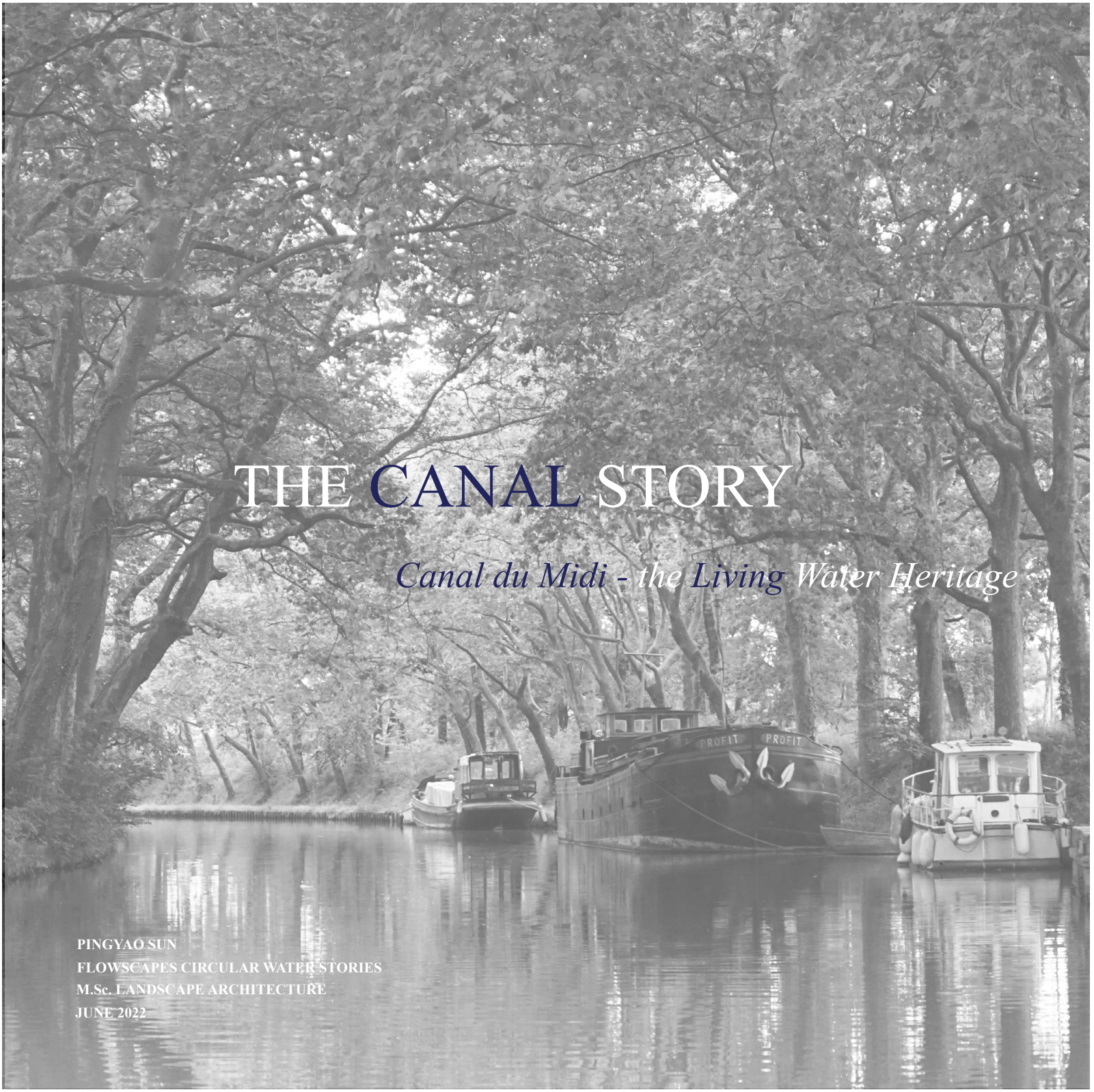

THE CANAL STORY

Canal du Midi - the Living Water Heritage

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FLOWSCAPES CIRCULAR WATER STORIES
M.Sc. LANDSCAPE ARCHITECTURE
JUNE 2022

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Philip - spangenberg - travel grant awarded

THE CANAL STORY

Canal du Midi - the Living water heritage

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Master Thesis P5 Report
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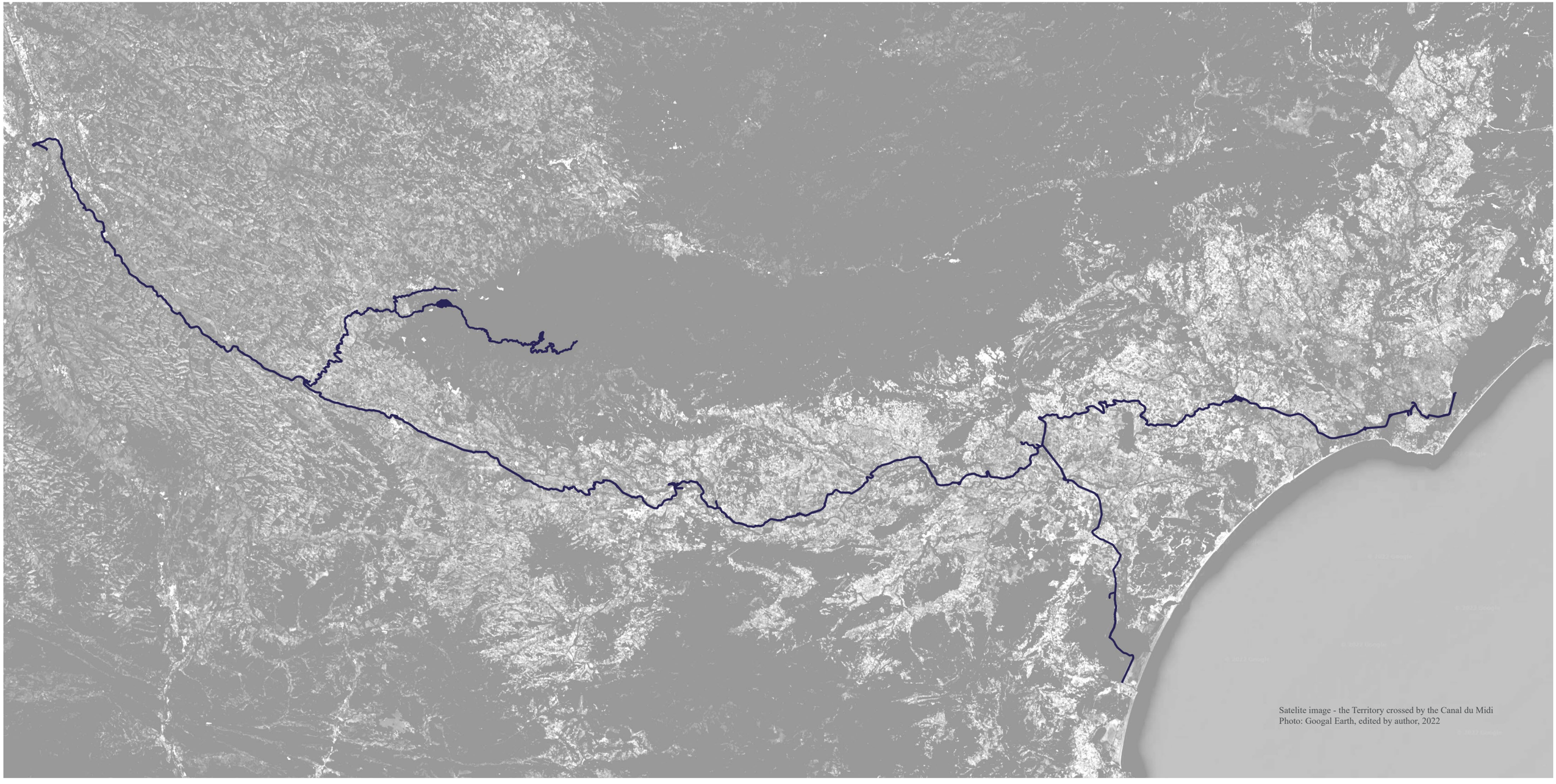


Satelite image - the Territory crossed by the Canal du Midi
Photo: Googal Earth, edited by author, 2022

ACKNOWLEDGEMENT

This thesis is a reflection of my fascination with landscape architecture and my study in the past two years in the Faculty of Architecture and the Built Environment at Delft University of Technology.

First of all, I would like to thank my mentors for accompanying me on this exciting journey of discovery and learning. Throughout this challenging year, my mentors never ceased to inspire me with their words and insights on the project. Dr. Ir. Inge Bobbink has always supported me in exploring the design approaches freely and provided critical advice, insight, and encouragement throughout the process. Dr. Ir. Esther Gramsbergen provides me with a lot of enthusiastic and inspiring guidance, especially on the architectural scale as well as the writing process. In addtion, I want to thank Sjef Jansen and Gabriel Geluk, for their important and patient tutoring from the ecological and technical perspectives.

Secondly, thanks to Philip - spangenberg - travel grant to support my field trip. Especially, I want to thank my friends David Sachelarie and Xiahui Lin, I could not imagine how to complete the two times site visit and the interviews without their support. Also, for all the French interviewers who provided me the valuable information.

