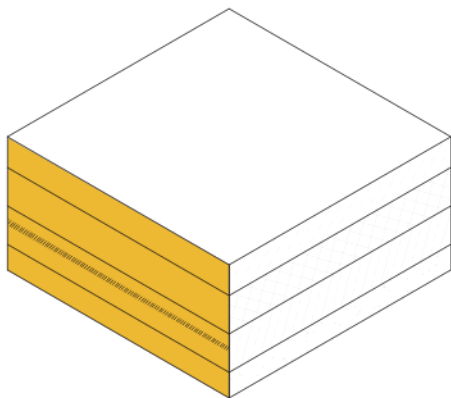
Detail 1: external wall, scale 1:25

Brick reused	190 mm
Insulation XPS	40 mm
Insulation board PIR	60 mm
Timber construction	120/60 mm
Mineralwool Insulation	120 mm
gypsum plaster board	15 mm



Detail 2: roof, scale 1:25

EPDM rubber felt	3 mm
Insulation PIR	180 mm
PE foile	2 mm
oriented strand board	22 mm
timber pole	60 mm
Timber beam	230/40 mm
gypsum plaster board	37,5 mm
plaster	12,5 mm



Detail 3: floor slab, scale 1:25

concrete floor slab	150 mm
Insulation PUR	150 mm
reinforced concrete	148,5 mm
gravel	100 mm

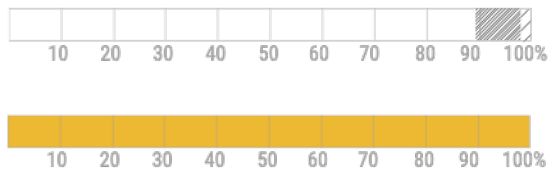


Figure 79: Circularity potential of the DnA project with detailed building elements