

| STAR2CS INTERREG PROJECT |

# THE OISE VALLEY :

## WHAT FORMS OF RESILIENCE TO ADDRESS FLOODING?

Oise-les-Vallées Urban Planning Agency

November 2019

PART

1

SITE-SPECIFIC RESILIENCE  
ANALYSIS

RESILIENCE  
GUIDELINES

2

PETIT MARGNY  
AT MARGNY-LÈS-COMPIÈGNE





# PREAMBLE

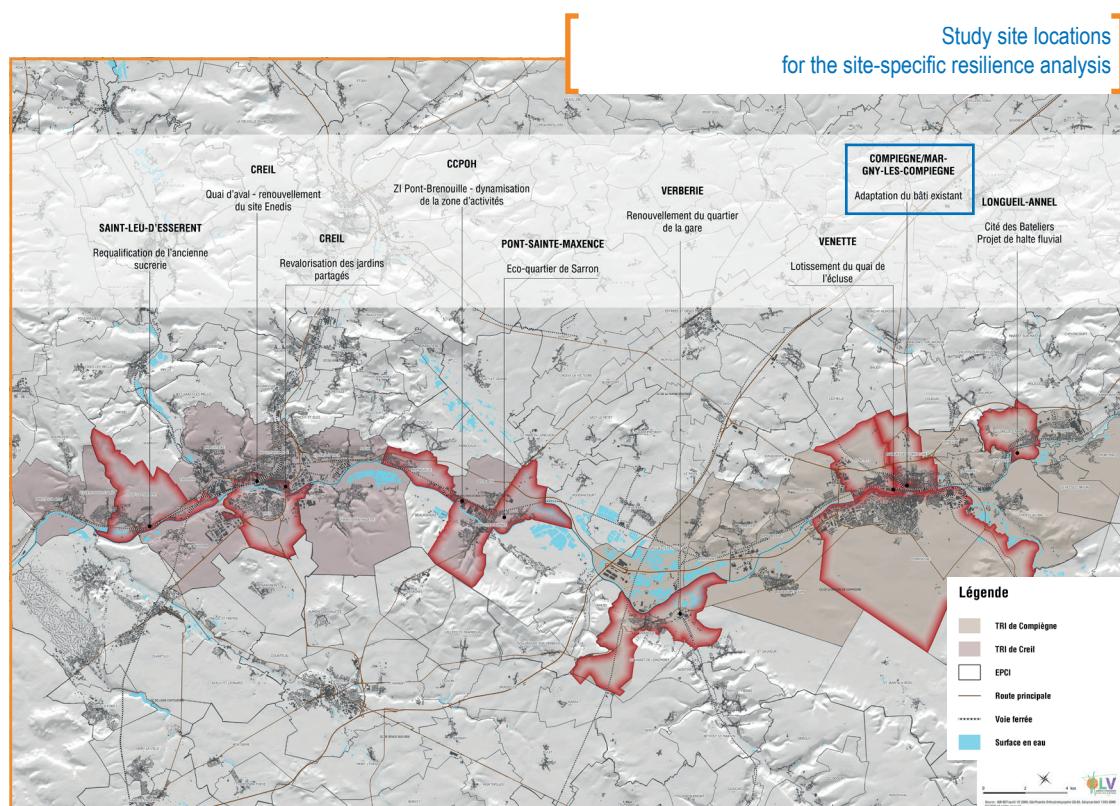


The Oise-les-Vallées Urban Planning Agency began assessing the valley's resilience to flood risk for the European Interreg STAR2Cs Project. The aim of the agency's involvement in this European project is to give further consideration to explore local development and spatial planning opportunities to address flood risk. To achieve this, three steps are currently being researched:

- 1** **Town planning resilience:** How can sites in flood-prone areas, subject to additional restrictions from differing stakeholder opinions, be planned and developed.
- 2** As individual flood resilience plans do not cover that of an entire region, step two focuses on a larger scale, especially **the resilience of roads and utilities** that keep the region up and running.
- 3** Finally, the agency wants to introduce a **methodological decision-making tool designed for various planning stakeholders** (councillors, technicians, developers, private individuals, etc.) to support the regional planning and development process.

With support from Architect, Éric Daniel-Lacombe, the urban planning agency produced nine case studies located along the Oise Valley during the first part of the project.

