

# Urban shelter

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**Building Type** : Isolated or semi-detached house  
**Construction Year** : 2022  
**Delivery year** : 2023  
**Address 1 - street** : 72 rue des Bordes 33500 LIBOURNE, France  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 49 m<sup>2</sup> SHON  
**Construction/refurbishment cost** : 187 000 €  
**Number of Dwelling** : 1 Dwelling  
**Cost/m2** : 3816.33 €/m<sup>2</sup>

## General information

This construction was an opportunity for us to create our workplace (an architectural workshop). We wanted to share this place with other creative professionals with *co-working* type management. We think this is a good way to contribute to the "social ecology" of our city's neighborhood ( Guattari , 1989).

In an approach of "conviviality" ( Illich , 1973) , we designed this project by favoring low technologies (*low-tech*) . This orientation makes it possible to promote the labor of local craftsmen and to facilitate maintenance or possible future repairs.

With a view to not artificializing the land, we first made the choice to invest in an existing fallow building and regenerate it by giving it a new function. In order to save materials, we have limited demolition. When certain elements had to be removed, they were put back into circulation in reuse sectors or reused on site.

The prospect of this personal project provided an opportunity to experiment with a set of innovative design principles that were very important to us.

Great attention was paid to the choice of materials and their origins: wooden frame, insulation of the roof with straw bales, insulation of the existing stone walls with a projection of raw earth + hemp, exterior wood joinery and exterior cladding in untreated chestnut.

Certain materials have been reused: double-leaf exterior gate transformed into sliding, single-glazed exterior joinery adapted into interior joinery, terrace made of sawn Bordeaux paving stones, etc.

Furthermore, a significant quantity of elements were re-used: all the plumbing elements, cement tiles on the floor, tiling on the wall, exterior joinery, etc.

Several bioclimatic principles were applied: use of the thermal inertia of raw earth, plant fibers for insulation (straw, hemp) , natural ventilation, passive thermal buffer to the north (insulated, but not heated) and active thermal buffer to the north. south (double trellis with fruit trees) .

The exterior arrangements apply the principles of the "mini forest garden" . The high concentration of trees should help create a cool microclimate, while producing food in this "edible landscape".

## If you had to do it again?

It would be necessary to start by building a small storage area on the site to be able to store the reused elements in good conditions very early on in the construction site (doors, windows, plumbing elements, scraps of earth/hemp, etc.).

## See more details about this project

<https://www.sudouest.fr/gironde/libourne/une-maison-bioclimatique-a-libourne-faire-de-l-ecoconstruction-c-est-une-vraie-demarche-14648224.php>

<https://delateteautoit.fr/presentation/>

<https://www.todoarchi.com/projets-todoarchi/refuge-urbain/>

## Photo credit

TODO Architecture

## Stakeholders

### Contractor

Name : VINCENT SENEGAS – EURL

### Construction Manager

Name : TODO Architecture

Contact : laureau[a]todoarchi.com

<https://www.todoarchi.com/>

### Stakeholders

Function : Other consultancy agency

Intersections

Pierre Lagrandmaison

<https://www.intersections-coop.fr/>

BET Structure

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Function : Company

GIRARD - SARL

Maxime Girard

<https://girardsarl.fr/>

Structural work, stone masonry, reused stone

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Function : Company

VINCENT SENEGAS – EURL

Vincent Senegas

Frame, roofing, straw insulation, parquet

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Function : Company

ROQUE - SAS

M. Jeandet

<https://www.roque-bois.fr/indexeb32.html>

Exterior carpentry + reused joinery

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Function : Company

ECHO et CO - SAS

Florent Ballu

<https://delateteautoit.fr/>

Earth/hemp insulation, earth coating

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Function : Company

Clim ELEC

Sophie PRIEUR

<http://www.clim-elec.com/>

Reuse plumbing

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Function : Company  
Tristan GASSIOT

Tristan GASSIOT

Reused tiles, Reused cement tiles

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Function : Company  
Damien WANQUETIN

Damien WANQUETIN

Reused wood shutters

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Function : Company  
Anne-Sophie ASTAIX

Anne-Sophie ASTAIX

<https://delateteautoit.fr/>  
Lime washes

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Function : Company  
All Work TP

