


# Les Petits Paliers - a collective housing project

by Claire lucas / 2023-05-12 15:08:16 / France / 234 / FR



New Construction

Primary energy need :

74 kWhep/m<sup>2</sup>.an

(Calculation method : RT existant )

**ENERGY CONSUMPTION**

Consumption Range (kWhep/m <sup>2</sup> .an)	Energy Class	Building Position
< 50	A	Below
51 à 90	B	At
91 à 150	C	Below
151 à 230	D	Below
231 à 330	E	Below
331 à 450	F	Below
> 450	G	Below

*Building*

**Building Type** : Collective housing < 50m  
**Construction Year** : 2022  
**Delivery year** : 2022  
**Address 1 - street** : 409 chemin des Moulins 73000 CHAMBÉRY, France  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 363 m<sup>2</sup> SHAB  
**Construction/refurbishment cost** : 755 000 €  
**Number of Dwelling** : 5 Dwelling  
**Cost/m2** : 2079.89 €/m<sup>2</sup>

## General information

AU BERCAIL pico-real estate promotion aims to carry out housing projects promoting good neighborliness and conviviality by working finely on the architectural composition in connection with the site and its built environment. The quality of the treatment of outdoor spaces is also essential, because it is possible at this scale of project to offer a contemporary and lasting architectural alternative to the standards of real estate development.

This real estate pico-promotion approach is part of a process of reasoned densification of urban plots. For the "Les Petits Paliers" project, the plot allowed an evolution from 1 to 5 dwellings, in order to ensure a good integration in the district.

*\* the prefix pico comes from the Italian piccolo ("small") in the positive sense of the term, for projects which do not aim to maximize the constructability of land but to promote small housing projects favoring above all the quality of the living environment. "Pico" also, because a habitat designed with common sense by a human-sized promotion structure with housing designers who have an ecological streak.*

The SMALL LEVELS or how to live green in the city! This collective housing project is carried out by AU BERCAIL near the center of Chambéry on an urban wasteland of 767 m<sup>2</sup>. The new construction - mixed concrete and wood frame - is set up on the street. It finds traces of an old demolished building and retains the stone wall. The two main trees of the land are preserved and an old low wall makes it possible to delimit a vegetable garden, on a part of the garden which is common to the condominium. This one has in addition to the 5 apartments, a shared guest room and a collective boiler room with wood pellets. The garden is modeled to allow integrated management of rainwater with a "rain garden" principle. A collective planting project was organized with the inhabitants to create a fruit and country hedge with more than 40 shrubs and small trees.

## Building users opinion

Operation delivered in October 2022, following a first general meeting to set up the volunteer trustee. The inhabitants have appropriated the places, including the common areas: garden and vegetable patch, guest room and the landings.

## If you had to do it again?

The collaboration with the project management team and mainly with the architects (Xavier and Blandine Patriarche de Kayak architecture) went particularly well. We completed each other on the follow-up of the construction site, which took place within the allotted time (1 month ahead of the provisional schedule despite the post-covid situation).

However, if it were to be redone, we would go for more simplicity in the construction method: the mixed concrete shuttered and wooden frame (for the two duplex dwellings which come to oversee the construction) as well as the central service area of the small landings generated differences in treatment for the insulation (complex of insulated and clad wooden wall, concrete wall with ETI and clad, wooden panels with ETI and plaster, concrete walls with ETI and plaster).

Regarding reuse, together (Contractor and architects) we were able to convey to companies our motivation for the reuse of materials from the site. For the next project, we intend to go further to involve sub-contractors. But for that we need to know the supply chains better.

