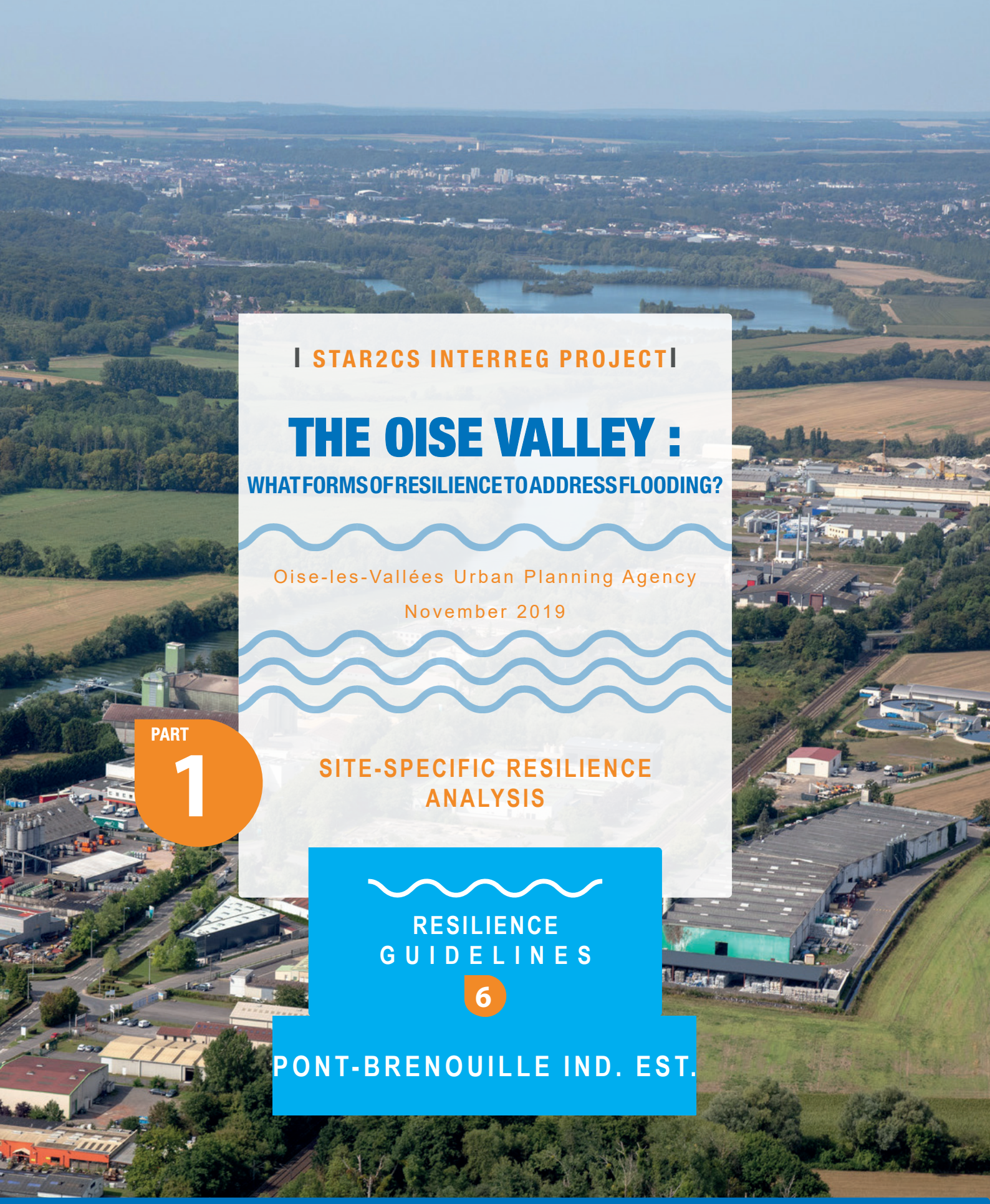


I STAR2CS INTERREG PROJECT I

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 6

PONT-BRENOUILLE IND. EST.