Didier Boucard

Exterior fittings, Re-use stones, Re-use portal

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Function : Manufacturer  
SO.MO.PA (Société Moderne de Pavage)

Frédéric BLANC

<https://fayatp.fayat.com/fr/filiales>  
Reused Bordeaux paving stone (sawn)

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Function : Manufacturer  
ISOL'en paille

Nicolaas OUDHOF

<https://www.isolenpaille.com/>  
Supply Straw bales (thickness 22 cm)

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Function : Manufacturer  
Storme Pruvost SARL

<https://carreauxdegironde-storme-pruvost.fr/>  
Raw earth supply

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Function : Company  
BACHMAYER JEAN CLAUDE – SARL

JEAN CLAUDE BACHMAYER

electricity

Type of market

Not applicable

Allocation of works contracts

Separate batches

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**Energy**

**Renewables & systems**

## Systems

Heating system :

- Wood boiler

Hot water system :

- Individual electric boiler

Cooling system :

- No cooling system

Ventilation system :

- Natural ventilation

Renewable systems :

- No renewable energy systems

## Costs

### Construction and exploitation costs

Total cost of the building : 187 000 €

## Circular Economy

### Circular economy strategy

Phase in which reuse has been integrated : Sketch study

Type of circular economy strategy implemented :

- Maximization of the number of impacted batches
- Targeting a few diversified products for testing
- Choice of non visible products
- Maximization of the carbon gain
- Maximization of the mass of waste avoided

Integration of reuse into the written contract documents : Reuse not integrated in the written documents

Validation protocol for reused materials : Yes

Validation protocol for reused materials :

Selection of items at the recycling center (smickval market) or on the LeBonCoin website.

Deposit validation form : No

### Reuse : same function or different function

Batches concerned by reuse :

- Structural works
- Roofing
- Indoor joineries
- Outdoor joineries
- Floorings
- Plumbing
- Landscaping
- others...

For each batch : Reused Materials / Products / Equipments :

- Structural work - *In-situ* reuse. The stones placed for the new openings were reused to repair the existing walls (approx. 1m<sup>2</sup>).
- Covering a bicycle garage - *In-situ* reuse. The Marseille tiles from the original roofing, as well as the rafters, were stored on site to build a future bicycle garage (15 m<sup>2</sup>), the rest of the tiles were resold and/or donated on the Leboncoin site (40 m<sup>2</sup>).
- Plumbing - Reuse sourcing *ex-situ*. All sanitary equipment (1 toilet, 1 hand basin, 1 sink, 1 shower tray) was sourced via local networks: recycling center (smickval market) or the LeBonCoin site.
- Exterior joinery - Re-use sourcing *ex-situ* - a door on the Leboncoin site + a window door at a clearance sale (destock33).
- Interior joinery - *Ex-situ sourcing reuse* - a toilet door and a dry toilet door. Source: recycling center (smickval market) + LeBonCoin website.
- Floor covering - *Ex-situ sourcing reuse* - 9 m<sup>2</sup> of cement tiles. Source: LeBonCoin website.
- Wall covering - *Ex-situ sourcing reuse* - 8 m<sup>2</sup> of tiles. Source: recycling center (smickval market).
- Sawn Bordeaux paving stone terrace - *Ex-situ reuse* - 10 m<sup>2</sup>. Source: SOMOPA.
- Sliding gate - Reuse - transformation of an exterior gate with two leaves into a motorized sliding gate. Source: LeBonCoin website.

Reused materials rate :

- For the cement tile floor - The various sources of reused cement tiles led us to work on *patchwork* pattern. First composed as a model by our children, the gradient puzzle was then scrupulously followed by the tiler.
- For the wall covering - The layout of the wall tiling was determined on site in order to accommodate the findings made at the local recycling center. "Free length" installation technique.