Above all, I would like to give my thanks to my family and my boyfriend, for their spiritual and financial support. Lastly, I want to thank my friends in landscape architectural track at TU Delft, the two years of study will not be this memorable without them.

CONTENTS

CHAPTER I

PREFACE

In this short chapter the personal reasons and objectives of the project will be mentioned, followed by an introduction of the basic background information of the Canal du Midi.

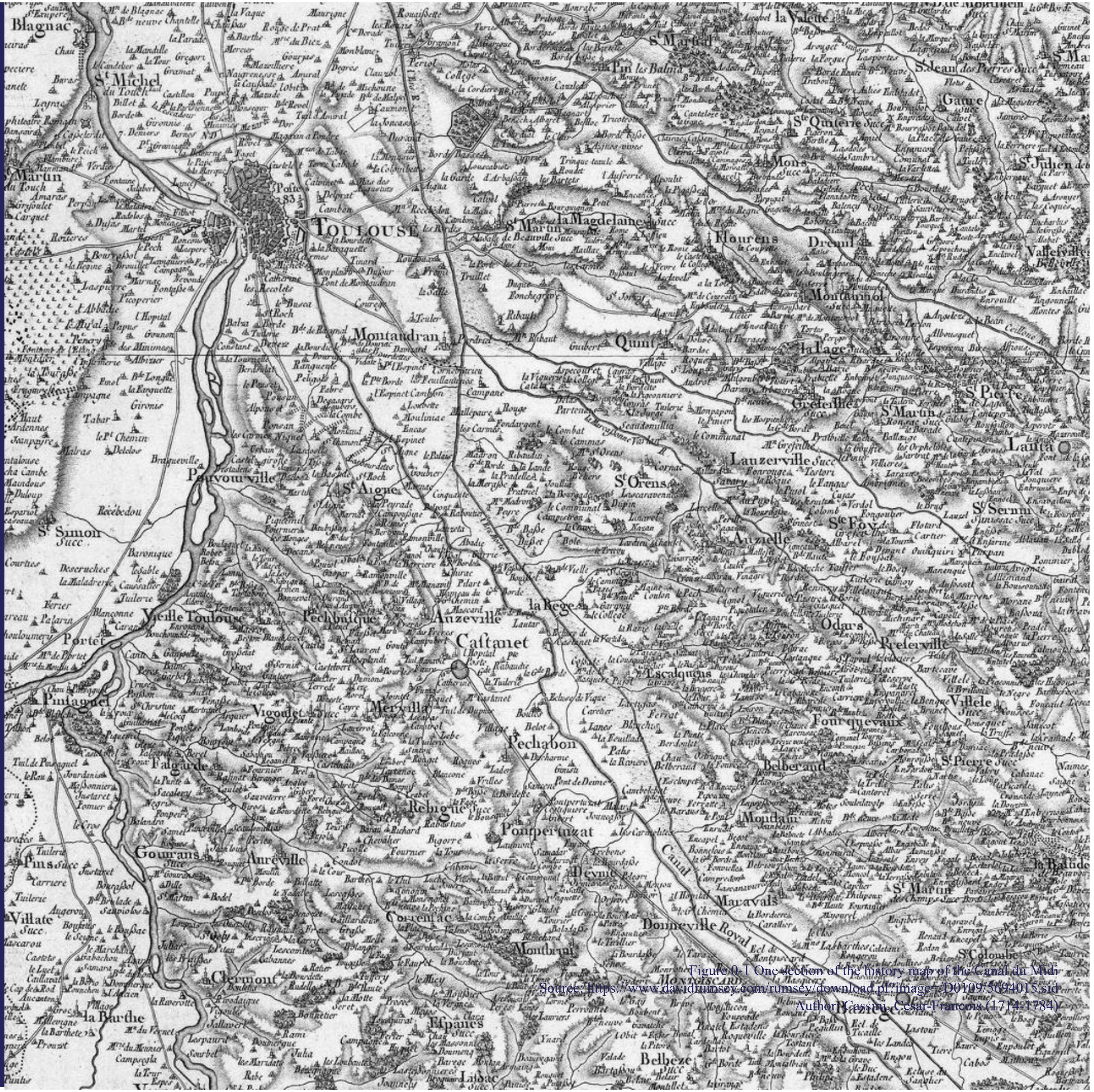


Figure 0-1 One section of the history map of the Canal du Midi
Source: https://www.davidrumsey.com/rumsey/download.pl?image=/D0109/5694015.sid
Author: Cassini, Cesar-Francois (1714-1784)

-00- INTRODUCTION

0.1 ABSTRACT

Keywords:
Water heritage, Landscape narrative, Sustainability,
Circular system

Canal du Midi, a revolutionary man-made waterway and trading route from the XVII century, is one of the oldest canals of Europe and is listed as a UNESCO World Heritage Site since when 1996 (UNESCO, May 12, 2022). The waterway was initially created to strengthen the king's power and to stimulate the economy, by creating a connection between the Mediterranean Sea and the Atlantic. In the second half of the 19th, the competition from the railway, followed by the impacts of WWI and WWII caused the decline of the trading role of the canal. Finally, at the end of the 1980s, the freight transport on the canal definitively stopped .

"The South Canal is clearly an exceptional example of a designed landscape" (Heritage, 2022), says UNESCO World Heritage, this grant water system shows the most innovative water management achievement of the time. The construction of the canal combines ingenuity and aesthetics by taking advantage of the natural water flow and the geographical and architectural elements of the land it crossed. Next to that, a wide range of specialized knowledge from Roman tradition to the latest scientific development was used in its construction. The project had brought enormous benefit for the region and the whole country of France. Today, the canal provides a unique perspective to review the relationship between artificiality and nature, modernity and the past.

However, the canal faces difficulties to adapt to its role of a landscape icon that attracts worldwide tourism and has difficulties to keep its role as a source for irrigation. In fact, the Canal du Midi is a rigid, long, quite narrow water structure, with many waterworks that need constant maintenance and have limited accessibility. Therefore, to overcome marginalization, it is essential to identify its values; "aspects of culture which are inherited by the present and which will be preserved for the future" (Upen, Oct 18, 2018).

The thesis proposes a discussion from the perspective of landscape architecture, if and in what way a large-scale historical site can become the spill of a sustainable landscape transformation. Central to the research is the use of the concept of the landscape narrative: Narratives are there in landscapes, intersect with sites, accumulate as layers of history, organize sequences, and inhere in the materials and process of the landscape (Potteiger & Purinton, 1998). And to envision the canal as an element, that can create a more adaptive and robust network to stimulate the sustainable development of the region by using three narratives: water as culture, water as infrastructure, water as nature.

0.2 MOTIVATION

"It takes time to know a place and its stories" (Potteiger & Purinton, 1998). This thesis is a nine-month research and design project on the Canal du Midi, based on a strong enthusiasm of the author for waterworks and cultural heritage.

The cities that I grew up and live in are all developed based on water, the riverside and port cities, the coastal cities, and the canal cities. I also grew up in an environment where the whole society, the faces of a city, the pattern and the buildings of a street, are in a state of dramatic transformation. Today, there are barely any memories left in the urban realm to remind the past of a people. This sense of loss is not only personal but also a common phenomenon in nowadays society, especially in rapidly developing countries such as China.

When I saw the Canal du Midi, I was fascinated by the stories locked up in the landscapes consisting of multiple layers and traces over time. However, I also saw a sign that the territory carrying the canal is trapped by the time to some degree - seems to have lost its former prosperity and vitality. This is the dilemma presented by many heritage and historic sites: there is a risk of identity loss in the event of rapid development or transformation, and the risk of disappearance or loss of functions in the absence of the need it was built for.

As an urban planner and soon-to-become a landscape architect, both professions are deeply involved in the transformation of living environments, I want to explore a strong dialogue between past and future through spatial design. In this graduate study, exploration will begin by telling the story of the Canal du Midi. The story of the canal is a metaphor for the flow of wealth, power, ambition, life, nature, and the mutual memory of a part of human history, as well as an uncertain future. Entwined with this story are the contradictory and interactional forces of strive and compromise, technology and ecology, vulnerability and adaptability. Through the landscape narrative frame, my design intervention offers a vision for a circulatory system that supports the continuous flow of the waterway as a living heritage that will be able to connect the past to a bright future.