Using these nine case studies, the aim is to produce an overall development plan for the Oise Valleys area, based on geography, landscapes as well as land-use and economic activity, not forgetting mobility, which is the key topic in this particular area. The development plan is, and will be, adaptable and incremental. It will help foster a collective awareness of the regional resilience process with respect to flooding.

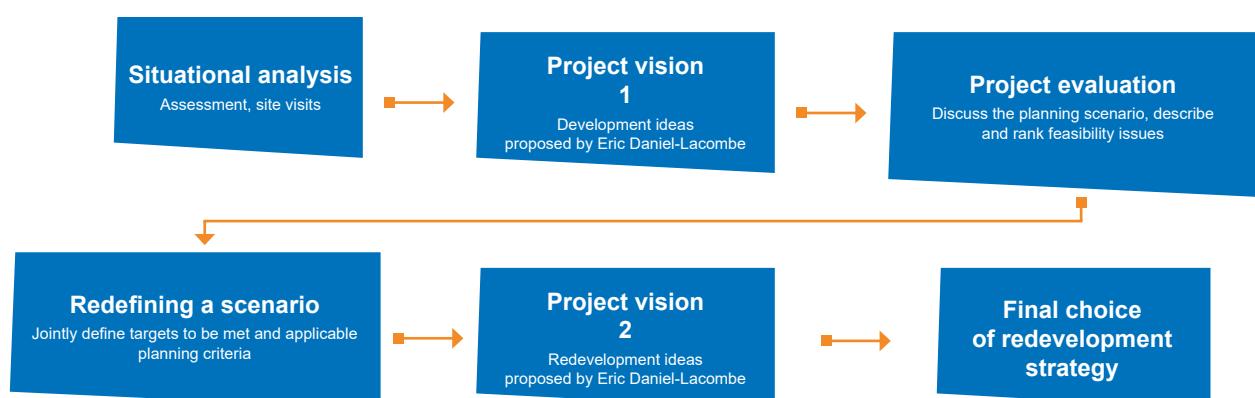




Given the major waterway project to connect the Seine and Escaut rivers with the Seine-Nord Europe Canal and dredging/re-profiling the River Oise to meet European standards (MAGEO), the mid-Oise area has a chance to forge a unique identity for itself to the north of the Ile de France region, while adapting to climate change.

We have devised development scenarios for each of the nine case study situations that provide a fresh, new insight. A series of initial development scenarios for each site was presented to the relevant stakeholder then revised to provide a new version incorporating feedback and analysis (often contradictory). Each scenario is intended to become a potential vision to transform the site in question by seeking to make it less vulnerable to flood risks.

### [ Adopted approach ]



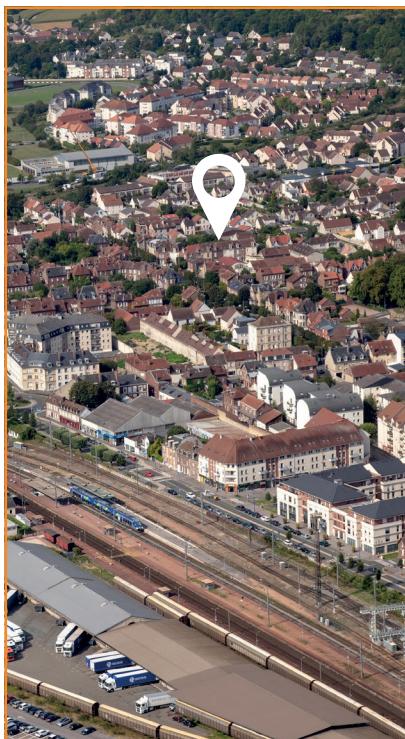
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## 1

# SITE PRESENTATION & CHALLENGES



## Presentation of local area



The town of Margny-lès-Compiègne has a population of approximately 8,000 people and belongs to the Greater Compiègne Regional Authority (ARC). As with other towns in the Oise Valley, Margny-lès-Compiègne has benefited from the river and its waterways to grow and expand local business. As the other side of Margny-lès-Compiègne is bounded by hills, most of the town's amenities are currently located on the floodplain. The floodplain, itself, is crossed by major infrastructure, making it highly accessible. It also forms a gateway to the ARC, given its strategic position at the centre of the conurbation.

## Site issues



The site in question is a residential area built in the 1920s, to the west of Margny-lès-Compiègne, in a low-lying part of the town. As a result, its architectural qualities are a distinguishing feature, yet it is vulnerable as the area is highly prone to 100-year flood events.