## Logistics

Rehabilitation and reconditioning operations (if project concerned by a cleaning/demolition stage) : Yes

Storage of materials for reuse in situ (if project concerned by a cleaning/demolition stage) :

- On site, on a dedicated area not covered

Storage of materials from external supply :

- On site, on a dedicated area not covered

## Insurance

Consultation of the technical controller : No

Insurance broker on the project : No

Consultation of the broker : No

Consultation insurer : No

## Environmental assessment

Impacts avoided : water, waste, CO2 :

Categories	CO2 avoided (kg)	Water consumption avoided (m3)	Waste avoided (kg)
Outdoor Facilities	1655.466923	10.36083077	1991.526369
Exterior fittings / Locksmith - Metalwork	0	0	0
Frame	0	0	0
Partitions	0	0	0
Blanket	237.51	1.2486	
Covering / Exterior arrangements	0	0	0
Lighting	0	0	0
Safety lighting	0	0	0
Climate engineering equipment	0	0	0
Electrical equipment	0	0	0
Facades	5.95	0.097	212.531598
False ceilings	0	0	
False floors	0	0	0
False ceilings	0	0	0
Big work	0	0	0
Sanitation facilities	281.059472	2.818621794	226.7891336
Insulation	0	0	0
Exterior carpentry	0	0	0
562.0302203	212.7864424	610.2436232	
Furniture	221.6416711	126.9493183	106.564748
Paint	0	0	0
Plumbing	0	0	0
floor coverings	142.6832084	30.47669341	294.2085966
Floor or wall coverings	0	0	0
Wall coverings	27.09039414	261.5187525	
Building security	0	0	0
Locksmith - metalwork	0	0	0
VRD	0	0	0
	<b>CO2 avoided (kg)</b>	<b>Water consumption avoided (m3)</b>	<b>Waste avoided (kg)</b>
TOTAL	3228.544378	411.8279009	

The reuse operation saved the equivalent of:

- 25,828 kilometers traveled by a small car, or 29 Paris-Nice journeys;
- 2746 rectangular bathtubs filled with water;
- 8 years of household waste from a French person.

## Economic assessment

Purchasing process for reused materials :

- Purchase by the contracting authority from a reuse platform
- Others

## Communication

Communication on the process : Yes

If so, please specify :

Visit organized on Saturday April 1, 2023, with the association *De la tête au toit*.

- <https://delateteautoit.fr/presentation/>
- <https://www.sudouest.fr/gironde/libourne/une-maison-bioclimatique-a-libourne-faire-de-l-ecoconstruction-c-est-une-vraie-demarche-14648224.php>

Project visit : Yes

## Circular design

Responsible consumption :

- Conservation of the original building and its framework;
- Raising the roof to open a large south facade;
- Very little artificial soil;
- Revitalization of a wasteland with a change of use.

Functionality economy :

- Design of a place with shared use (*co-working*);
- The initial design anticipates a possible future change of use. This office building could easily become housing in the future.

Industrial and territorial economy :

A "water path" was created with various elements: the rainwater downspout, the rainwater tank, the paved gutter, up to an infiltration valley. All rainwater is naturally infiltrated onto the land. Infiltration of all wastewater directly on the plot with a vegetated infiltration valley.

The entire range of materials for the exterior fittings was chosen for its porosity to rain. Apart from the technical cupboard to the north, very few floors have been artificialized.

The exterior arrangements apply the principles of the "mini forest garden". The high concentration of trees should help create a cool microclimate, while producing food in this "edible landscape".

Eco-design :

We designed this project with a focus on "*low-tech*". This orientation makes it possible to promote the labor of local craftsmen and facilitate maintenance and possible future repairs:

- Principles of natural ventilation: orientation of through openings to encourage air currents;
- Creation of a technical thickness to the north, to form a thermal buffer (insulated but not heated);
- Creation of a double trellis of climbing fruit trees to the south, to provide shade on the stone wall and the high openings, while producing fruit;
- Exterior blinds were placed to the south in front of the high openings for summer comfort. This is the main *high-tech* device of the project. If it breaks down, the vegetation will naturally take over.

Sustainable supply :

- We have given pride of place to local materials, whether they come from reuse/reuse, or geosourced/biosourced materials (raw earth, hemp, straw, local wood). The exterior cladding is made of Périgord chestnut boards.
- Winter heating is provided with a log stove, in a central position, which will be installed next summer (2023).
- The entire place operates with natural ventilation.
- Climbing vegetation was used to generate shade on the south facade.