-00- INTRODUCTION

0.3 CONTEXT

Location:	South France
Area:	Water catchment area 2,088,200 ha
	Heritage buffer zone area 18,200 ha
	Property 2,007 ha
Type:	Artifical system
Function:	Navigation, Trading, Tourism, Irrigation
Water Quality:	Fresh Water & Brackish Water

Figure 0-2 Regional location of the Canal du Midi

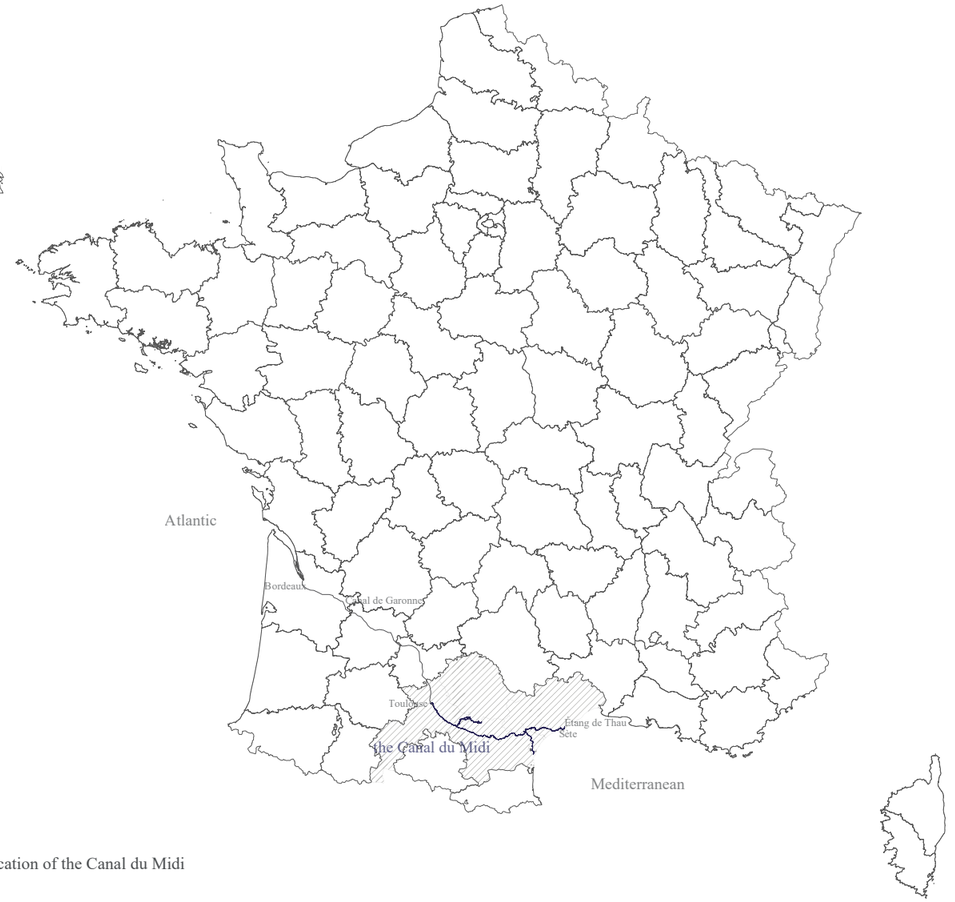


Figure 0-3 National location of the Canal du Midi

"This 360km network of navigable waterways linking the Mediterranean and the Atlantic through 328 structures (locks, aqueducts, bridges, tunnels, etc.) is one of the most remarkable feats of civil engineering in modern times." (UNESCO, May 12, 2022). Canal du Midi was inscribed in 1996 on the basis of cultural criteria (i), (ii), (iv) and (vi) (UNESCO, Sep 28, 1995) considering that the site is of Outstanding Universal Value (Heritage, 2022).

The description of the Canal du Midi from UNESCO demonstrated the huge span of the waterways. Located in South France, stretches from the port of Sète, on the Mediterranean coastal lagoon of the Étang de Thau, to the city of Toulouse. Thus, the canal creates a link, via the Canal de Garonne, the Garonne River and the Gironde Estuary, between the Mediterranean Sea and the Atlantic Ocean, which explains why it is also called "The Two Seas Canal" (Vallerani & Visentin, 2018).

Since 1992, the Voies navigables de France (VNF), the canal authority, has been responsible for the Canal du Midi (France, May 12, 2022).

The Canal du Midi in figures:
-Louis XIV gave the royal seal of approval to the project in 1666 (France, May 12, 2022);
40% of the costs were accounted for by the Crown, 40% by the State and 20% by the Riquet family, with the latter becoming the owner of the (France, May 12, 2022) canal after the death of the King;
-14 years of work (1667 - 1681) (Méditerranée, 2013); constructed between the Mediterranean coastal pond of Thau and the city of Toulouse (Vallerani & Visentin, 2018).
- The total length of the waterway is 360km (278 km of canals and 82 km of water supply system) (UNESCO, May 12, 2022);
Around 12,000 people worked on the canal (Occitanie, Dec 18, 2019);
-328 structures: locks, bridges, tunnels, aqueducts… (UNESCO, May 12, 2022);
-200,000 boaters each year (Occitanie, Dec 18, 2019);
-1.5 million cyclists and hikers (Occitanie, Dec 18, 2019);
-Around 45,000 trees line the banks.

-00- INTRODUCTION

0.3 CONTEXT

"At the end of the 17th century, the French engineer Pierre-Paul Riquet designed one of the most extraordinary civil engineering works of the modern era: the Canal du Midi. Of technical prowess unique in the world when it was created, it has become over time a strong component of the territories it crosses and shapes. It is a heritage of universal value, it is also a lever of attractiveness for the area as it combines technological innovation, architectural quality, and the beauty of the landscapes" (i-pat, Dec, 2020).

The Canal is protected as a classified site and some of its elements are also protected as historical monuments. In addition, the surroundings of the canal called the buffer zone (an area of 18,200 ha, covering 74 urban and peri-urban municipalities, including important historical cities such as Toulouse, Carcassonne, Béziers, etc.) are now subject to protection (UNESCO, May 12, 2022).

The Canal and its buffer zone cross four departments of France (High - Garonne, Tarn, Aude, Herault), which all belong to the Occitania region (before 2015 called the Midi-Pyrénées region and the Languedoc-Roussillon region). The classification process is still ongoing to refine the protection system around the property with a view to a new delimitation of the buffer zones with deep interactions with the canal waterway (UNESCO, May 12, 2022).

Figure 0-4 The canal and the buffer zone

-00- INTRODUCTION

0.3 CONTEXT

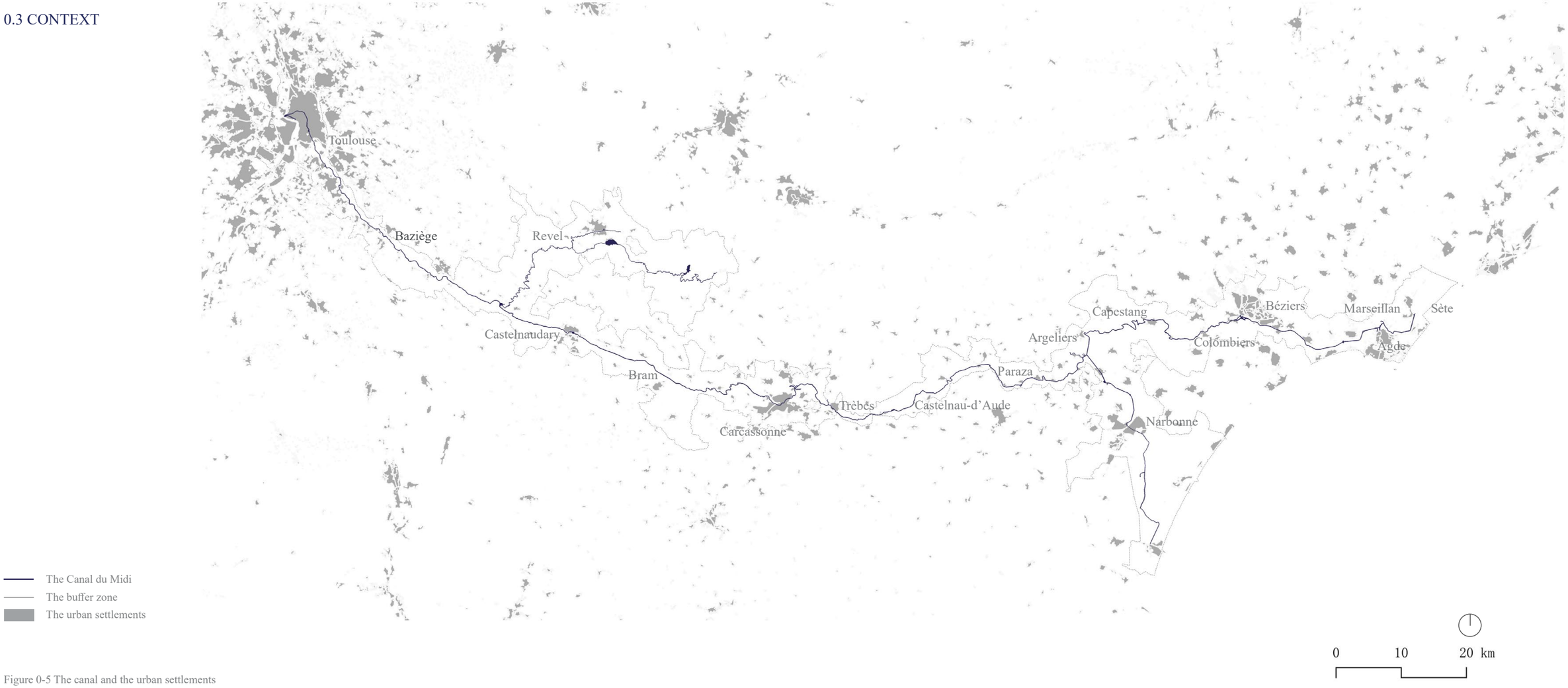


Figure 0-5 The canal and the urban settlements

CHAPTER I

READING THE CANAL

This chapter contains the first impression of the canal from a foreigner and tourist's perspective, followed by the reading of the canal through different landscape layers. This analysis creates a foundation to understand the canal and define the problem field, which finally leads to a set of research questions.