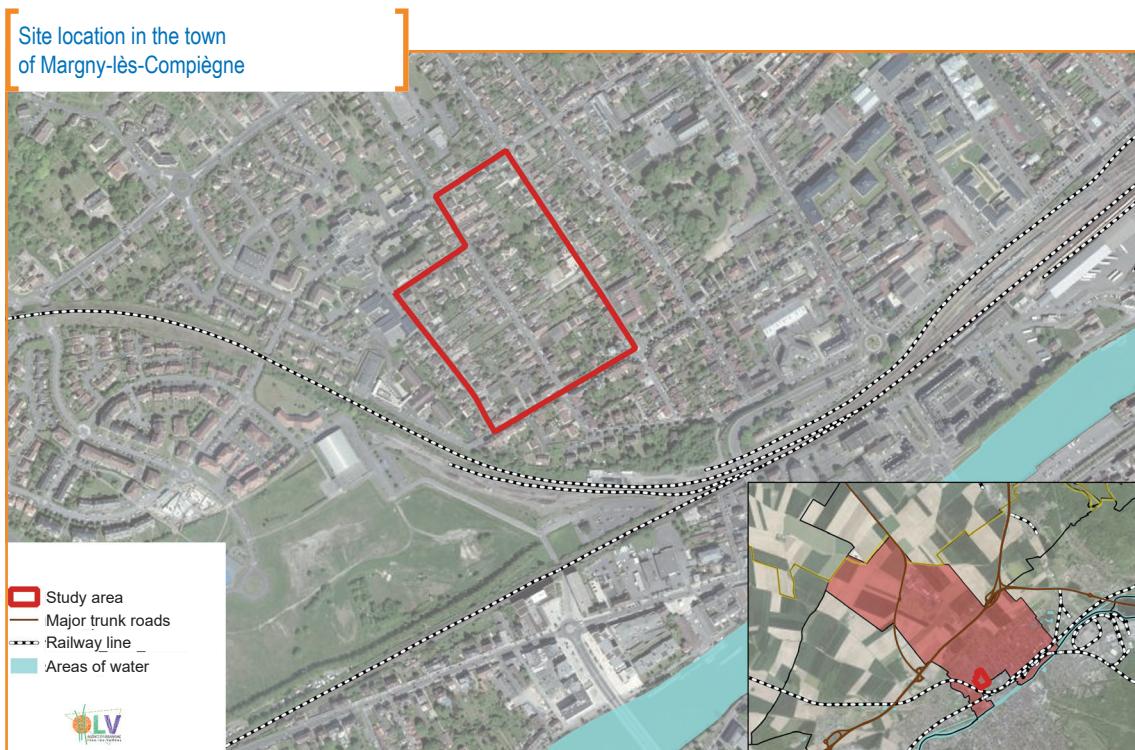
As it is badly affected by flooding, the local area is also subject to ABF restrictions. The local area is also part of the PAPI Programme and mirrors the nationwide challenge of how to develop existing buildings to cope with the risk of flooding. At this particular site, the task is to manage and build on the existing urban fabric without increasing its footprint or impairing its current architectural quality.

## Challenges and goals

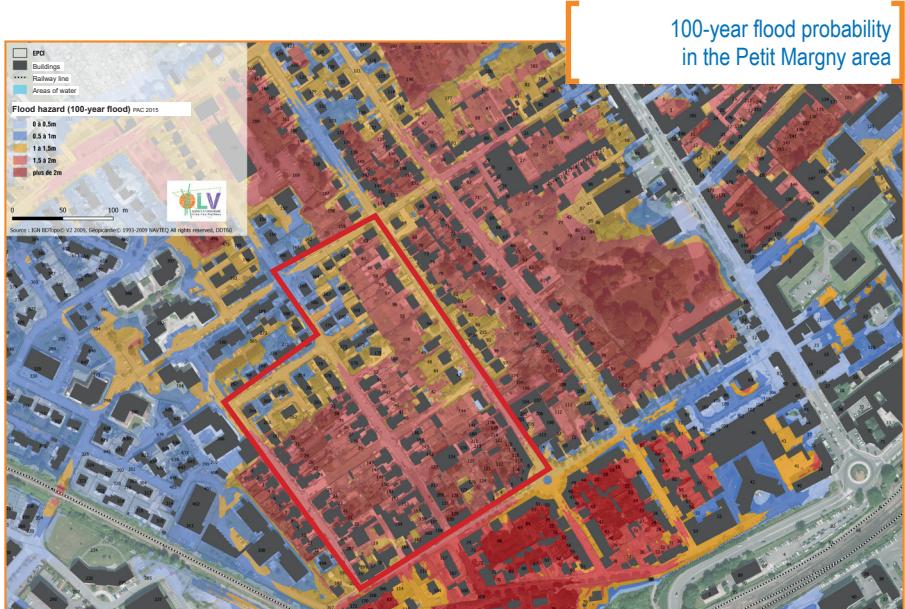
Adapt the existing local area to make it less flood-prone