Interreg 2 Seas Mers Zeeën STAR2Cs
European Regional Development Fund

Adaptation to climate change

Bureau d'architecture Eric Daniel-Lacombe

AGENCE D'URBANISME Oise-les-Vallées

[PREAMBLE]

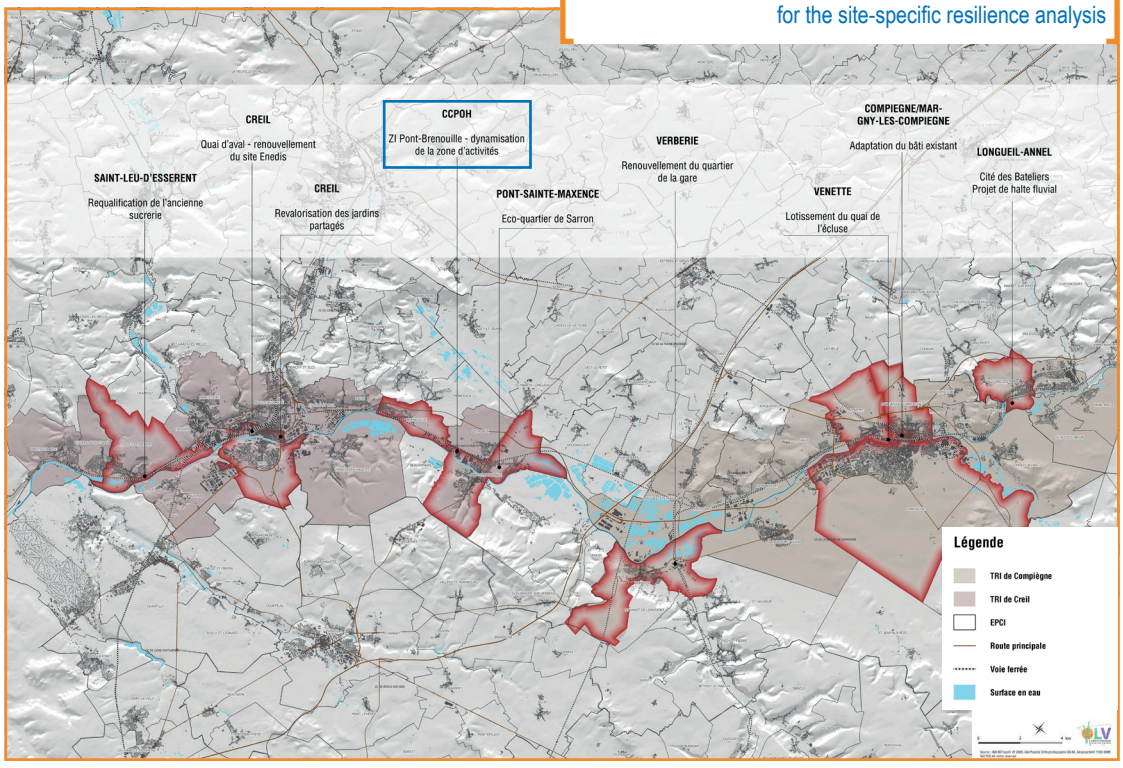
The Oise-les-Vallées Urban Planning Agency began assessing the valley's resilience to flood risk for the European Interreg STAR2Cs Project. The aim of the agency's involvement in this European project is to give further consideration to explore local development and spatial planning opportunities to 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.