## See more details about this project

<https://au-bercaill.eu/les-petits-paliers/>

<https://www.oekofen.com/fr-fr/references/copropriete-de-5-logements-chambery-73--20866/>

## Photo credit

Romuald Nicolas Photographies (for the first 6 photos)

AU BERCAIL (for that of the carport)

## Stakeholders

### Contractor

**Name :** AU BERCAIL pico-promotion immobilière

**Contact :** Sarah COHEN et Claire LUCAS - contact[a]au-bercaill.eu

<https://au-bercaill.eu>

### Construction Manager

**Name :** KAYAK architecture

**Contact :** Blandine et Xavier PATRIARCHE - contact[a]kayakarchitecture.fr - 04.79.71.43.12

### Stakeholders

**Function :** Company

ZANON charpente

Jean Baptiste MAUFRAIS - jean-baptiste.maufrais[a]zanon-charpente.fr

[http://zanon-charpente.fr/](http://zanon-charpente.fr)

Batch frame, roofing, reuse of wood

**Function :** Other consultancy agency

Laure Bal

Laure Bal - laure[a]bal-economiste.fr - 04.79.84.22.68

<http://www.bal-economiste.fr>

Economist

**Function :** Others

Energies Libres

Thomas Perrissin-Fabert

Realization and operation of the collective wood pellet boiler room (OKOFEN) for the sale of heat

**Function :** Company

Greg Constructions

Pierre BETEND - pierre[a]gregconstructions.com

Batch GO, reuse of stones for building the surrounding wall

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Function : Company

MILLET PAYSAGE

Adrien Quay Thevenond - adrien[a]millet-paysage.com

<https://millet-paysage.com/>

VRD lot, reuse on materials for exterior fittings

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Function : Company

SERRURERIE TAILLEZ

Jimmy TAILLEZ - serrurerie.taillez[a]gmail.com

LOCK SLOT lot, reuse of railings for street fence

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Function : Others

SOCOTEC

Olivier SOULAN - olivier.soulan[a]socotec.com

<https://www.socotec.fr/>

Technical controller

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Function : Other consultancy agency

ANNECY STRUCTURES

Anthony DIETRICH - anthony.dj[annecystructures.com] - 04 50 05 06 25

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

BE structures, contribution to technical solutions for the reuse of wood in structural elements

## Contracting method

Off-plan

## Type of market

Not applicable

## Allocation of works contracts

Separate batches

## Energy

### Energy consumption

Primary energy need : 74,00 kWhep/m<sup>2</sup>.an

Calculation method : RT existant

Breakdown for energy consumption :

- Heating: 33.2
- DHW: 31.6
- Lighting: 4.4
- VMC auxiliary: 4
- To. cast: 0.5

### Envelope performance

Indicator : n50

Air Tightness Value : 1,68

## Renewables & systems

## Systems

### Heating system :

- Water radiator
- Wood boiler

### Hot water system :

- Wood boiler

### Cooling system :

- No cooling system

### Ventilation system :

- Humidity sensitive Air Handling Unit (Hygro B)

### Renewable systems :

- Wood boiler

Renewable energy production : 83,00 %

ÖkoFEN automatic wood pellet boiler, 18kW power, and 4-ton compact Flexilo.

## Environment

### Biodiversity approach

Conservation of the two main tall trees present on this small urban wasteland and taken into account in the composition of the project and the location of the building (morello cherry and paulownia).

#### Planting:

- More than 40 shrubs to create a diversified and rustic hedge favoring species with small fruits for birds and flowers for pollinating insects;
- Climbers on the surrounding walls: Virginia creepers, honeysuckle, knotweed, vines;
- Willows and irises in the rain garden (integrated stormwater management).

#### Mitigation actions on soil and biodiversity :

Conservation and protection of the site's topsoil for restoration at the end of the work.

## Risks

### Hazards to which the building is exposed :

- Flooding/Runoff
- Urban heat island

### Risks measures put in place :

In addition to the thermal performance of the building, the project has no waterproofed surface apart from the roof, the tall trees present on the site have been preserved, and numerous plantations have been planted to promote shade and an island of urban cool.

On the street a climber has been planted and in agreement with the city, the immediate approach to the building has been planted as part of the "living sidewalks" approach.

To respond to the risk of flooding by runoff, the standard of living is 0.80 cm above the TN and the garden modeled to create a rain garden to manage rainwater.