Devise a development plan for the local area, largely populated by private individuals





The flood hazard map modelled in 2015 on 100-year flood events shows that this existing district is highly flood-prone. In fact, it experiences flood events with water reaching a depth of up to 2.5 m. Located behind the railway lines, the neighbourhood sits in an area where water can accumulate. This needs to be considered in the project.



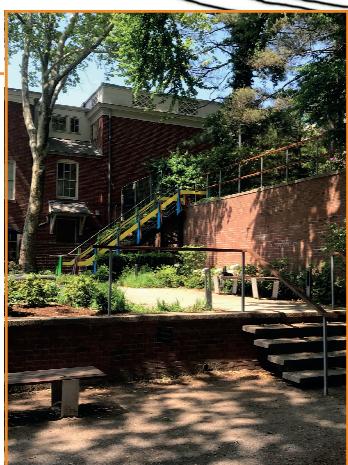
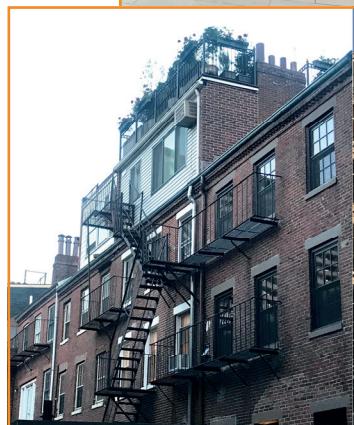
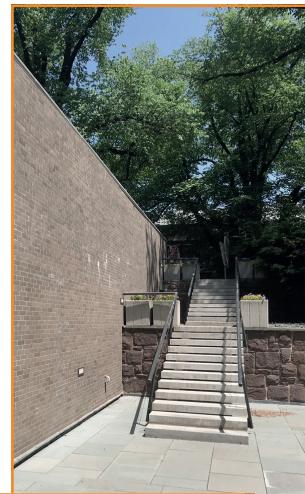
## Summary of stakeholder positions



Stakeholder	Local authority	State	ABF
Main priority	Desire to adapt the local area to flooding and build it up	Protect the local community from flooding	A neighbourhood with outstanding architecture
Priority impact	Create multi-family housing close to the railway station	List the Petit Margny area in the purple PPRI zone	Buildings in the local area to be protected
Priority-related risk	Heightened vulnerability of site and assets	Overly restrictive regulations for renovation	Impossible to develop the buildings
Risk effect	Rise in the number of people affected by flood risks	Impossible to make the neighbourhood more resilient	Neighbourhood 'stuck' and unable to become more resilient

## 2

## DEVELOPMENT PROPOSALS



NB: All images featured on this page are taken from the presentation by Eric Daniel-Lacombe at a workshop on 2 April 2019, entitled *Inventive analysis for Oise-les-Vallées*

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## THE ARCHITECT'S OPINION

Eric Daniel-Lacombe



© Eric Daniel-Lacombe

**R**egenerating a flood-prone historic neighbourhood does not raise the same architectural and urban development issues as those for new-builds on flood-prone sites (as applies to the mooring facilities at Longueil). When a new building is constructed, hazards are analysed (how they evolve, their context, etc.) to propose amenities that make the place and its buildings a low flood risk. This is more complex for urban renewal programmes. The residential area already exists, so changing it requires proper transformations. The example of this district, listed in the red zone of the PPRI, means that fear of greater flood risks has driven regulations that seriously restrict any changes. The public services fear that each redevelopment will fuel an expansion in the footprints taken up by buildings rather than a return to more natural defence mechanisms. The "Petit Margny" housing estate has been selected as the second study site as it can be an example of this metamorphosis.

It was built in the early 20<sup>th</sup> century and has already experienced floods of more than 2 metres, which submerge and damage all the ground floors of the houses. Being near to the railway station and the quality of its picturesque architecture inspires the residents to live here despite periodic flooding. Repairs must be carried out after each flood event but how can the homes be made less vulnerable to floodwaters if we cannot take any practical steps?