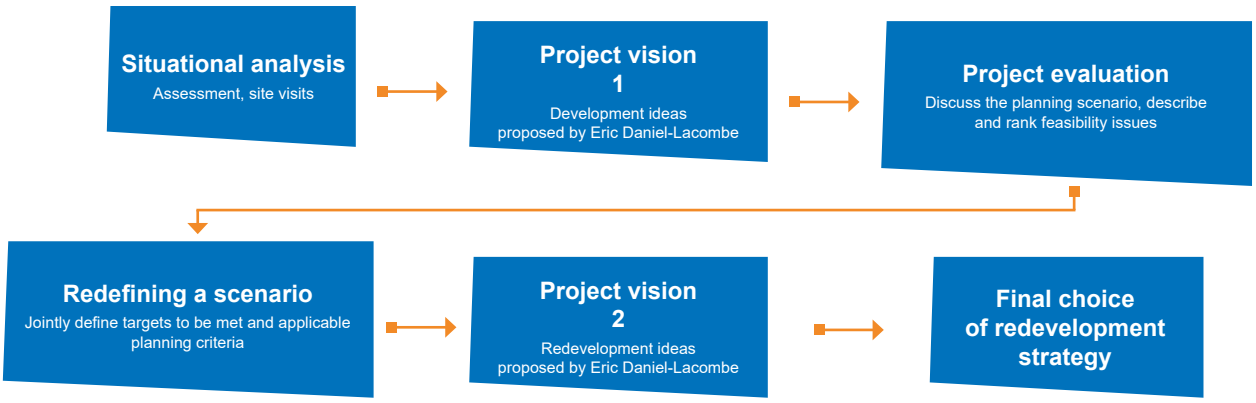
Study site locations
for the site-specific resilience analysis



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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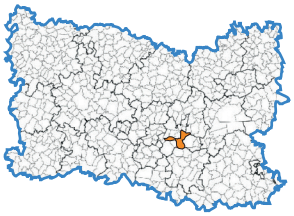
1 SITE PRESENTATION & CHALLENGES

Presentation of local area



The town of Pont-Sainte-Maxence has a population of more than 12,000 people. It is part of the Pays d'Oise et d'Halatte Intermunicipal Association (CCPOH).
Local historic features, together with its setting make it an especially attractive town, on the banks of the River Oise, surrounded by one of France's biggest forests, the Forest of Halatte, which lies to the north of the Massif des Trois Forêts area.
The town of Brenouille has a population of just over 2,000 people and is in the Oise Department, west of Pont-Sainte-Maxence. It also belongs to the CCPOH.

Site issues

The Pont Brenouille industrial estate is in the municipalities of Pont-Sainte-Maxence and Brenouille. It lies on the banks of the Oise, between the river and the railway line. It has a grain port facility, the largest on the mid-Oise river section, together with Clairoix. Numerous companies have set up there over many years, such as Ecoplastics or Hubau.
In 2017, the municipality stated its desire to overhaul the industrial estate, in particular, to nurture new business opportunities on the last few remaining plots. This project, planned for a flood-prone area, has been jeopardised by the draft PPRi which listed part of the site as a flood expansion zone.

Challenges and goals

This industrial estate has been a strategic development site since the 1960s and constitutes one of four pillars of the local economy for the CCPOH.

