

Structure the reuse approach for finishing work products

Refurbishment of the Maison des Canaux



Image source:<http://lescanaux.com/visiter-la-maison/>

- **Context:** Maison des Canaux is a building of the City of Paris. It served as the administrative center for the Canaux de Paris (Canals of Paris) from 1882 to 2010, and then remained uninhabited between 2010 and 2017. The building was made available to the association « Les Canaux » by the Housing and habitat Department in 2017.
- **The challenge :** transform Maison des Canaux to an exemplary building in the social and solidarity-based circular economy.
- **Reclaimed materials:** furniture, floor coverings, walls, lighting fixtures, decoration, terracotta tiles.

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Chronology

November 2016 - Maison des Canaux site was made available to "Les Canaux" association by the Direction du Logement et de l'Habitat (Housing and habitat Department)

End of 2016 - Beginning of 2017 : Preliminary studies for phase 1 of the project

- A reclamation audit is carried out by OHU Design
- Sourcing from other project sites of the City of Paris in order to find reclaimed furniture
- The scenography and interior layout are designed by the agency Epatant (based on the uses requested by "Les Canaux" and based on the products, equipment and materials proposed by OHU Design for reuse)

1st half of 2017: Works related to phase 1 of the project

- Development of specific methodologies transmitted to the contractor to implement circular economy in the project
- Involvement of the City of Paris's carpenters to adapt the furniture to the needs of "Les Canaux" association
- Obtaining a Technical Experimentation Assessment (ATEX) issued by CSTB for parchment paper lighting fixtures (verification of their compliance with European regulations and safety standards)

July 2017 – End of phase 1 of the project - Objective of opening the doors of the Maison des Canaux

July 2020 –Beginning of the search for reclaimed wood for the phase 2 of the project (upcycling of the wood in terrace lattice and decking)

2021 - Launching of the design & build contract for phase 2 of the project

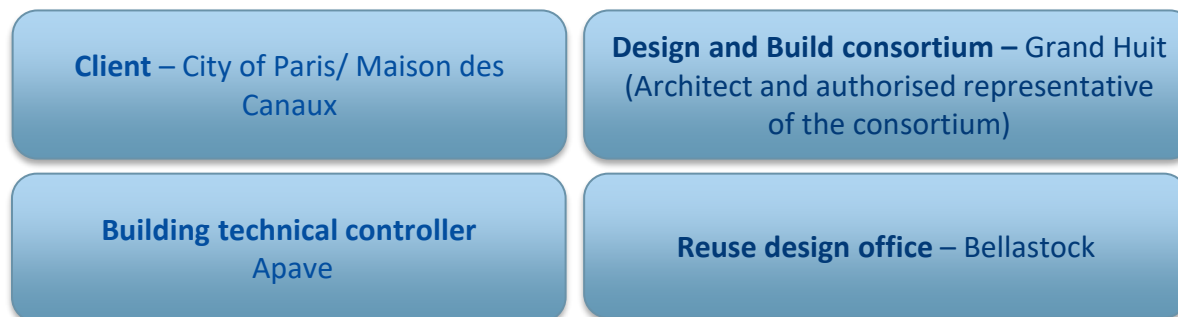
March 2021 / March 2022 - Works related to the phase 2 of the project

The project – two different phases and two different procurement procedures

- **Phase 1:** The existing works contracts at the City of Paris were used for the interior layout of the building



- **Phase 2:** Design and build contract concerning the reorganisation of the ground floor and the basement, construction of an external terrace with pergola, improving the accessibility of the premises, redesigning the heating system and overall improvement of the building energy performance.



Different examples of reuse and repurposing (Phase 1)

The objective of the operation was to conserve the existing building as much as possible and to maximize material reclamation. However, some materials were repurposed.

Floor coverings: refurbishing of the wooden floor in most of the spaces. In some rooms, it was not possible to recover the wooden floor. In these cases, a carpet was created using recovered carpets and recycled plastic.

Furniture:

- Refurbishing and/or transformation of the existing furniture by the carpenters of the City of Paris.
- Sourcing of furniture from different project sites of the City of Paris. Example: Furniture from the Carnavalet Museum
- Use of wood to make the desks of the Maison des Canaux and acoustic insulation.
- Donation of archival furniture to *Extramuros*, a carpentry workshop for social insertion, and to *A travers fil*, an associative carpentry workshop, or to building sites within the City of Paris.
- Some chairs were designed from recycled plastic.
- The armchairs in the meeting room were reupholstered by Collecterie de Montreuil (an ESS) with fabric manufactured from recycled plastic.

Lighting fixtures: creation of luminous artworks with parchment paper by Junior Fritz Jaquet, and lighting fixtures were manufactured by Maximum.

DEFINITIONS

Repurposing (ADEME): any operation through which substances, materials or products that have become waste are used again.

Repurposing ("reclaimed material" - FCRBE): a dismantled material that has not been yet implemented.