A transformation plan for the local area could be drafted. This would be done in consultation with the municipality, public services, the local community and, of course, ABF-registered Architects, as the site has a heritage value. The idea is as follows: The houses cannot be raised like jacking up a car but the layout and uses of their rooms can be moved to the upper floors. Living rooms, kitchens, bedrooms and bathrooms will be relocated to the first floor, which becomes the main floor of the houses. The existing gardens will

remain at ground floor level, as will all uses unaffected by flooding or that will suffer little damage. This transformation is challenging and clearly expensive for the residents. As a result, it is best to test it on a more easily convertible communal area than private individual spaces.

A public space crosses through the housing estate which is used as an alleyway, with people coming and going, mainly on foot. It may be possible to experiment with it by changing the alleyway into a long elevated walkway. The walkway floor would be two metres high to stay clear of floodwaters and allow access below in drier weather. Floodwater often remains trapped in private gardens, so this dual-level alleyway would allow water to flow below it and more easily return to the riverbed. The new elevated walkway can become a focus for various uses by the local residents. Bicycle parking, composting sites, bins and garden tools could consequently be placed underneath the walkway. The wooden walkway would become an useful, elevated promenade to cross the neighbourhood in wet weather or to move to flood-free areas without having to fight fast-moving currents. If, for example, the residents relocate to their first floors, they can access their redesigned homes directly by new front doors. For those whose homes are not directly connected to the walkway, flood shelters can be built to gather the residents together. This subsequently avoids large groups of people moving about a flooded town and therefore minimises sources of accidents.

The scenario can be used experimentally and the findings will be useful for other already built-up, flood-prone sites by:

- introducing an energy, water, supply and communications protection programme as quickly as possible. This would also cover waste removal facilities and make safe build-ups of contaminants (industry, livestock farming and sewerage plants)

from the floodwaters, as sources of risk for settlements downstream;

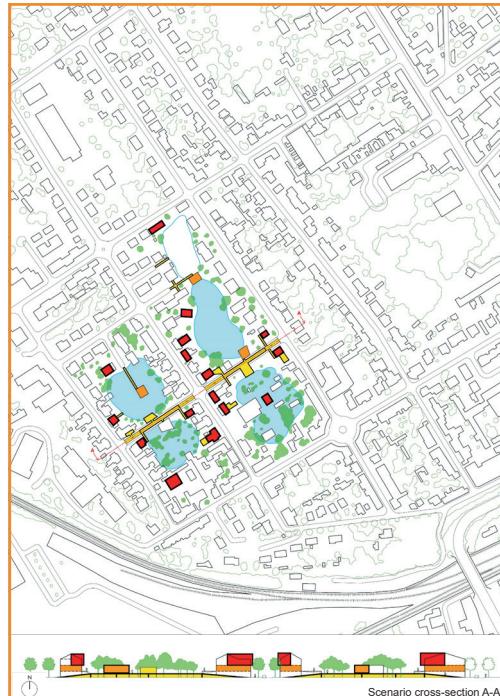
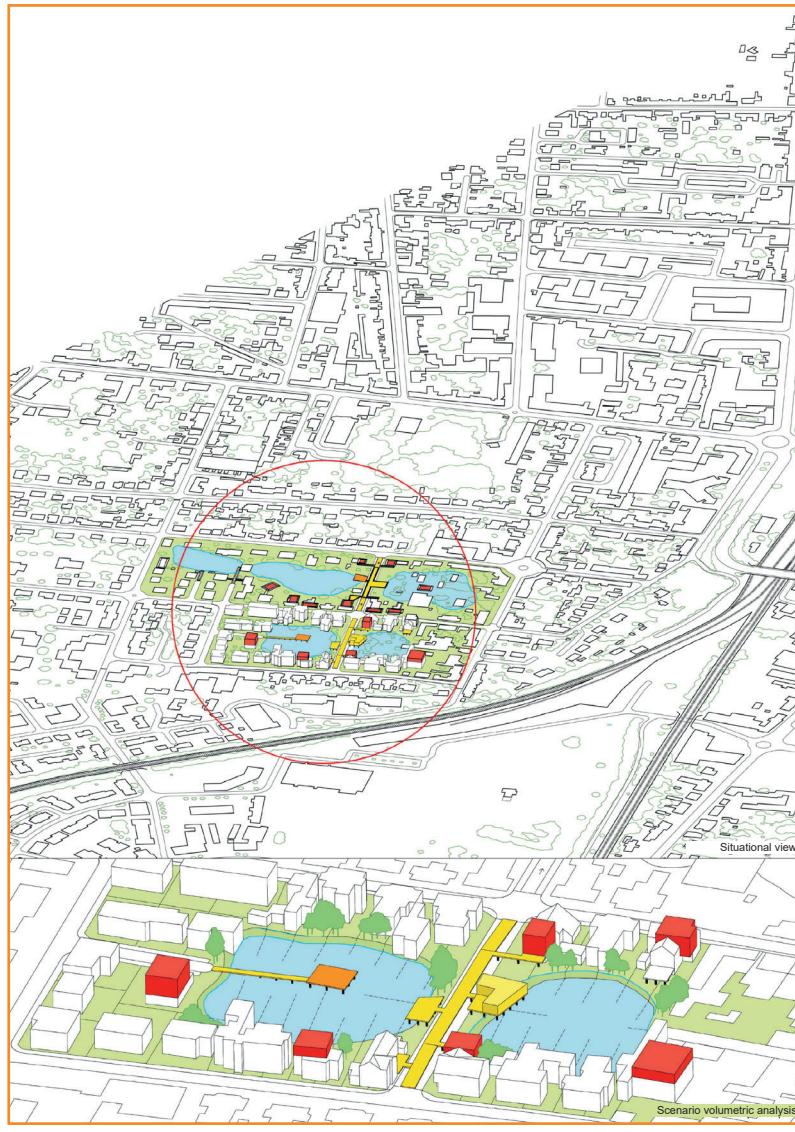
- provide local residents with an aid package to adapt homes in flood-prone areas over the next twenty years, to ensure decent living and/or evacuation conditions during flood events;
- creating reception and healthcare facilities for people who have to leave their homes closest to the areas at risk and introducing comprehensive evacuation exercises on an annual basis.