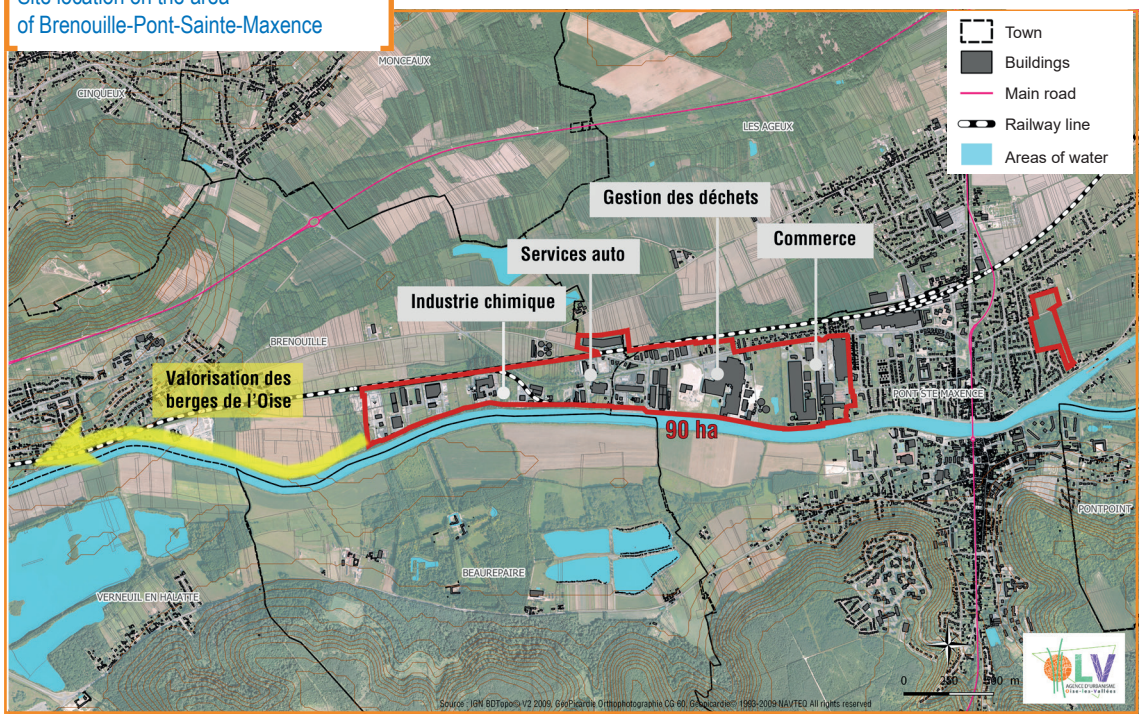
Land for sale here is extremely limited. Some plots are still available but these may well be listed at flood expansion zones in the forthcoming PPRi.

Possible project

Willingness of local elected members to sustain a thriving industrial estate by:

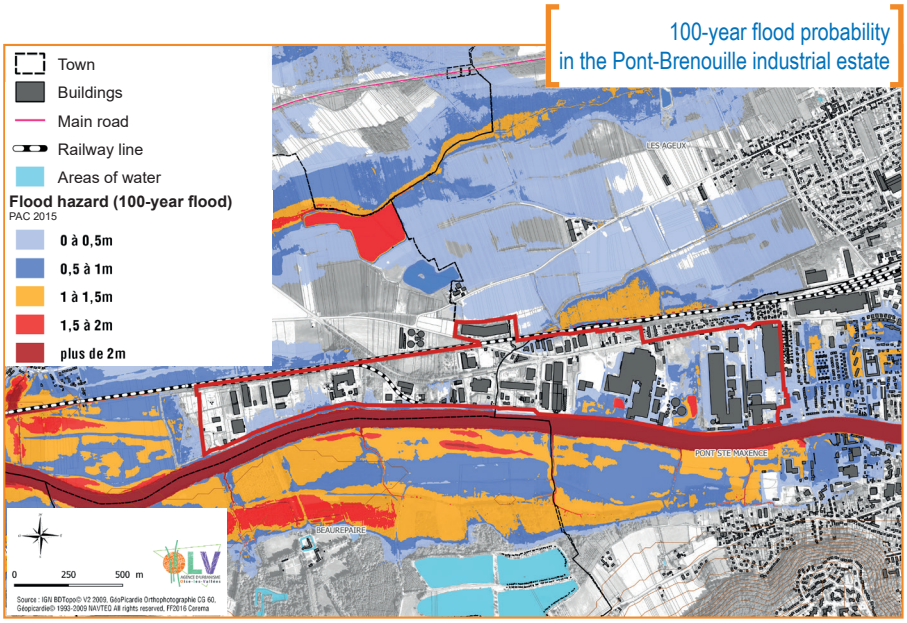
1. safeguarding or developing existing businesses (expansion plans or storage facilities for key materials vital for specific businesses to operate properly);
2. enabling ongoing plans to go ahead on the few remaining plots, as land for economic development becomes rarer.