Figure 2-1
One section of the history map of the Canal du Midi
Source: https://www.davidrumsey.com/rumsey/download.pl?image=/D0109/5694015.sid
Author: Cassini, Cesar-Francois (1714-1784)

-01- FASCINATION

1.1 LANDSCAPE IMAGE

Walking and traveling through the Canal du Midi region is a unique experience of exploring a picturesque landscape and being lost in time. The crowded and busy locks and ports, the green water banks in a peaceful atmosphere, the light and shadow through the old huge plain tree reflected in the water, the historical castles, cathedrals, and ancient ruins, the flowing water, etc. Following the canal, passing through the wild, the farms, and cities is a journey full of surprise.

I wrote down the impression of traveling to the Canal du Midi: “The place is like a secret maze, one feels so small as a person by walking in this enormous landscape, always going up and down, always changing directions, always seeing something repeating while the others changing all the time”. The collage of impression sketch of the canal drawn a few weeks after the journey shows the fascinated landscape images that stay in mind.

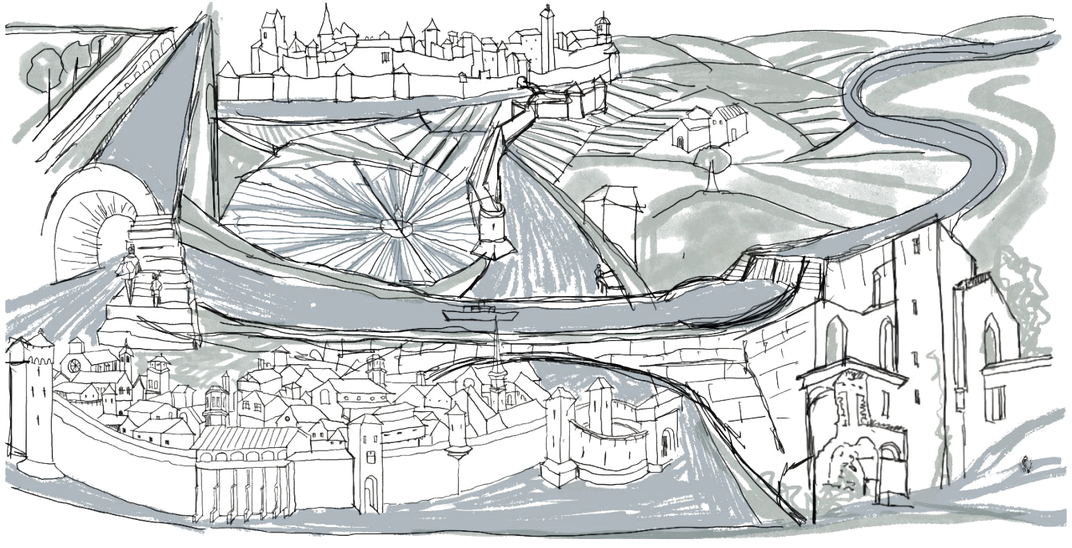


Figure 1-2
A collage of impression sketch of the canal,
Made by author, inspired by a drawing from LA CITÉ DE CARCASSONNE (Lannoy, 1997)

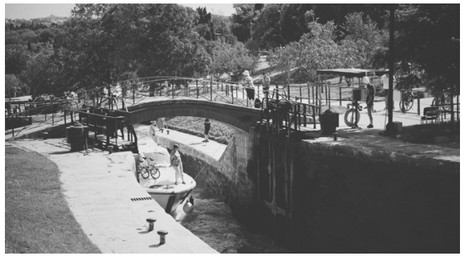


Fig 1-3 The waterway in around Paraza;
Fig 1-4: The Repudre canal - bridge (monument since 1942) ;
Fig 1-5: One lock of the Les 9 Ecluses de Fonseranes;
Fig 1-6: The canal bank in Bassin de naurouze;
Fig 1-7: The castle of Carcassonne
Fig 1-8: Étang de Thau largoon
Took by author

-01- FASCINATION

1.2 CIRCULARITY

If we observe this canal from the flow of water, the main source of water of the circularity is from the Bassin de Saint-Ferréol in the Montagne Noire to the Bassin de Naurouze and directed into the main watercourse. It crosses and interacts with several rivers and streams reaching the saltwater lagoon the Étang de Thau, and ending up in the Mediterranean Sea.

The canal is built as an independent waterway by constructing different types of aqueducts and some other innovative civil engineer works to make sure the navigation function. While there are many spillways, discharge channels, and intakes along the canal to adjust and control the amount of water in the canal, the water of the canal also has been used for irrigation of crops since the 19 centuries.

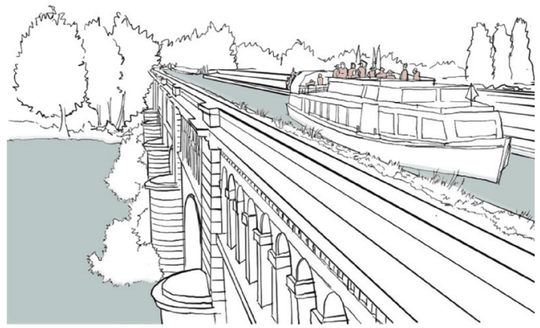


Figure 1-9:
Sketch of an Aqueduct (Pont - canal de l'Orb),
Made by author

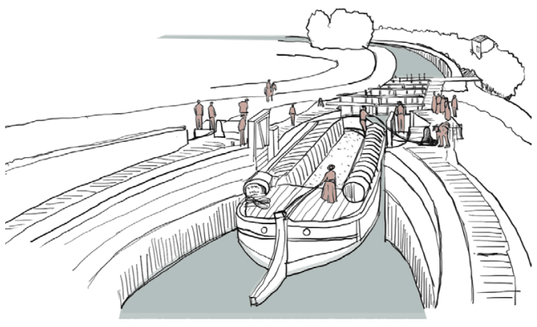


Figure 1-10:
Sketch of the merchant ship crossing the lock (Les 9 Écluses de Fonseranes),
Made by author

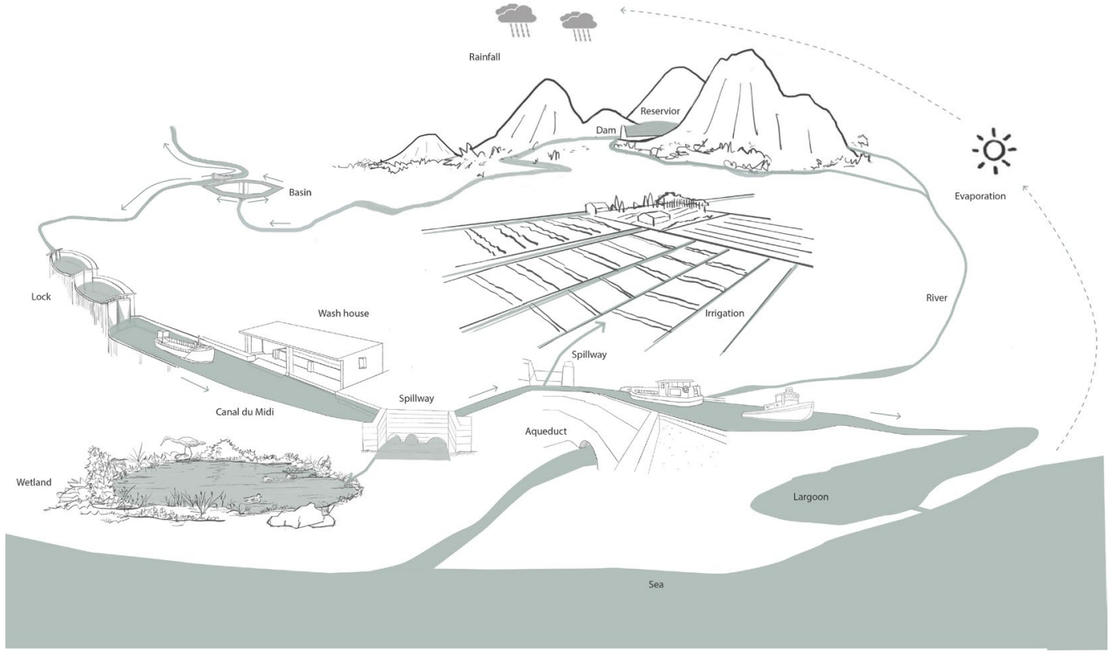


Figure 1-11:
Circularity diagram, made by author

-02- REGIONAL ANALYSIS

2.1 THE FUNCTIONAL CANAL

2.1.1 Navigation

The Canal du Midi, originally designed as a navigation canal, the 328 hydrologic works are the marks of the 'heavy engineering' of this truly unique canal, where nature forms a constantly backdrop to all kinds of staircase locks, aqueducts, siphons, spillways, feeders, dry docks, and a tunnel (10 dams, 63 active locks of the main route, 90 aqueducts and 14 canal bridges) (Waterways, Oct. 1, 2021).