The hydraulic engineering in this new type of neighbourhood is barely visible at ground floor level and protects first floors. It may encourage home-owners to follow its example (one would hope). Rather than rebuild exactly the same house using insurance policy payouts, homeowners could plan building work to make the house less vulnerable to the next flood. If everyone considers floods and heatwaves, open-plan ground floors can become cool, breezy courtyards in summer. The challenge remains of replacing the m<sup>2</sup> of lost floor space, which can be built into the roofs, probably by raising them slightly with approval from ABF, of course. The roof space then becomes a vertical extension to be used by residents. The restyled neighbourhood will remain true to itself yet different, pointing the way to a new form of environmental ecology. Looking more closely at the map, this experiment could radically change life in the local area during a flood. The impossibility of living with 2 metres of flood water would become bearable with the raised walkway leading people to their shelters, while raising the height of the front doors to their homes. In dry weather, the public walkway, combined with a ramp or lift, would offer greater access to nearby places and community facilities for frail or mobility-impaired individuals. It would also be useful to better identify these individuals and prioritise their care during periods of heavy rainfall.



## VERSION 1

This first draft of proposals was presented to councillors and technicians at a bilateral meeting to fine-tune the outcomes. Given the local context (privately-owned homes, ABF constraints, ageing population, etc.), the Greater Compiègne Regional Authority asked Eric Daniel-Lacombe to simplify the planning proposal and focus primarily on redeveloping the alleyway, which is a public amenity.

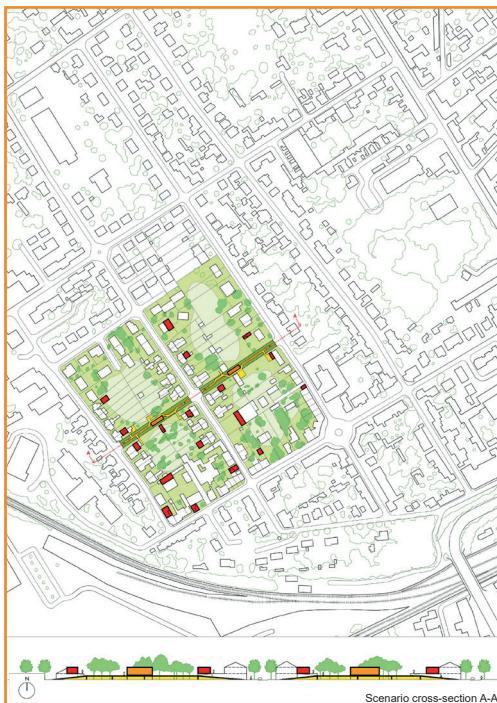


### PRINCIPLES

#### VERSION 1

Vertical extensions  
to buildings

Floodwater  
storage basins  
for each housing  
block



© Eric Daniel-Lacombe

## VERSION 2

Redeveloping the alleyway can be the first step to transform this flood-prone neighbourhood. The goal is to create a walkway that acts as a shelter connected to the ground at various points to sustain a bond with the soil and nurture a risk awareness culture. The walkway will have shelters along its length that local residents can use for their own needs (as a place to meet or even a community hub, etc.)