Site location on the area of Brenouille-Pont-Sainte-Maxence



The flood hazard map modelled in 2015 on 100-year flood events features undeveloped plots around existing business activities subject to variable hazard risks, ranging from low to very high. These flood risks especially affect businesses located in the town of Pont-Sainte-Maxence.

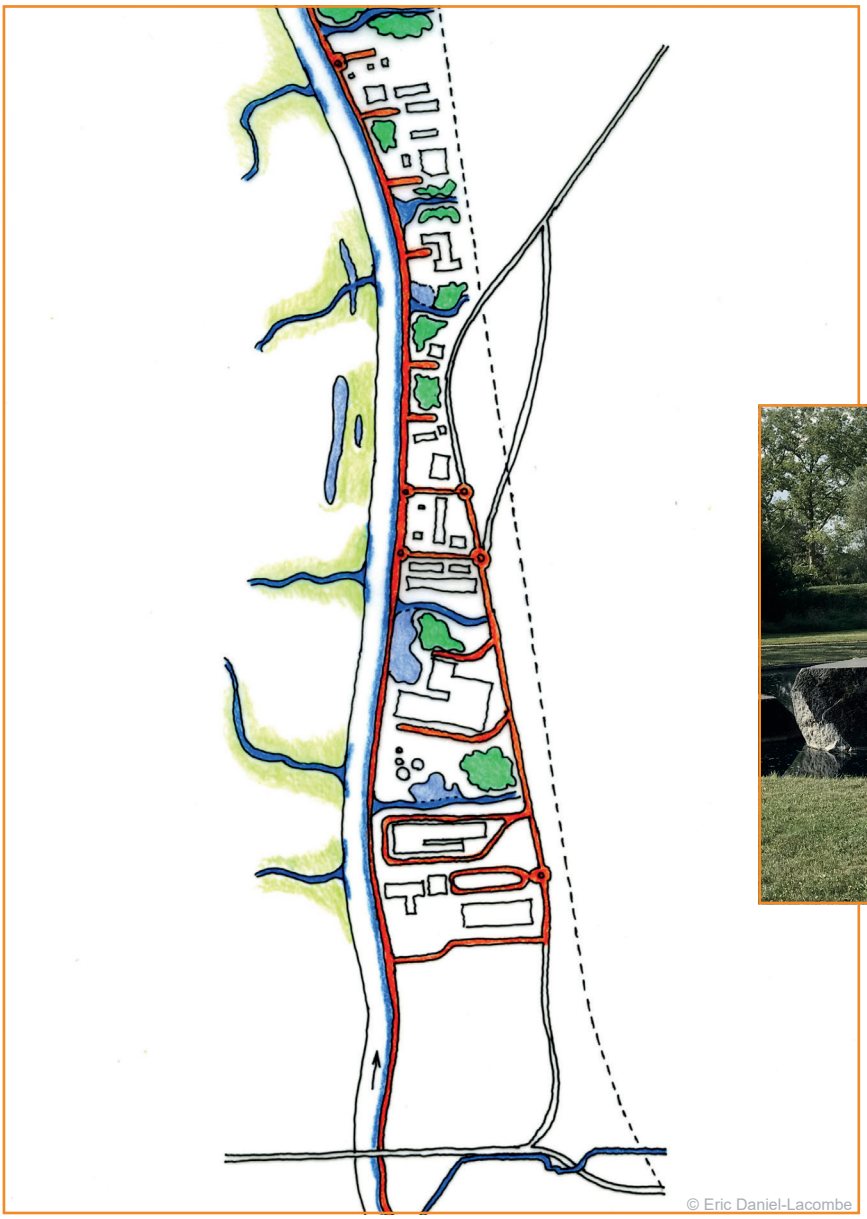
100-year flood probability in the Pont-Brenouille industrial estate