## Urban environment

The project was designed to limit the social and environmental impacts in the neighborhood. Constructability has not been maximized to find a level of reasoned densification in accordance with the existing built environment, preserving the two most beautiful trees on the land, allowing the development of a real city garden for future inhabitants.

Land plot area : 767,00 m<sup>2</sup>

Built-up area : 268,00 %

Green space : 499,00

## Costs

## Construction and exploitation costs

Total cost of the building : 755 000 €

### Circular Economy

#### Circular economy strategy

Phase in which reuse has been integrated : Preliminary design studies

Type of circular economy strategy implemented :

- Targeting a few diversified products for testing

Type of circular economy strategy implemented :

A resource diagnosis was carried out upstream before selective deconstruction, making it possible to identify materials reused or reused in the project. Approach supplemented by solutions for exterior fittings during construction.

Quantified targets for reuse? :

Objective to exit without added value compared to a "new" solution

Integration of reuse into the written contract documents : Integration of the approach in the general clauses

Validation protocol for reused materials : Yes

Validation protocol for reused materials :

Mentions of reuse and/or recovery have been entered in the CCTPs. The companies were made aware of the reuse approach at the start of the construction site.

For locksmithing: validation of the technical feasibility with the craftsman

For the structural timber of the carport: validation of feasibility with the company, BE structure and technical controller

Deposit validation form : No

#### Reuse : same function or different function

Batches concerned by reuse :

- Structural works
- Structural framework
- Locksmithing-Metalwork
- Outdoor joineries
- Landscaping

For each batch : Reused Materials / Products / Equipments :

##### **FRAMEWORK Batch**

Structural timber stored in the demolished building:

- 12 beams, 100x200 by 5 m
- Reused for the framework of the carport with 5 parking spaces

Cast iron dolphins from a demolition site of the OPAC Savoie:

- 3 pieces, 3ml
- Reused for EP descent

Louvered wooden shutters of the demolished building:

- 4 rooms
- Reused at the level of the slatted façade at the street limit

##### **LOCK SLOT lot**

- Railing of the demolished building with barraudage
- 8ml
- Reused as a street fence

##### **VRD batch**

Concrete curbs from a demolition site of the OPAC Savoie:

- 14 units, i.e. 0.4m<sup>3</sup>
- Reused to delimit the courtyard from the vegetable garden

Single twist wire mesh disassembled on site:

- 45ml
- Reused on new separating boundary

Cast iron grids for rainwater at the level of the old demolished gate:

- 5 pieces, 2.5ml
- Reused at the start of each vegetable strip

Large stones under base portion of demolished enclosure wall:

- 6 units
- Reused on site in garden seating and stepping stones

EDP tank from Valorist shipyards:

- 1, or 1.2 m3

Composter from Grand Chambéry

- 1, or 1 m3
- Model slightly damaged at the level of the lid that cannot be distributed

## Batch GO

- Stones from the portion of the perimeter wall demolished for new pedestrian and car access
- about 4 m3
- Reused on site to reconstruct the surrounding wall at the site of the old gate.

[Reused materials rate :](#)

## FRAMEWORK Batch

- Structural timber stored in the demolished building.
- 12 beams, 100x200 by 5 m
- Reused for carport frame 5 parking spaces.

The wood was made available to the carpenter on the ground before the demolition of the building to facilitate its removal. The company stored this wood. The plan of the carport was established taking into account this material to be reused with a dialogue between architect / structural engineer / carpenter / technical control engineer. The carpenter was proactive and involved himself very positively in this process. Long-term storage, edging and the size of the wooden elements allowed us to maintain the price established with purchased wood.