Margny-lès-Compiègne town council has approved the simplified project outline and recognises the exemplary approach that could be replicated in other parts of the town if funding becomes available to deliver the projects.

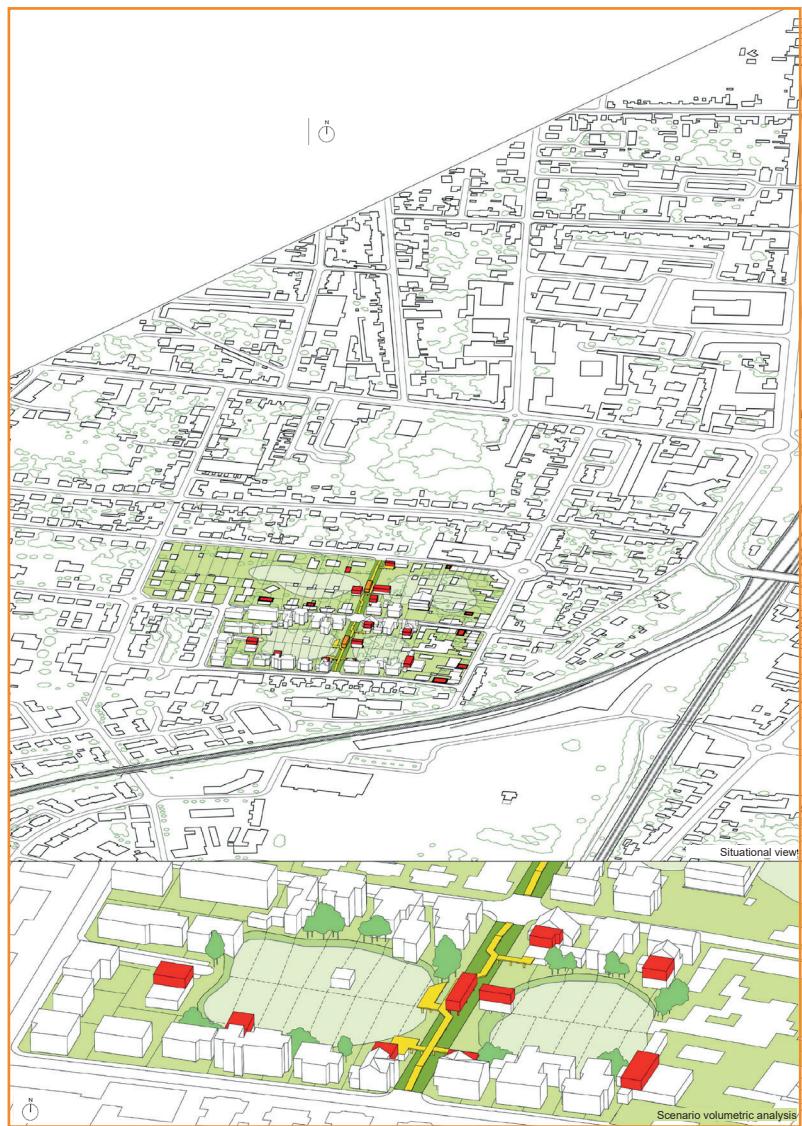
### LIMITATIONS

Challenging to implement

Regulatory challenges

Difficult to gain acceptance

VERSION 2



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## 3

## PROJECT EVALUATION &amp; FEASIBILITY

Both versions proposed by Éric Daniel-Lacombe seek to avoid a certain number of detrimental effects in the event of a flood.

Each of them lessens or eliminates potential damage and is likely to generate benefits for the local area, or even the entire town.

In most cases, however, these risk reduction measures are not cheap, in financial, technical or human resource terms.