Recycling :

- Maximizing the recycling of construction site waste;
- Very little material went to landfill. We have taken more items from the recycling center than the other way around!

## Additional information (PDF documents)

### Contest

#### Reasons for participating in the competition(s)

This project has the meaning of a manifesto for us. We have sought to be as virtuous as possible, particularly in the choice of materials used (biosourced, geosourced, reuse, etc.).

Here are some principles applied to this project:

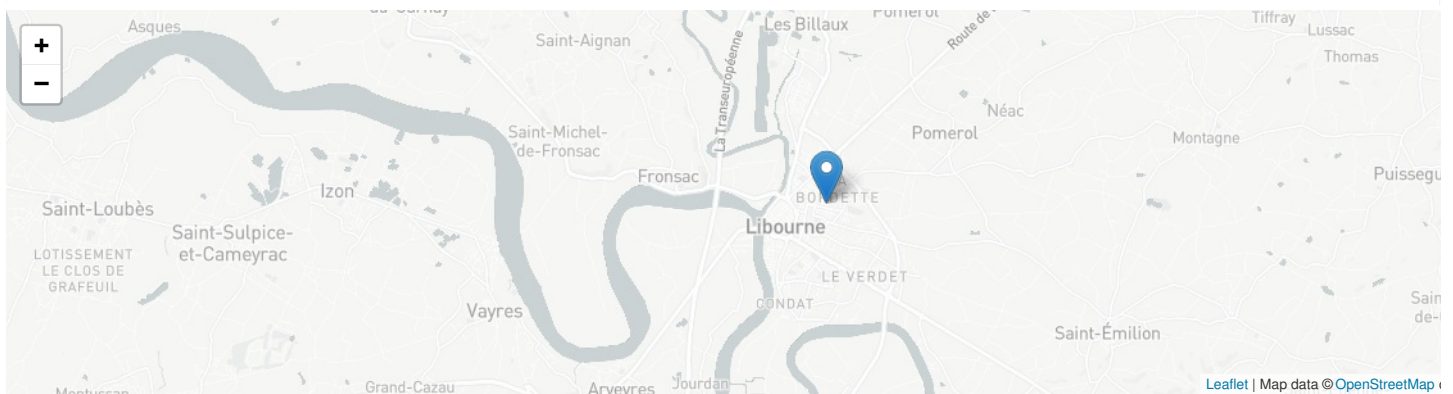
- Limitation of demolition. When necessary, materials were stored for reuse (reuse, resale, donations, professional sectors, etc.). Limiting the quantity of materials in landfill.
- Limitation of the quantity of scraps and systematic reuse of them, particularly in the northern part, as well as in subsequent small self-construction sites.
- Limiting the use of cement to the strict minimum.
- We chose a wooden frame which is supported on the existing frame.
- The roof insulation was made from 22 cm thick straw bales (bale cut in half), plus a 6 cm rigid wood fiber rain shield.

- The interior insulation of the walls was carried out using earth-hemp projection 8 cm thick, plus earth base layer (15mm), and earth finishing coating in different colors.
- A set of oak wood joinery was custom-made for the project.
- The exterior wood cladding is made of Périgord chestnut planks laid with joint coverings (untreated).
- The flooring upstairs is made of poplar wood (27 mm). The parquet flooring on the ground floor is Landes pine (23mm).
- In-situ reuse. The stones removed for the new openings were reused to repair the existing walls. The gate has been transformed into a sliding gate.
- Ex-situ reuse. Many elements were sourced via local networks: all the sanitary equipment (toilet, hand basin, sink, shower tray), a French window, an entrance door, cement tiles, outdoor paver terrace re-use sawn wood shutters, earthenware, etc. The layout of the wall tiling was determined on site in order to accommodate the findings made at the local recycling center.
- For the floor, the various sources of reused cement tiles led us to work on a patchwork pattern. First composed as a model by our children, the gradient puzzle was then scrupulously followed by the tiler.
- The materials for the exterior developments were chosen for their permeability so as to encourage the infiltration of rainwater: earth-stone for parking, gravel for pathways, landscaped valley, mulched fruit tree garden.

Building candidate in the category



Conception circulaire



Date Export : 20240223103635

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