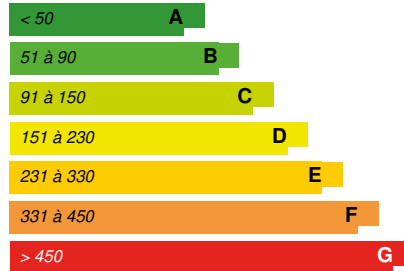


Area of the TOUR CARREE (Square tour)

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Building Type : Collective housing > 50m
Construction Year : 2019
Delivery year : 2019
Address 1 - street : 16 rue de la Tour Carrée 17000 LA ROCHELLE, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 291 m²
Construction/refurbishment cost : 1 300 €
Number of Dwelling : 4 Dwelling
Cost/m2 : 4.47 €/m²

General information

Bordered by the ocean and protected by a classified wood, **this new neighborhood without car** is resolutely turned towards nature. Gardens, vegetable gardens, orchards, alleys and plots offer quality outdoor spaces.

Unique in its design, the de la Tour Carree area offers a living environment respectful of people and the environment.

- **Rare location** , close to the beach and the sea
- Neighborhood mixing houses, capable volumes (**evolving housing**) and semi-collective spaces
- Activist choice in terms of resource conservation: low carbon construction (E3C2), rainwater harvesting for communal gardens watering, car removal, photovoltaic panels.

Sustainable development approach of the project owner

Since 2008, **EDEN PROMOTION** has carried out 19 programs in La Rochelle and its surroundings, for a total of more **than 1000 housing units** .

Realization at controlled cost, use of renewable energies and technologies of the future, the EDEN projects offer an excellent quality-price ratio and performances beyond the thermal regulation in force.

A HOLISTIC APPROACH TO HABITAT

As a proactive promoter on the territory of La Rochelle for 8 years, EDEN Promotion advocates for high **performance housing that is accessible to as many people as possible** . The group designs and implements programs incorporating strong objectives to reduce energy

costs. Beyond this DNA, he develops new practices and new concepts aimed at reducing the cost of housing: in his new program The [area of La Tour Carree](#), EDEN is experimenting with [Capable Volumes](#) (habitable housing and ready to finish at the rate of acquirers) at a particularly attractive price; in its [Vibrat6](#) program, the promoter is currently producing a [participatory housing](#) project whose economic objective is to minimize risks and commercial costs.

Thanks to the daily commitment of its 20 employees, [EDEN PROMOTION](#) leaves a positive mark on the future.

In [Madagascar](#), the group supports the [AMADA association](#) whose vocation is environmental and humanitarian. [The Antsanitia Resort, an eco-tourism hotel](#) integrated with the surrounding villages, offers eco-friendly stays and local people. Various projects were carried out thanks to AMADA: a dispensary was built as well as a school of 3 classes, 400 000 trees planted on a territory of 500 ha and the post of a professor financed.

ATMOSPHERE, an **office of assistance to the environmental project management**, intervenes upstream of the [projects of EDEN PROMOTION](#) and during the different phases of realization:

- to programming: to define the challenges and translate the HEQ and energy objectives of [EDEN PROMOTION](#)
- at design: with solar / thermal and solar / photovoltaic pre-feasibility studies
- during the study phase: writing the environmental specifications, carrying out the thermal simulations, defining an energy strategy
- in the choice of entrepreneurs: by studying offers, references and respect for environmental objectives
- during the realization and upon receipt of the program.

ATMOSPHERE is a member of the [EcoHome Cluster](#), which aims to create cheaper, more economical and more environmentally friendly homes.

Architectural description

ARCHITECTURAL NOTICE AND LANDSCAPE

1. The origin of the project

The Project is the winning project of a consultation organized by the City of La Rochelle for the creation of a new residential district in a remarkable site, of an area of approximately one hectare, close to the sea and the park of the Square Tower. The objectives given by the city for this project were:

- An exemplary real estate complex with regard to sustainable development (coherence of the functioning of the neighborhood, landscape integration, building performance, energy optimization, storm water management, quality of life, respect for sensitive natural areas, biodiversity, etc.)
- New housing whose cost is related to the financial means of many families who today can not live in La Rochelle (affordable and sustainable access)
- A social rental housing (23%) also with private residential outdoor spaces
- A mix of housing forms and typologies.