Maintenance and management

As a functioning canal, in operation for more than three centuries, modernization of many of the hydraulic structures is constantly worked on. In the late 1970s, the canal was modernized to bring it up to the standard of the main canal network in France, navigable by the 38.50m long péniche (Waterways, Oct. 1, 2021), a barge loading 250 tons. The works, which consisted essentially in lengthening the existing lock chambers, were completed from Toulouse to Baziège and from Argens to the Étang de Thau, including the entire branch to Port-la-Nouvelle, and the navigable dimensions in these sections increased accordingly. Five new deep locks were built at the Toulouse end of the canal, and two at Béziers, replacing former double staircase locks, so that there are now 15 locks and 18 chambers between Toulouse and the summit. The most significant change of the summit was (Waterways, Oct. 1, 2021) the construction of the water slope to bypass the Fonserannes staircase, which finally opened in 1989 after protracted court action following the failure of the traction unit when the water slope first opened in 1984 (Waterways, Oct. 1, 2021).

In 1990, the prospects for a revival of water transport were seen to be negligible, even for 250-tonne barges, and in 1996 the canal became a World Heritage site (Waterways, Oct. 1, 2021). Over the past years, VNF is committed to several actions for the management of the canal. One of the most important purposes is to maintain the navigation function and strengthen the efficiency of navigation management (Waterways, Oct. 1, 2021).
Therefore, it should be noticed that, even as a protected historical heritage, based on its functional nature, the canal is still in dynamic change and modification - a living heritage that required regular maintenance and management.

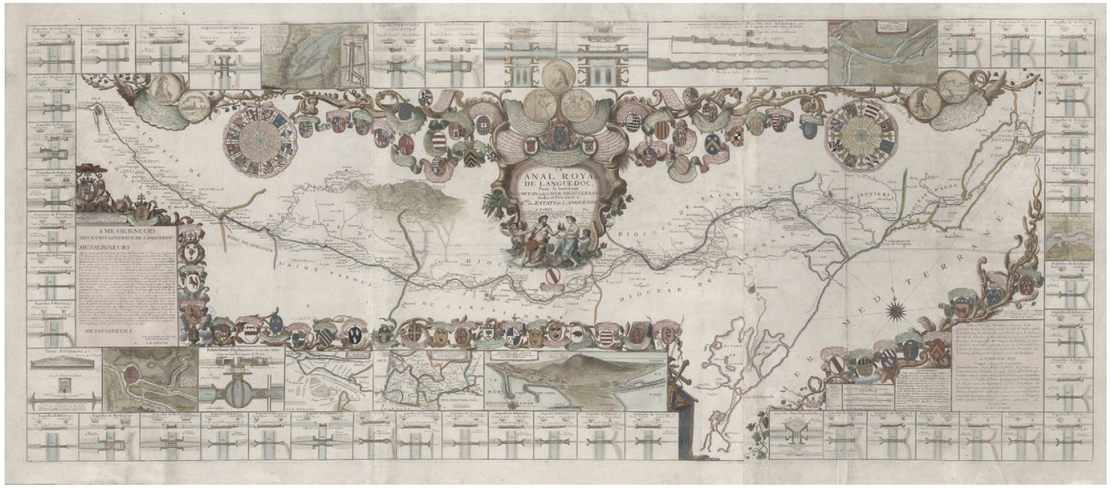


Figure 1-12:
Map with engineering drawings of the Royal Canal of Languedoc (Canal du Midi)
by J.B. Nolin (1697)

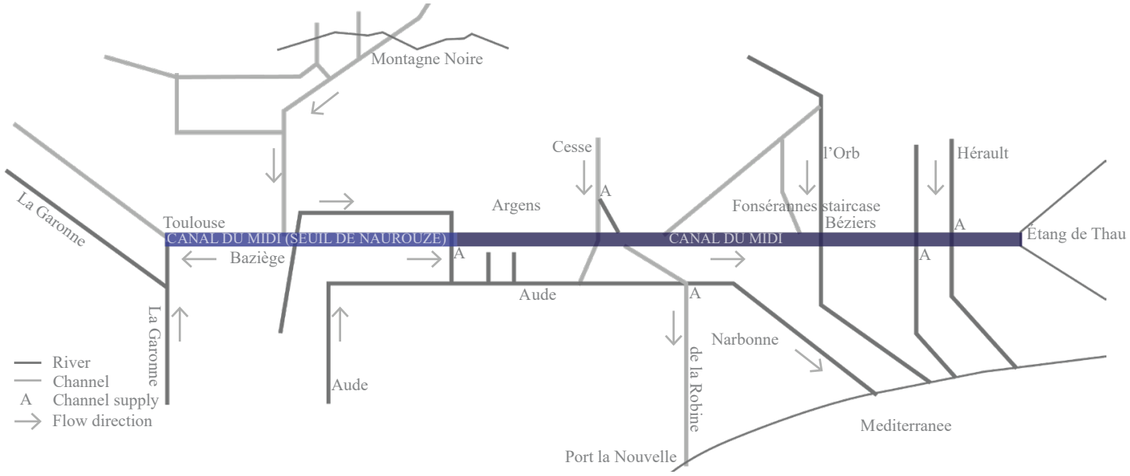


Figure 1-13: Diagram of the hydraulic system of the Canal du Midi, made by author
Source: VNF - DTSO, 2018

-02- REGIONAL ANALYSIS

2.1 THE FUNCTIONAL CANAL

2.1.2 Tourism

Now, as listed world heritage site, the Canal du Midi is also a lever of attractiveness for tourists. There are two popular ways of traveling through the Canal, one way is by boat, and another way is by cycling. Since the canal maintained its navigation functionality, it attracted boating enthusiasts from all over the world to sail through the canal. Additionally, nowadays there are increasing groups of people choosing to visit the canal by bike.

Along with the canal, medieval cities such as Carcassonne, Castelnaudary, etc., local communities along the canal, charming Mediterranean productions (the wine, food and local handicraft) and Mediterranean identical atmosphere (Braudel & Reynolds, 1976), and the Roman heritage, all show huge potential for tourism development.

However, traveling through the canal also means crossing many municipalities with low population and limited tourist destinations compared to those nearby and popular tourist attractions in South France such as Côte d'Azur and Provence.

2.1.3 Irrigation

In the 19th century, the irrigation of crops by the canal water developed. This function of the canal was not originally intended, but the evolution of agricultural techniques coupled with a good mastery of the hydraulic operation of the canal made it possible to respond positively to the demands of farmers who wished to benefit from water intakes (i-pat, Dec, 2020).

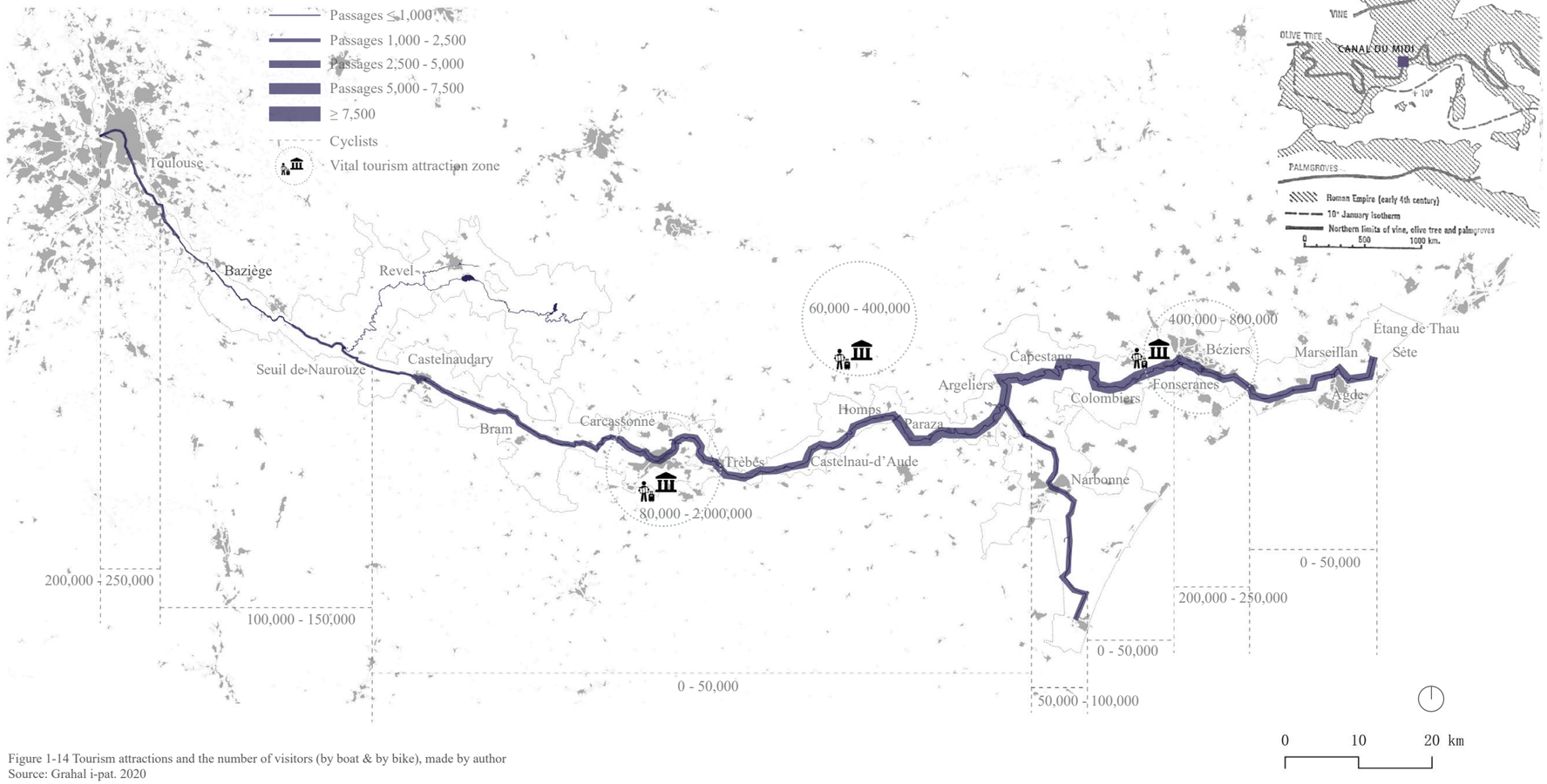
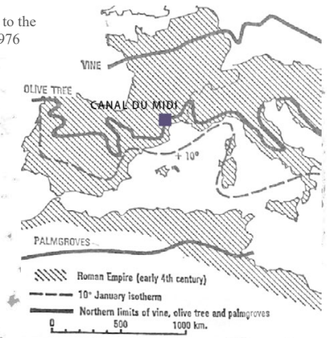