<https://www.dropbox.com/s/ao0fu0pczljpgkw/r%C3%A9emploi%232.jpg?dl=0>

[https://www.dropbox.com/s/8dpo7fn9k920mj6/IMG\\_4849%202.jpg?dl=0](https://www.dropbox.com/s/8dpo7fn9k920mj6/IMG_4849%202.jpg?dl=0)

[https://www.dropbox.com/s/fee0t1reju774gr/IMG\\_1893.jpeg?dl=0](https://www.dropbox.com/s/fee0t1reju774gr/IMG_1893.jpeg?dl=0)

## LOCK SLOT lot

- Railing of the demolished building with barraudage
- 8ml
- Reused as a street fence

The guardrail was made available to the locksmith on the ground before the demolition of the building to facilitate its removal. The company stored this element before carrying out the necessary repairs to transform it into a fence (change of angle, installation of fixing plates on the sideboard wall, treatment and painting). The reuse of this element was possible thanks to the downgrading of the field of use from guardrail to fence. The long-term storage, cleaning and necessary recoveries allowed us to align ourselves with the price of a new fence meeting the requirements of the Architecte des Bâtiments de France. The craftsman was enthusiastic about doing this rework.

<https://www.dropbox.com/s/85unbnmhxbnek9/r%C3%A9emploi%233.jpg?dl=0>

## Batch GO

- Stones from the portion of the perimeter wall demolished for new pedestrian and car access
- about 4 m3
- Reused on site to reconstruct the surrounding wall at the site of the old gate.

The stones remained stored on the site for the duration of the work. The mason was satisfied to have this work of reconstruction of a stone wall, to integrate the mailbox block of the condominium. The stone copings were also put back in place. Only the labor was invoiced, aligning itself with what a concrete block wall to coat on both sides would have cost.

<https://www.dropbox.com/s/p4oem8kiffv4b5x/r%C3%A9emploi%231.jpg?dl=0>

<https://www.dropbox.com/s/bk9c33fi8tsanx0/R%C3%A9emploi%234.jpg?dl=0>

## 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
- On an external platform, in combination with reconditioning operations

Storage of materials from external supply :

- No problem of storage, supply correlated to the progress of the works

## Insurance

Consultation of the technical controller : Yes

Specific mission given to the technical controller :

There was no particular mission. but very constructive informal exchanges with a technical controller who is sensitive and interested in this subject.

Insurance broker on the project : Yes

Insurance broker : AGB courtage, sandrine Orlandini, s.orlandini[a]agb-assurances.fr

Consultation of the broker : No

Insurer : Albingia

Consultation insurer : No

## Environmental assessment

Impacts avoided : water, waste, CO2 :

[https://www.dropbox.com/scl/fi/90gmla6f6qtbx08762s4o/2022\\_Troph-esB-timentsCirculaires\\_Outil-calcul-d-impacts-diffus-version-1.xlsm?dl=0&rlkey=2gal3dyj38zto82ftbjemsolm](https://www.dropbox.com/scl/fi/90gmla6f6qtbx08762s4o/2022_Troph-esB-timentsCirculaires_Outil-calcul-d-impacts-diffus-version-1.xlsm?dl=0&rlkey=2gal3dyj38zto82ftbjemsolm)

The reuse operation saved:

- > more than 15 tonnes eq. CO2
- > more than 263 m3 of water, i.e. 1757 bath fillings
- > 23 tonnes of waste, i.e. 46 years of waste production by a household
- > more than 126,000 km traveled by car, i.e. 143 Paris-Nice journeys.

## Economic assessment

Total cost of reuse : 9 000 €

Reuse quantified in the companies' offers? : No

Purchasing process for reused materials :

- Purchase by the company from a reuse platform
- Others

Purchasing process for reused materials :

Via the Materials Library ENFIN ! réemploi (Chambery): cast iron dolphins and concrete curbs

More details on the economic balance :

The reuse solutions have been negotiated with the companies so that it comes to the same price as what had been quantified as new in their offers.

New business model and financial balance :

No effect on the balance sheet of the operation.

## Communication

Communication on the process : Yes

If so, please specify :

- Regular posts on LinkedIn.
- Visit of the project at the time of delivery: CAUE 73 for elected officials, technicians and architects, and a visit organized with the neighbors of the district.

<https://www.caue-observatoire.fr/ouvrage/les-petits-paliers-chambery/>

<https://www.dropbox.com/s/cz9278dn7npx9m2/Chy%205198%20visit%20Les%20Petits%20Paliers%20pico-promotion.jpg?dl=0>

- Participation with Kayak architecture in two round tables on the question of reuse: CAUE 73 and for the Cercle des Industriels et de l'Habitat de l'Arc Alpin.