2. The land

The land on which the project is located is located in the western part of the city, bordering on three areas with marked characters:

- The Technocéan industrial zone as well as the wastewater treatment plant of the agglomeration in the North and in the East
- The natural sector of Chef de Baie, of great landscape quality, in the West
- A seaside and housing sector comprising only a few single dwellings in the South. The land is bordered to the west by a high quality of trees including maple trees, oaks, tamarisks and ash trees. This afforestation is identified and protected by both the PLU and the ZPPAUP. It opens on natural spaces soberly arranged to allow the walk along the littoral. In the South a wooded hedge runs along the Rue de la Tour Carrées serving the few houses located on the seafront. The project is part of the plant belt of the classified wooded area and the wooded hedge that will be cleaned of brambles that have colonized, preserved and strengthened. The gardens of individual houses are a continuation of the classified wooded area.

3. The regulatory framework

The land corresponds to the parcel referenced in cadastre section AX No. 46 with an area of 10,729 m2 completed by the neighboring land corresponding to the parcels referenced in cadastre AX No. 40 and No. 45 with an area of 1.926m2. It enters the zoning of the UR zone of the PLU and must take into account the regulatory requirements of the ZPPAUP and those of bringing it to knowledge relating to the consideration of coastal risks.

4. The project

From the scale of buildings to the materials and forms used, it feeds on the character and quality of life of the villages in the region. The implantation of a multitude of small islands allows adapted built forms: from the social housing (islands B and F) to the individual house (islands A & H) while passing by the small collective (island E and G) or volumes capable (ilot VC), each one develops a variety of uses, an optimal orientation as well as a scale of the reasonable habitat. The whole project is articulated around a strong and ambitious idea: to make disappear the car of the free spaces of the project. From the entrance of the site, vehicles are invited to park in a public car park under dwellings, in R-1. Only a controlled access lane serves the interior of the site for the removals, the relief and the maintenance of the site. By eliminating the use of the vehicle in the site, all the voids are released for the benefit of the collective, the relations between neighbors are favored in alleys and plots, through pathways that vary, dilate or shrink like the plots of *querreux* well known locally. The full calibrate outdoor spaces. Interstices free the prospects. The plant infiltrates the alleys. Plants colonize the walls. They climb on the trellised structures of solar farms. Houses and small collectives are organized as an archipelago. The volumes are fragmented to find a domestic scale, consistent with neighboring homes. This ambitious housing organization promotes living together while preserving the privacy of each inhabitant. Each housing has large private outdoor spaces judiciously placed relative to each other. The intimacy of the occupants is preserved by filters supporting climbing vegetation. These devices will allow a jubilant appropriation of the terraces and loggias. The roofs of the bicycle rooms and common premises on the ground floor are vegetated. The multiplicity of forms of the full and the empty goes of pair with a diversity of the typologies: individual houses, able volumes, superimposed houses, apartment villa, semi collective ... This wealth of typology answers to the plurality of modes of living current and future.

The implantation of the building limits the waterproofing of the soil by preserving all the infiltration capacities of the site which will be reinforced by the colonization of the plant in the collective spaces.

- Establishment of the building: This one conforms to the plan of composition / implantation / alignment principle defined by the regulation of the

UR area of the PLU as part of an overall plan.

- The footprint does not exceed 50% of the land unit area
- Implantation in relation to the property boundaries complies with article UR7 of the zone regulation
- The heights of the buildings do not exceed 6 meters and the buildings do not exceed 2 levels of construction. Reference levels of the natural terrain are calculated based on the average level over a 30 meter strip per building.
- Materials: Largely inspired by the surrounding villages, the lime coating used on all buildings gives this white project a more traditional and traditional look than a traditional plaster. The openings as for them revisit the small vernacular formats. For islands A, B and C, wood lath cladding punctuates the poplar cladding building, indicating the entrances and clearing the remarkable spaces on the ground floor. For islands D, E, F, H, VC, E and G, the private areas (terraces and balconies) as well as some facades are dressed in a mesh white steel openwork. This filter is an architectural element that identifies and qualifies all dwellings in the island. It is similar to a vine arbor allowing the vegetation to partially and punctually colonize the volumes. These trellises create a threshold effect between the inhabited space and the landscape. Some terraces on the island G are projected beyond the facade at R + 1 and look like squares, with a view framed by the sea.