Reuse (ADEME): "operation through which a product is given or sold by its initial owner to a third party who will give it a second life. The product keeps its status of a product and does not become waste at any moment."



Image source: <http://lescanaux.com/la-maison/>

The process of controlling technical-insurance risks

1/ The case of terracotta tiles as a wall covering (Phase 2)

- Terracotta tiles were reused as a wall coverings in the sanitary rooms. These tiles, as many reclaimed materials, were no longer commercially available. The challenge in terms of maintenance was therefore to find a solution in case of possible breakage/deterioration.
- To guarantee optimal maintenance and allow for the replacement of broken elements, an additional quantity of terracotta tiles was targeted during the sourcing phase.
- These extra tiles were stored in the basement of the Maison des Canaux building.

2/ The case of decking for the terrace (Phase 2)

SCOP (Cooperative and participative architectural agency) Grand Huit, which was the authorised representative of the consortium holding the design and build contract, proposed in collaboration with Atelier R-ARE, an association specialised in dismantling doors and windows and in the reuse of wood, to reuse wooden doors and window frames for the decking of the terrace. The City of Paris agreed.

A process involving several steps was developed:

Step 1 - Creation of "reuse work" sheets describing :

- the characteristics and requirements of reclaimed materials (use, technical characteristics, quantity, schedule, etc.)
- the hypotheses on the works to be carried out on the material
- the logistics aspects
- the life-cycle of the structure (ease of end-of-life disassembly, maintenance, reuse)
- the points of consideration
- the normative context.

Step 2 - Search for reclaimed materials by the City of Paris and Atelier R-ARE: to meet the demand and the requirements for weather resistance of the renovated structures (terrace lattice and decking), the search focused on wooden doors and windows with a class 3 rating, preferably made of oak.

Step 3 - Procedures for the selection of reclaimed materials: each reclaimed material that corresponds to the description and which was available in the required quantity at the date of the project, was reviewed by the architect and Atelier R-ARE. Due to missing information (information on the species of wood and the possibility or not to reclaim materials), site visits were organised before the validation of the architect and Atelier R-ARE.

In the end, 378 landing doors coming from three different sources (the social housing companies RIVP and Elogie SIEMP and the association REAVIE) were repurposed.



The search for reclaimed materials **Source:** [Les Menuisiers Circulaires – Passerelle Ecologique \(passerelle-ecologique.paris\)](#), RIVP Photo

2/ The case terrace decking (Phase 2)

Step 4 – Drafting the procedures for dismantling and storing doors : The reclaimed doors had to be made of class 3 wood, with frames, and stored and transported vertically.

Step 5 - Dismantling of the landing doors by Atelier R-ARE : this was done carefully in order to facilitate the reuse of the following elements:

- the uprights for the terrace decking ;
- the top and bottom cross members for the lattice of the terrace;
- the plywood of the panels of the doors to make the baseboards;
- the door frame rabbets for the mosaic end grain.

Step 6 - Design and manufacturing of the terrace decking by Atelier R-ARE : the prototypes were submitted for validation to the City of Paris, to the authorised representative of the consortium, to Les Canaux association and to the building technical controller. The latter gave a favourable opinion.



The design of the decking for the terrace - **Source:** [Les Menuisiers Circulaires – Passerelle Ecologique \(passerelle-ecologique.paris\)](#), RIVP Photo

Conclusion on good practices related to insurance

The following products and materials were reused and repurposed: the terracotta tiles for wall covering, the wood of the archive furniture used as acoustic insulation and furniture, the luminous artwork created from parchment paper, lighting fixtures, and wooden doors and window frames used again as lattice and decking for the terrace.

These elements did not require setting up any particular insurance approach, as they are not structural elements subjected to the ten-year guarantee. However, several actions were set up to provide a guarantee on the origins and quality of the products and materials and to limit the risk of incidents.

The terracotta tiles used as a wall covering resulted in the establishment of small replacement stocks in case of breakage. The purpose of ordering quantities greater than the needs of the project and forming stocks located in the basement of the building was to anticipate the need to replace defective/broken products. This guaranteed that the maintenance of the building would be possible even if the products and materials were no longer available for sale at the time of the works.

The reuse of the landing doors and the manufacturing of the terrace decking and lattice gave rise to:

- **A precise characterisation of the materials during the reclamation audit:** the team consisting of an architect and an association specialised in the dismantling of doors, organised site visits in order to validate the quality of the wood and its species, as well as the possibility of dismantling while preserving the characteristics of the materials.
- **Specific methodologies for removal, dismantling, storage and transport** of landing doors have been proposed by the association specialised in dismantling doors and windows and in the reuse of wood in order to facilitate their repurposing. A technical note describing the steps has been drafted.
- **A prototype submitted to the technical controller:** the manufacturing of the decking for the terrace has been submitted for validation to the technical controller for the regulatory and risk management aspects, as well as to the City of Paris, the authorised representative of the consortium and the association « Les Canaux ».

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