Figure 1-14 Tourism attractions and the number of visitors (by boat & by bike), made by author
Source: Grahal i-pat. 2020
Note: The data of Passages from 2019, the data of cyclists from 2010, both in annual

Figure 1-15 the 'true' Mediterranean, from the olive tree to the great palm groves, revised from Braudel & Reynolds, 1976

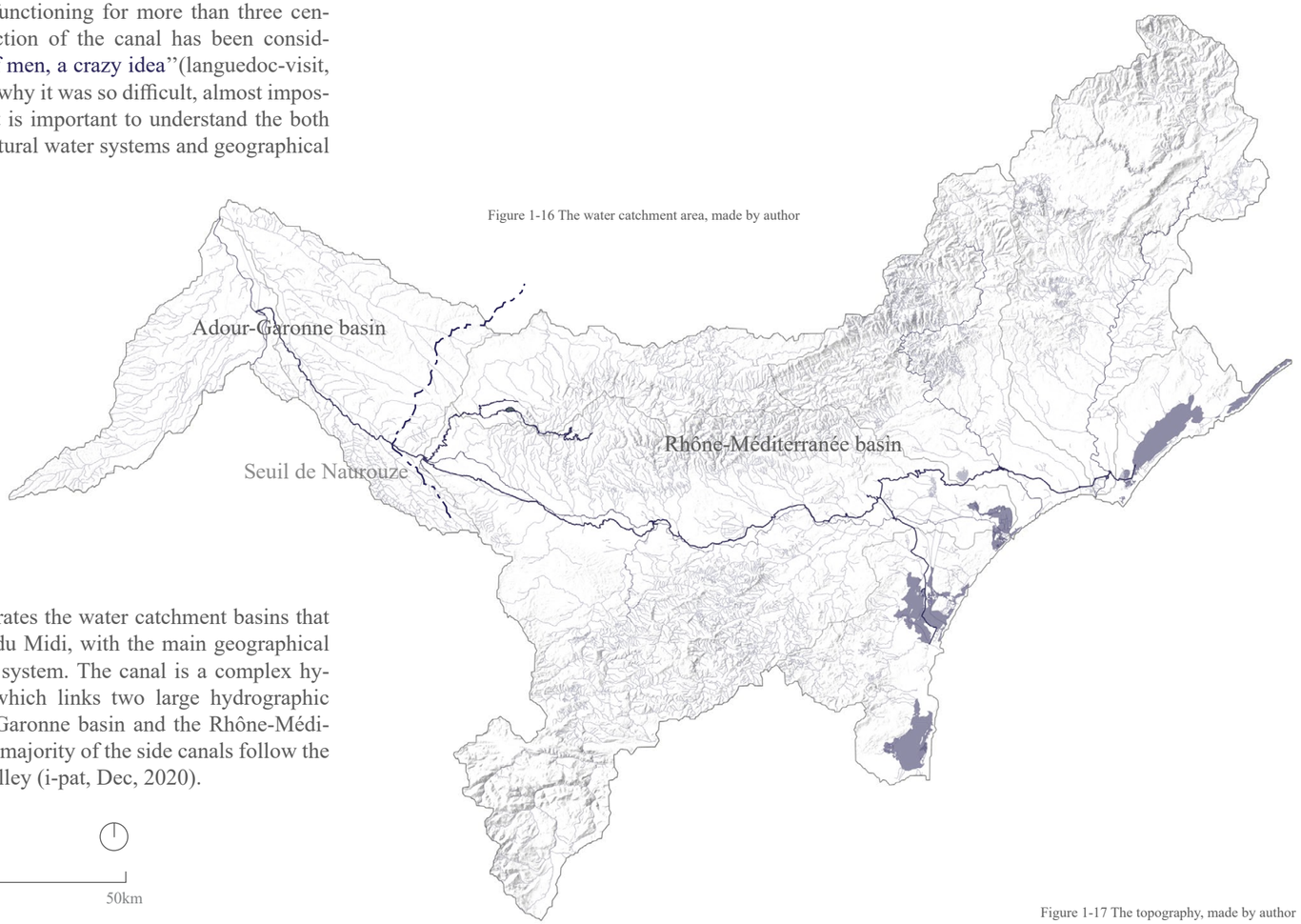


-02- REGIONAL ANALYSIS

2.2 THE GEOGRAPHICAL CANAL

As a grand work functioning for more than three centuries, the construction of the canal has been considered "the genius of men, a crazy idea"(languedoc-visit, 2022). To discover why it was so difficult, almost impossible, to be built, it is important to understand the both the artificial and natural water systems and geographical characteristics.

Figure 1-16 The water catchment area, made by author



2.2.1 Water system

The Fig 2-16 illustrates the water catchment basins that crossed the Canal du Midi, with the main geographical features and water system. The canal is a complex hydraulic structure, which links two large hydrographic basins, the Adour-Garonne basin and the Rhône-Méditerranée basin. The majority of the side canals follow the slope of a single valley (i-pat, Dec, 2020).

The canal is dotted with engineering structures allowing both the maintenance of the correct water level and navigation on the whole of its route. The locks of the Canal du Midi make it possible to cross a cumulative drop of 246 meters (Boyd, 2022).

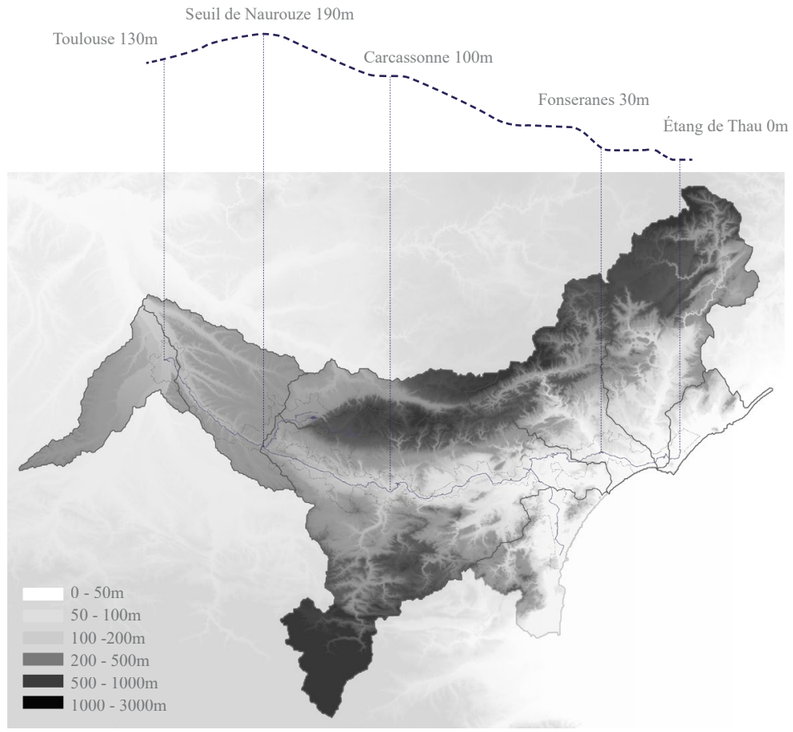


Figure 1-17 The topography, made by author

-02- REGIONAL ANALYSIS

2.2 THE GEOGRAPHICAL CANAL

The canal gets the water from the Montagnes Noires (the black mountains). In the highest places of the watershed (Naurouze threshold - Seuil de Naurouze), the canal flows in two directions (Sun, 2021). The entire supply system of the Montagne Noire including the channels of the Mountain, the Plain, and the Laudot river, from the Alzeau water intake and from the Pont-Crouzet water intake, reaches Naurouze integrating the St Ferréol basins. Except for the main water source from the Montagnes Noires, the feeder ditches from the rivers spread over the length of the canal. The maps have illustrated several important rivers that connected with the canal such as River Garonne, Aude, Orb, etc. The reservoirs and ditches work together to provide the right water level.

The annual water requirement for the structure is estimated at 150 million mÂ³. 40% of the water transport is used for navigation - this 40% includes losses by leakage, infiltration, and evaporation. The rest of the total volume is used for other uses, the first of which is the irrigation of agricultural land (i-pat, Dec, 2020).