## SWOT analysis

WITHIN THE PROJECT	OUTSIDE THE PROJECT
STRENGTHS	OPPORTUNITIES
Positive aspects justifying project benefits	Aspects to capitalise on the project environment
<ul style="list-style-type: none"> <li>Bring together housing blocks and creation</li> <li>Project easily achieved</li> </ul>	<ul style="list-style-type: none"> <li>Engage all the specialists (hydraulic engineers) and local residents to improve knowledge about flooding in the local area</li> </ul>
WEAKNESSES	THREATS
Negative aspects to be improved	Obstacles that may impede project development
<ul style="list-style-type: none"> <li>Houses in the local area remain vulnerable to floodwaters</li> </ul>	<ul style="list-style-type: none"> <li>Poor use of land by local community favouring the creation of debris jams.</li> <li>Shelter difficult to evacuate in the event of a prolonged flood</li> </ul>

The SWOT analysis combines the project's strengths and weaknesses with surrounding opportunities and threats to help define a development strategy.

## Advantages / Disadvantages by stakeholder

	Advantages	Disadvantages
Local authority	Reducing vulnerability in the local area	Return on investment doubtful
State	Greater protection of the local community	-
Users/Residents	Option to find shelter and safety in the event of a flood	Houses and property still just as vulnerable
ABF	19 <sup>th</sup> century buildings unchanged	-

## Methodological details

### Resilience indicators

Several aspects must be specified in terms of resilience indicators.

Firstly, it should be noted that the 5 criteria defined to study project resilience were proposed by Oise les Vallées and are the result of its methodological choice alone. We have identified:

- 1. An environmental benefit:** The project offers an environmental advantage by respecting nature and preserving biodiversity, etc.
- 2. A social benefit:** The project offers a social and human advantage inasmuch as it provides a service to its users and improves the quality of life for the local community
- 3. An operational benefit:** The project offers an operational advantage, making buildings technically capable of resisting floods and able to cope with flood hazards, etc.
- 4. An economic benefit:** The project offers an economic advantage in its ability to generate income, to attract business and retail while fostering tourism, etc.
- 5. Scenic benefits:** The project can slip seamlessly into the local area by considering the specific features of each area and delivering aesthetic benefits, etc.

### Explanation of the choice of scoring system

The scenarios were scored on a scale of 1 to 10, with 0 being the lowest score and 10 the highest.

The choice of scoring method is clearly subjective and is in no way definitive. The aim is partly to trigger discussion and reactions.

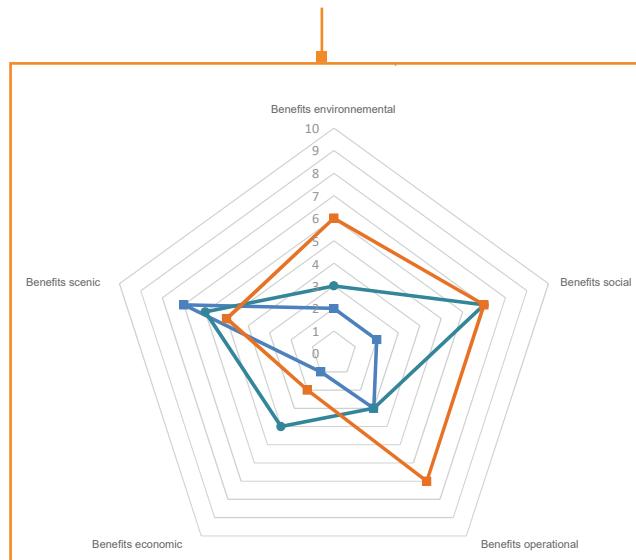
Score	Category
1-2	Very poor
3-4	Poor
5-6	Fair
7-8	Good
9-10	Very good

The purpose of the scoring system is to compare the three chosen development scenarios:

- The first corresponds to the current position. This refers to the state of the land as it is now, prior to any development taking place.
- The second corresponds to a hypothetical planning scenario where flood risk has not been considered. As such, this refers to development plans that comply with current urban development guidelines but which do not prioritise resilience.
- The third scenario is proposed by Eric Daniel-Lacombe and featured above.

## Aspects to consider for resilience

Benefits	environmental	social	operational	economic	scenic	Private individual	State	Local authority	ABF
Scenario 1 "Current situation"	2	2	3	1	7	5	7	2	8
Scenario 2 "Ignoring the risk"	3	7	3	4	6	6	3	8	5
Scenario 3 "Eric Daniel-Lacombe"	6	7	7	2	5	7	8	9	7



## Level of satisfaction