The roofs have multiple treatments:

- support of photovoltaic panels, hidden by the acroterium (islet A and E) - dry tank, bituminous waterproofing not accessible, hidden by the acroterium (islet F, H, VC) - green roof (island G) - accessible roof terrace with full body guard, lime plaster (island G)

5. Serving the new neighborhood.

A parallel road to the Rue de la Tour Carrée will be created during the project. It will lead to Rue de la Tour Carrée upstream of the intersection with Douzille Road. It will serve the ten places reserved for visitors to allow residents to leave their car in the common underground parking. This lane will separate vehicular traffic from residents of the new neighborhood to the flow of pedestrians and cyclists along Rue de la Tour Carrée to continue along the coastal promenade.

6. Parking.

The project provides for 77 common parking spaces in the basement of blocks B and C including 2 PMR-23 outdoor parking spaces distributed on the land unit including 5 places PMR. The number of places created is greater than the number fixed by the regulation of the zone UR of the PLU

- 1 place for each of the 18 social housing units
- 1.2 places per free accommodation (61 in the project) which gives a total of 91 places including 5 PMR7. The landscape project. Treatment of surroundings and insertion of the program. The project adapts to the variations of the ambiances and landscape contexts of the four sides. It is part of the plant belt of the classified wooded area that will be preserved and strengthened
- South / South-West side: Classified wooded area No development in the EBC. The boundaries of private plots will be planted to create continuity between the EBC and the neighborhood. The boundary of the EBC will be materialized by plantations (shrub layer) to mark a distance between the treatment of private gardens and that of the EBC. To minimize the impact of trampling in the EBC, field fences (acacia poles + two metal wires) are installed. There is a management agreement with the city on this EBC.
- West side: management of covisibilities. This buffer space is composed as follows: - the dividing line: hedgerow (spontaneous local species C.F list of plants)
- Individual tree stems (fruit trees) (more than 2 m from the plot boundary)
- Micro vegetable gardens (long) - footpath grass - Water point (recovery and reuse in gravity of roof water in underground cisterns with hand pump).
- North side: vehicle entrance The limit with the Rue de la Tour Carrée is composed of a vegetal continuity in accordance with the expected ZPPAUP (tree and grass layer). The buried containers are accessible from the Rue de la Tour Carrée and drowned in a green setting (shrub and tree layer). This strongly planted first plan will reduce the visual impact of the car park (PK grass and filtering) and vehicle entries and exits.
- East side: Vegetable filter - Eastern limit: Replantation of a tree and grass layer (with some interesting topics) - This planted filter adapts to projected uses, namely: dense filter on inhabited areas and less dense filter to the right of the public plot for more interactions with the Rue de la Tour Carrée.
- Polarity around the public square and concierge (bikes, bowling alley, seating and forecourt of the collective building) .b. Landscape treatment inside the project. The idea is to create a car-free neighborhood with as little water as possible. Thus the atmosphere is similar to that of the natural park area of the square tower. The road system has been reduced to a minimum in order to maintain coherence with paths in natural areas: no sidewalk (but PMR strips of 1.40m, grassed central strip, one-way traffic). the use of impervious surfaces to penetrate as much water as possible and, on the other hand, to become part of a typology of lanes in a natural space. The planting of many trees close to homes will reduce the visual impact and sound (foliage noise) of the neighboring industrial zone (respect of a tree stem for 200m2 of undeveloped land and 20% of open land) .In the fringe gardens are more private and in the heart of the neighborhood planted areas offer collective functions (shared vegetable gardens, greenhouse, reading hut, seating, etc.) Finally, green recycling systems (composting) and rainwater recovery (cisterns) will be s in place and used especially for vegetable gardens.
- Plant Palette: Trees: Montpellier maples, ash trees, Tamaris, Fig tree, Holm oaks, Fruit trees. Woodland hedge: plum tree, dogwood, hornbeam, European charcoal, viburnum, herbaceous and massive layer: littoral perennial plants + grasses + lawn seedlings dry and limestone.