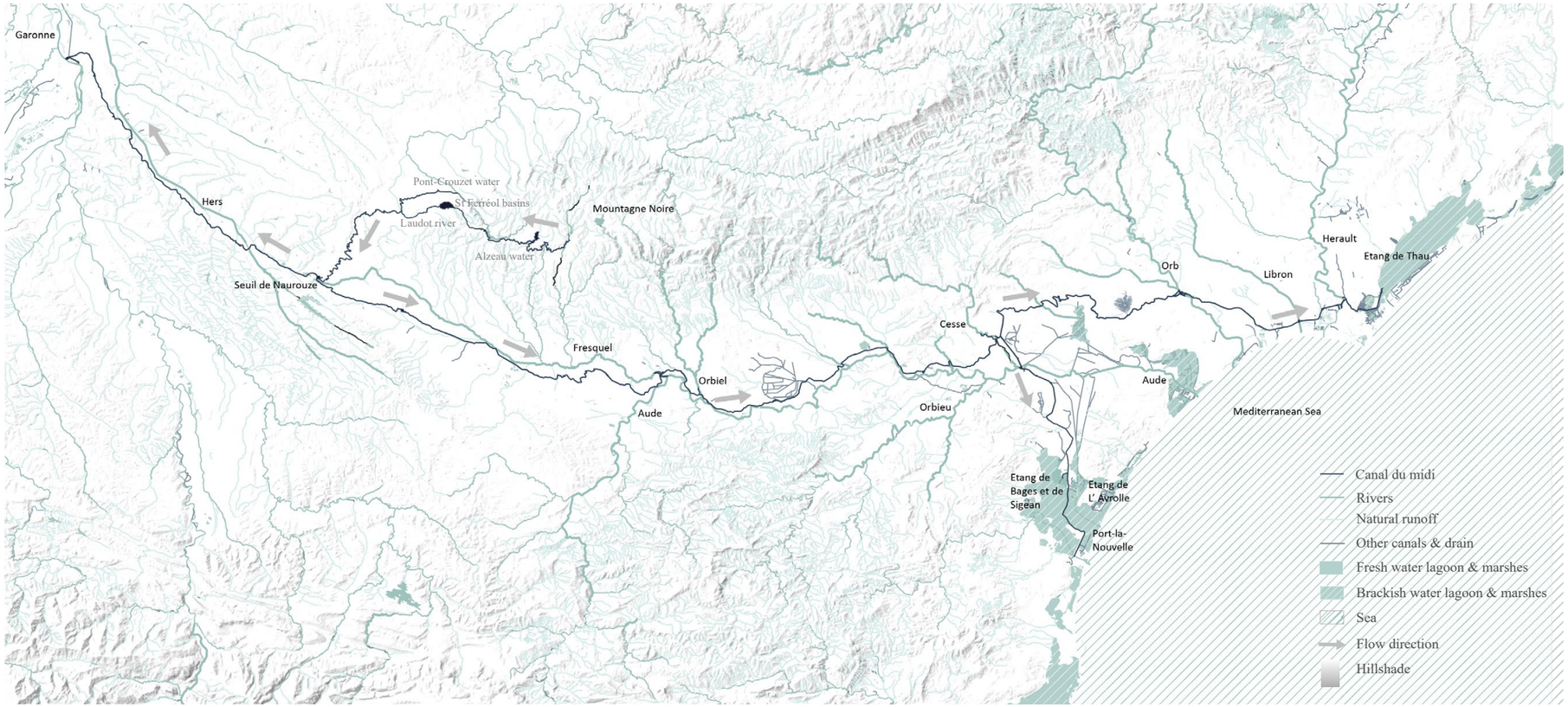


Figure 1-18 The water system

-02- REGIONAL ANALYSIS

2.2 THE GEOGRAPHICAL CANAL

2.2.2 Climate

Climate zone : Temperate
Sub-climate:
Cfa - Humid subtropical climate
Csa - Hot-summer Mediterranean climate

Climate & Weather Averages

High to:	29°C
Low to:	2°C
Mean to:	14°C
Precipitation:	285 - 777 mm (per year)
Humidity:	75%
Dew point:	9 °C
Wind:	15 km/h
Pressure:	1018 mbar
Hottest Months:	Jul & Aug (29°C avg)
Coldest Month:	Jan (9.5°C avg)
Wettest Month:	May (127mm avg)
Driest month:	July (18 wmm avg)
Windiest Months:	Apr (17km/h avg)
Annual Rainfall:	508-823 mm

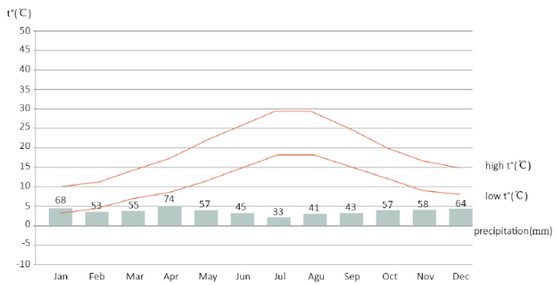


Figure 2-19 Annual Temperature and amount of rainfall

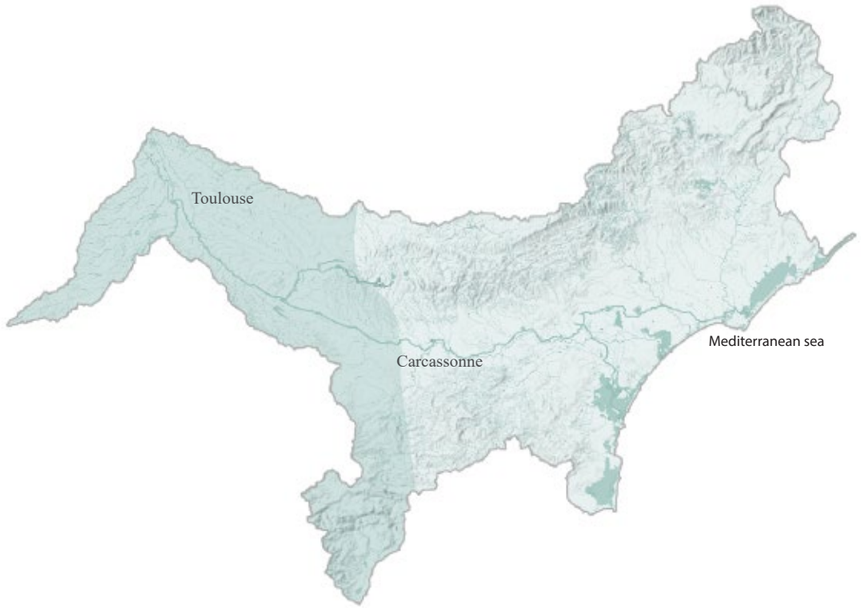


Figure 1-20
Sub climate
Humid subtropical climate
Hot-summer Mediterranean climate

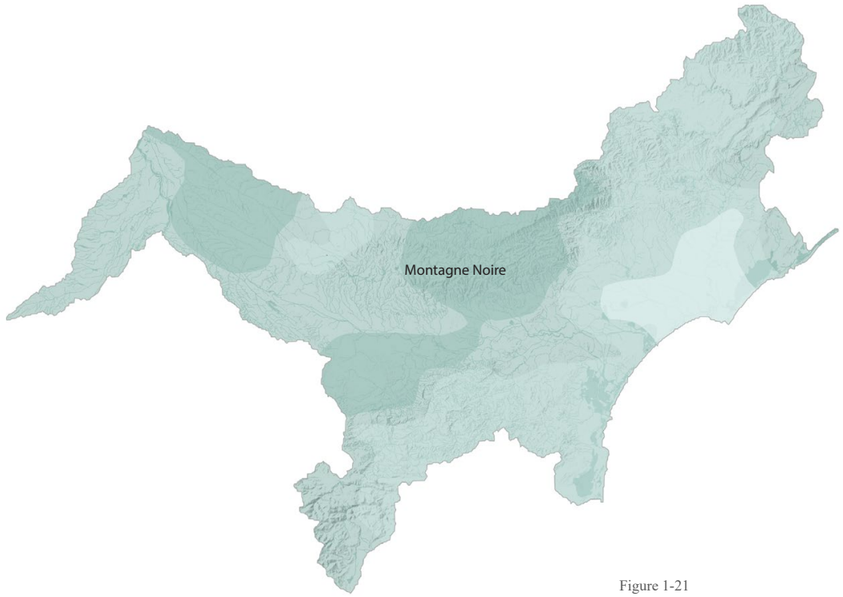


Figure 1-21
Annual Precipitation
1400
1000
800
500

The area crosses two sub-climate zones - a humid subtropical climate in the area from Toulouse to Carcassonne and a hot-summer Mediterranean climate in the area from Carcassonne to the Mediterranean Sea. These two different climate zones are the reason for a verified planting and agricultural typology in the area.

The rainfall in the entire catchment area varies greatly, and there are also strong topographical and seasonal changes. The Montagne Noire is a region with twice the rainfall of the plain area with 1400 millimeters per year at around 500–600m above sea level (wikipedia, May 15, 2020), which is the reason that it became the main source for the water supply for the whole canal.