[https://www.dropbox.com/s/7f9odommgspsztk/CIH%20REEMPLOI\\_compressed.pdf?dl=0](https://www.dropbox.com/s/7f9odommgspsztk/CIH%20REEMPLOI_compressed.pdf?dl=0)

Project visit : Yes

## Circular design

### Responsible consumption :

Housing project carried out on a small urban wasteland near the city center.

The project as a whole has tried to promote the connection between:

- On the project management side: work on the model template, taking into account the existing environment, work on the succession of thresholds: from the limit of the plot to the threshold of its accommodation, passing through the small landings, common private spaces that can be converted to the right thanks to the inhabitants.
- Project management assistance side: proposal for sharing spaces with the common multi-use room (workspace, guest room, children's play area), the common wood boiler room, the garden and its vegetable patch, the bicycle shelter. Support for the inhabitants in the formation of the group: presence of the MO at the first meeting of the volunteer syndic, proposal for collective planting work on delivery of the building for the vegetable strips, the constitution of diversified hedges and plantations on the street.

### Functionality economy :

When designing the project: one of the largest dwellings was offered as a 5-bedroom duplex or 4-bedroom apartment + an independent room to allow for a room with a shower room with independent access on the same floor for a bedroom or a work piece.

On the ground floor, the project includes an independent guest bedroom with bathroom, accessible to people with reduced mobility, belonging in equal shares to the inhabitants of the condominium, to allow family, friends to be received and for one night a week by a teacher on the move. A charter for the use of this room is appended to the co-ownership regulations.

### Eco-design :

- Renewable energies: automatic boiler with wood pellets
- Water: infiltration of rainwater in rain gardens on the plot and recovery of rainwater for the vegetable garden in a tank bought second-hand.
- Materials: levels N1 and N2 in wooden frame, Austrian larch cladding on 2/3 of the facades, wooden joinery, recyclable steel deck roof in a light color to prevent overheating.

### Sustainable supply :

Biosourced insulation (wood fibres) implemented on the roof.

Marmoléum in the duplex rooms.

Wood pellets from a local pelleting unit (< 40 km )

### Recycling :

- Awareness of waste sorting throughout the construction site.
- Organization of a collective cleaning and waste sorting operation involving all companies mid-site.
- On-site recycling of topsoil and stones from the demolition of the existing building

## Health and comfort

### Indoor Air quality

Natural ventilation in addition to VMC in all rooms.

Floor coverings (tiles, marmoleum, wooden parquet) and PVC-free exterior joinery.

All the paints and stains used are classified A+, to limit VOCs

### Comfort

#### Temperature level :

All housing including T1 are through with three orientations.

#### Humidity control :

VMC hygroB

Opening frames in all bathrooms and toilets

Tilt-and-turn windows in all bedrooms and living rooms.

#### Acoustic comfort :

Wood / concrete structure to adjust the acoustic comfort between dwellings

#### Visual comfort :

Design to favor the opening of all the living rooms onto the garden, with the trees preserved in the foreground.

Installation of micro-perforated store-screen type protection on living areas.



## Quality of life and services

Housing project integrating a common garden for all the inhabitants of the condominium. Only vegetable strips are allocated to each dwelling.

Les Petits Landings have a guest bedroom shared with a bathroom for the reception of relatives. Disabled access and separate entrance.

The service landings are common spaces that can be appropriated by the inhabitants.

## Contest

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

A "small" real estate development operation, but a client motivated to embark on the path of reuse, by choosing to work with the KAYAK architecture agency, Xavier and Blandine Patriarche, initiators of the creation of the reuse platform local: ENFIN ! réemploi. A good synergy to motivate companies to take the reuse step with us on this housing project.

The operation is modest in size but it aims to be reproducible and questions the issue of a dosed and qualitative density, to optimize the land while intensifying the presence of plants in the city.