See more details about this project

Photo credit

© Background Studio

Stakeholders

Contractor

Name : EDEN PROMOTION

Contact : Louis BOUSQUET / 17 Rue JEAN PERRIN / 17000 LA ROCHELLE / 05 46 50 28 06

<http://www.eden-promotion.fr/g50-le-domaine-de-la-tour-carree-la-rochelle.html>

Construction Manager

Name : Hangar G2 - Quai Armand Lalande

Contact : Emmanuelle Poggi / Hangar G2 - Quai Armand Lalande / 33300 BORDEAUX / 05 56 39 61 97

<https://www.poggi-architecture.com>

Contracting method

Off-plan

Energy

Energy consumption

Primary energy need : 59,40 kWhep/m².an

Primary energy need for standard building : 60,00 kWhep/m².an

Calculation method :

CEEB : 0.0005

Breakdown for energy consumption : heating: 26.4 kWhep / m².an ECS: 23.9 kWhep / m².an Lighting: 4.4 kWhep / m².an Auxiliary: 4.7 kWhep / m².an Other uses: 72.5 kWhep / m².an Photovoltaic: -37.3 kWhep / m².an Cep = -32 kWhep / m².year (4 uses RT2012 only)

Real final energy consumption

Final Energy : 23,00 kWh_{ef}/m².an

Envelope performance

Envelope U-Value : 0,28 W.m⁻².K⁻¹

More information :

Bbio: 28.8

Bbio max: 60

Indicator : I4

Air Tightness Value : 0,30

More information

Counting in each dwelling (LEGRAND echo-counter)

Renewables & systems

Systems

Heating system :

- Electric heater

Hot water system :

- Heat pump

Cooling system :

- No cooling system

Ventilation system :

- Humidity sensitive Air Handling Unit (Hygro B)

Renewable systems :

- Solar photovoltaic
- Heat pump

Other information on HVAC :

Thermodynamic water heater with heat recovery on extracted air

Total resale of photovoltaic power generation

Solutions enhancing nature free gains :
Système constructif mixte bois/béton - traitement scrupuleux de tous les ponts thermiques

Environment

Urban environment

Shared gardens, local gas choice with low water requirements, minimized green space mineralization, very small car space, rainwater recovery.

Products

Product

Product category : Gros œuvre / Structure, maçonnerie, façade
Difficulty mainly related to the architectural part, very mineral.

Costs

Construction and exploitation costs

Additional information on costs :
Costs Works: 1 596 € / m² SHON
Mastery of work: 9.5%% / Cout Tx

Energy bill

Forecasted energy bill/year : 800,00 €
Real energy cost/m² : 2.75
Real energy cost/Dwelling : 200

Carbon

GHG emissions

GHG in use : 3,00 KgCO₂/m²/an
Methodology used :
RT2012

GHG before use : 689,60 KgCO₂ /m²
Building lifetime : 50,00 année(s)
, ie xx in use years : 229.87
GHG Cradle to Grave : 1 059,80 KgCO₂ /m²
E + C referential (calculated in May 2017) and certified during the design phase

Life Cycle Analysis

Eco-design material :
The compactness, the choice of the envelope "wood frame" and a reasoned management of the VRD allowed us to minimize the impact of the construction on the carbon weight of the building.

Contest

Reasons for participating in the competition(s)

Bordered by the ocean and protected by a classified wood, **this new neighborhood without car** is resolutely turned towards nature. Gardens, vegetable gardens, orchards, alleys and plots offer quality outdoor spaces.

Unique in its design, the Domaine de la Tour Square offers a living environment respectful of people and the environment.

- **Rare location** , close to the beach and the sea
- Neighborhood mixing houses, capable volumes (**evolving housing**) and semi-collective spaces
- Activist choice in terms of resource conservation: low carbon construction (E3C2), rainwater harvesting for communal gardens watering, car removal, photovoltaic panels.

Building candidate in the category



Bas Carbone



Prix du public



Prix des Etudiants