Summary of stakeholder positions

Stakeholder	Local authority	State	Companies
Main priority	Foster economic development on the site	Minimise flood-related risks	Safeguard, or even grow business activity on the site
Priority impact	Encourage development and growth of businesses on the industrial estate	Part of the site is listed as a flood expansion zone	Desire to expand and develop land at the industrial estate
Priority-related risk	Construction of buildings in a flood-prone area.	Companies cannot grow	Construction of buildings in a flood-prone area
Risk effect	Increasing vulnerability	Business will ultimately relocate	Increasing vulnerability

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*

THE ARCHITECT'S OPINION

Eric Daniel-Lacombe

© Eric Daniel-Lacombe

A port's activities are so closely tied to the river that the presence of water never directly alludes to flooding. That said, the flood hazard map states this risk How, then, can those working at the port entertain the idea of making their technical and economic facilities less vulnerable? The first buildings at the port took up little space compared to the total surface area and left room for the water when the river breached its banks. Then, building on its success, the port expanded. New buildings were added, reducing the surface area governed by natural defence mechanisms if the river flooded. Car parking and storage areas around the buildings create debris jam risks by blocking the pathways where flood water flows. Furthermore, areas adjacent to the buildings increase the soil sealing and subsequent risk of disarray in the event of a flood. Although the first buildings were constructed on backfilled land (mounds) and are higher, the latest additions are built on remaining land, which is often lower-lying (in hollows), closer to the level of the River Oise and therefore more vulnerable. The State services are aware of this situation and have decided to restrict any new developments to have a clearer picture of the problem. This stance has been met with some disbelief by the users.

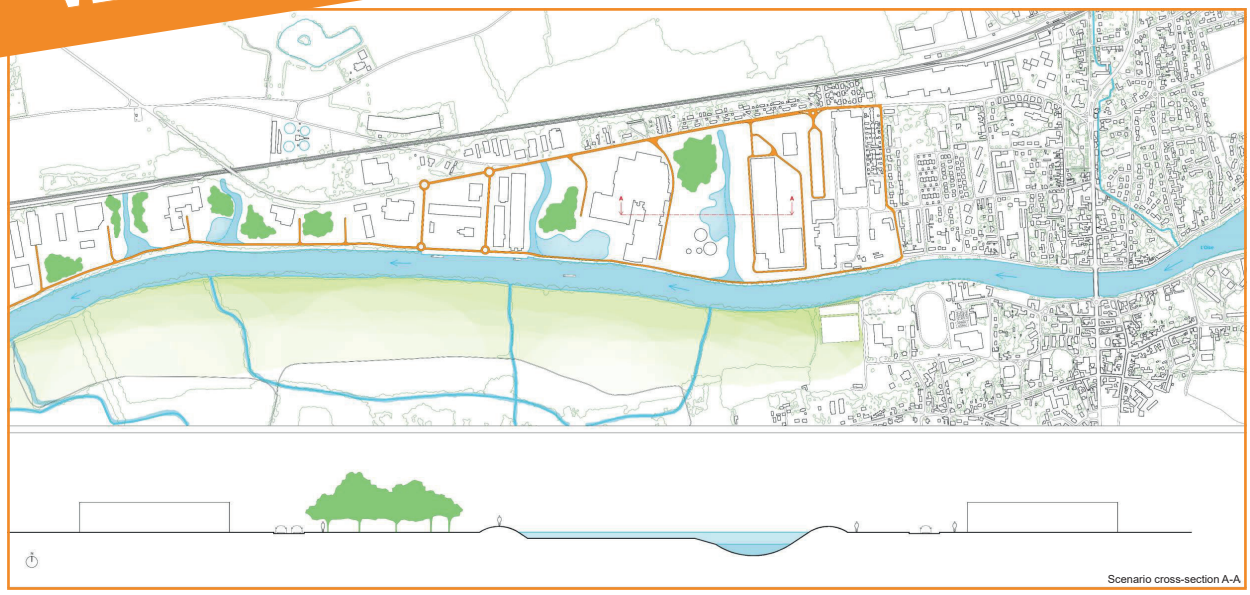
The flood hazard map provides the option of charting out the expected direction of water movements when floods occur. By sketching in the flood-prone areas, the outline of the protected locations becomes clear. By treating flood-prone areas like drainage ditches in hollows, any addition of a new building or storage facility can be avoided. The effect is just like drawing the flood hazard map directly on top of the port's built-up areas. The undeveloped parts subsequently appear as being less vulnerable. Adding drainage ditches perpendicular to the river on the opposite bank provides a good example of a natural defence mechanism for wetlands. We can therefore take this and sketch in the outline of the port.

These future planted hollows will form new boundaries between the port activities. They will have much greater landscaping and hydraulic qualities than the widespread use of metal fences at the port but moreover, they help retain water when the flood waters rise and return them to the river by gravity as the water subsides. The mounds and hollows will form a new landscape for the port.

A full-scale trial on this test site can convey the image of a port for the future, less vulnerable and more ecological. The industrial buildings opposite the last houses in Pont-Sainte-Maxence have been designed for the future head office of the Inter-municipal association. By undertaking a development focusing on demolition and renovation of sections of factory space to favour natural flood risk defence mechanisms, the resulting architecture combines the built and natural environment. Two drainage channel gardens will surround the outstanding future building and extend to the river as a ecological symbol for the valley. The neighbouring houses have everything to gain. They will be protected by a green space and land management to make them less vulnerable to future floods.

The flood hazard map would feature areas of pale blue and white crossed by drainage ditches in red that pick up on the remnants of an older, more natural landscape, almost identical to that on the opposite bank.

VERSION 1



This first draft outline of the project was presented to councillors and technicians at a bilateral meeting. The aim of the meeting was to refine the proposals and identify obstacles to the project delivery.

In this proposal, Eric Daniel-Lacombe decided to create a series of drainage ditches perpendicular to the river, similar to the opposite riverbank. Together with landscaping, these would redesign the boundaries for the companies and make the site less vulnerable to flooding.

PRINCIPLES

VERSION 1

- Create drainage ditches perpendicular to the river
- Landscape the river banks

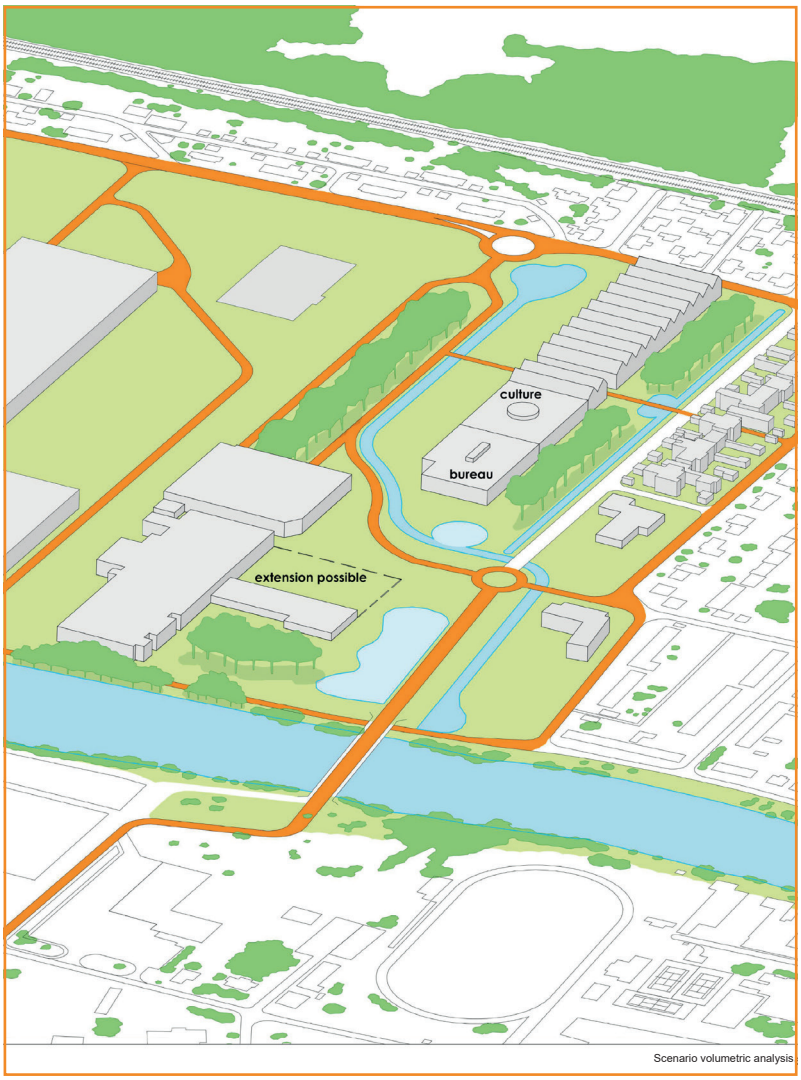
VERSION 2

This proposal met with support from the municipality which also requested some changes. Indeed, it requested that the relocation of the CCPOH be taken into account and to plan for its future premises on the site.

LIMITATIONS

VERSION 2

- New CCPOH inter-municipal association premises not included
- Connection to link up the various defective buildings



3 PROJECT EVALUATION & 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 Positive aspects justifying project benefits	**OPPORTUNITIES** Aspects to capitalise on the project environment
• The planning proposal sets out a series of drainage ditches perpendicular to the river, matching the opposite bank	• The drainage ditches will be landscaped while a planting scheme will add nature interest to the site and a high-quality working environment.
WEAKNESSES Negative aspects to be improved	**THREATS** Obstacles that may impede project development
• Link the development proposal to the Seine-Nord Europe Canal and MAGEO projects	• Issue of funding and land ownership • Environmental impact of the 'cut and fill' earthworks technique

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	Possibility to retain businesses in the local area	-
State	-	-
Users/Residents	-	-
Companies	Possibility to retain and secure their business activities	-

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 insomuch 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.

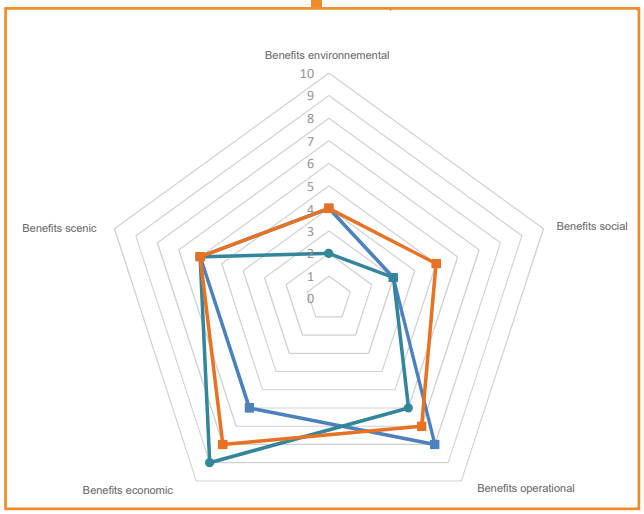
Score	Category
1-2	Very poor
3-4	Poor
5-6	Fair
7-8	Good
9-10	Very good

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
Scenario 1 "Current situation"	4	3	8	6	6
Scenario 2 "Ignoring the risk"	2	3	6	9	6
Scenario 3 "Eric Daniel-Lacombe"	4	5	7	8	6



Level of satisfaction

Companies	State	Local authority
6	7	6
8	4	8
8	8	8