-02- REGIONAL ANALYSIS

2.2 THE GEOGRAPHICAL CANAL

2.2.3 Landscape typology

On the undulating landforms of southern France, this canal flows through a variety of very different landforms and landscapes. From the mapping analysis, it can be summed up as follows: **urban and peri-urban landscape, mountain landscape, plain landscape, cultivation landscape, wine–growing landscape, lagoons and ponds landscape, and coastal landscape**. These different landscape types are not disjoint parallel classifications, they are sometimes **intertwined**, for example, most of the cultivation land is in the plains, while the vineyard may be in the plains or in the mountains or the coastal area. Most of the vineyard area is in the east and crops, like cereals and grains, grow in the west. Following the division in climate zones, again the area near **Carcassonne forms the dividing line between two distinct landscape types**.

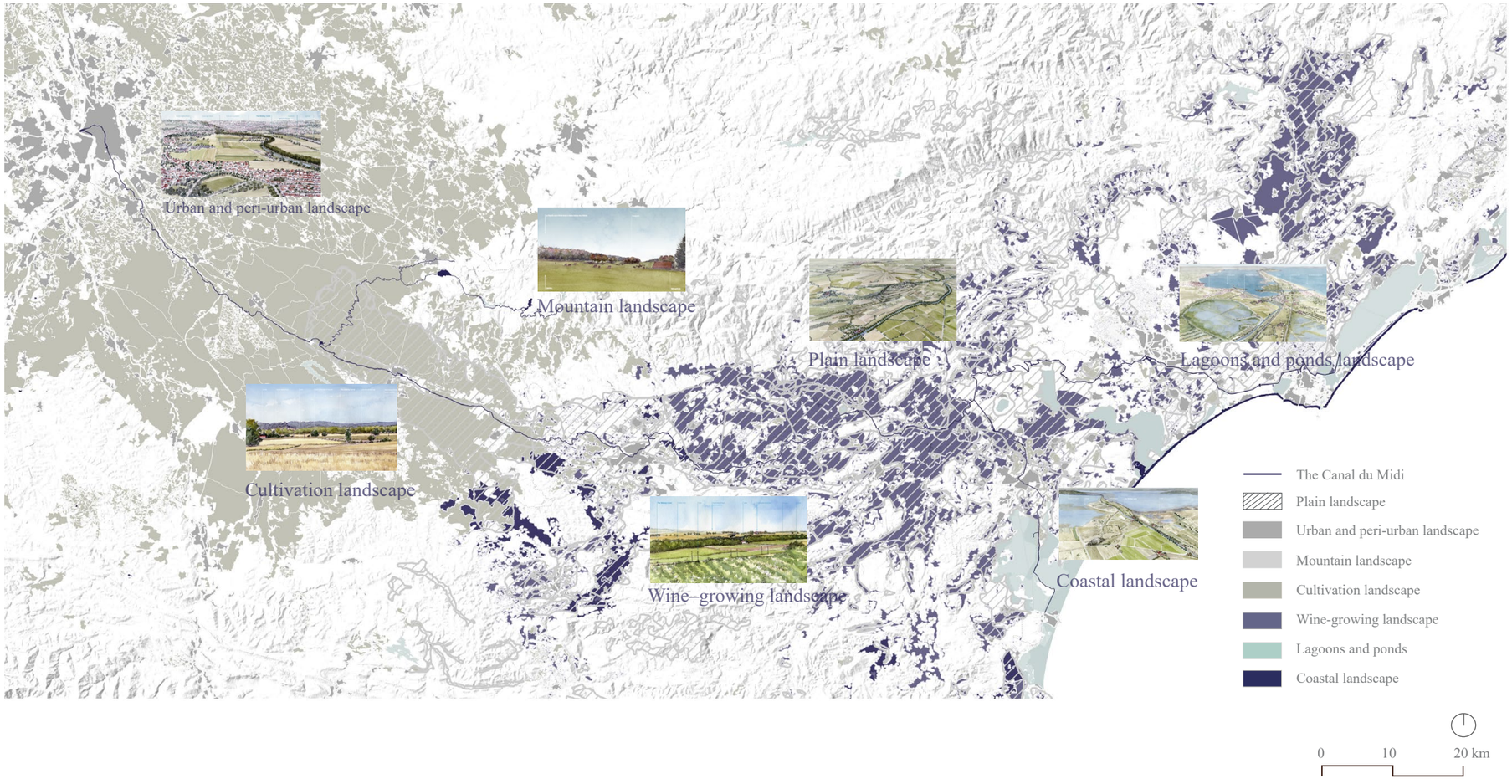


Figure 1-22 Landscape typology
Map: made by author; Illustration source: i-pat, Dec, 2020

-02- REGIONAL ANALYSIS

2.2 THE GEOGRAPHICAL CANAL

2.2.4 Ecological condition

The canal is a long ribbon of water stretching through the landscape and attracts many animal species (wikipedia, May 15, 2020). The eastern part of the canal has the highest ecological value, there are many natural reserves and wetland resources, benefiting the entire ecosystem. From the west side of the canal to Carcassonne, there is less diverse vegetation. The mountains in the north and south provide a large area of natural habitat, the canal runs through the central plain, and the green spaces near the canal are fragmented. Several species of fish, such as bream, breed in the canal, and others reproduce in its feeding rivers and spend part of their life in the canal. Molluscs such as anadontes – a kind of freshwater mussel-, and corbicula - a kind of freshwater clam- occur in the canal. Invasive coypu (River rat or nutria) and muskrats introduced from the Americas burrow into the banks, which they damage. Finally, many animals and birds come to drink water from the canal (wikipedia, May 15, 2020).

The canal can be seen as a “linear park” with waterfront vegetation broken into many sections. There are 50,000 trees in rows on 60% of the linear canal, composed mainly of plane trees. However, the aging and dieback of the alignment plantations, due to the contamination of the plane trees by the colored canker (UNESCO, May 12, 2022), will inevitably cause the landscapes as well as the ecosystem of the Canal du Midi to change considerably in the years to come (i-pat, Dec, 2020). So far, the planting scheme expressed the canal as a three-dimensional structure in the landscape.

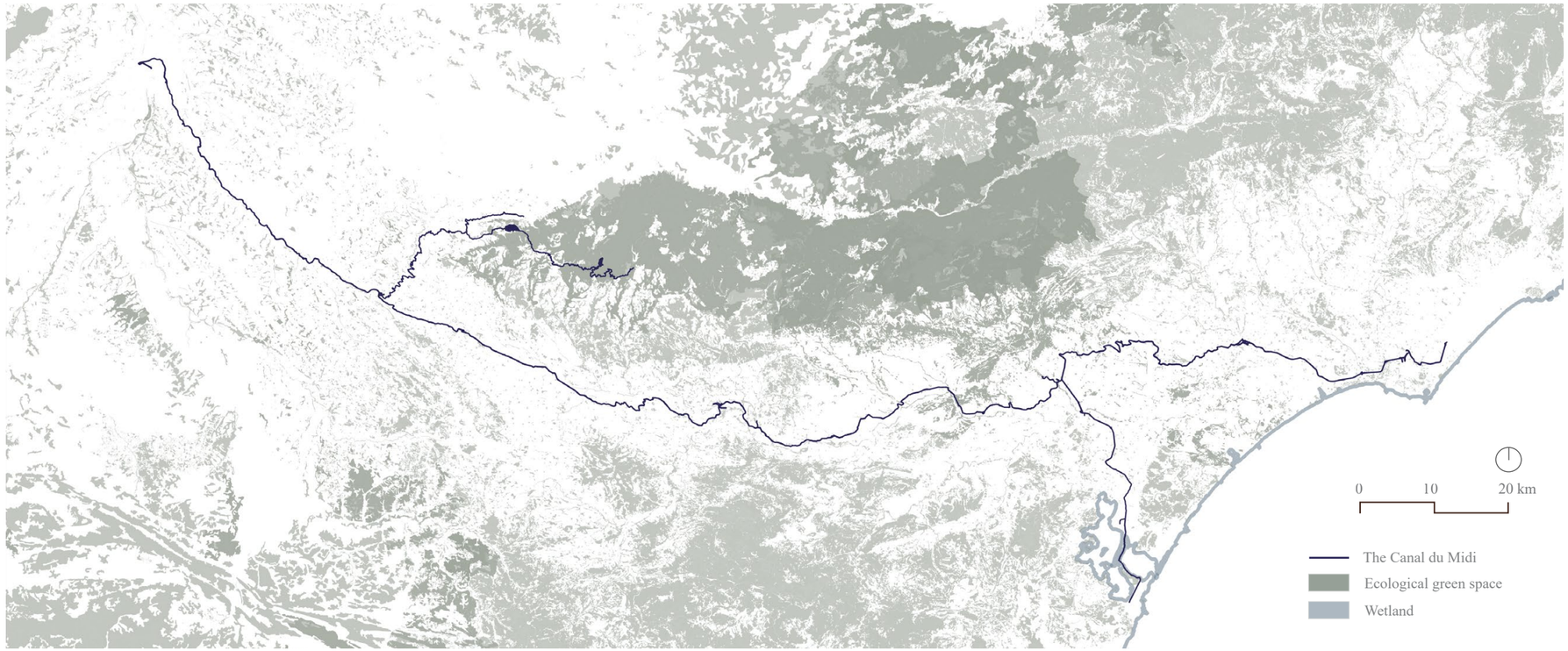


Figure 1-23 Ecological condition

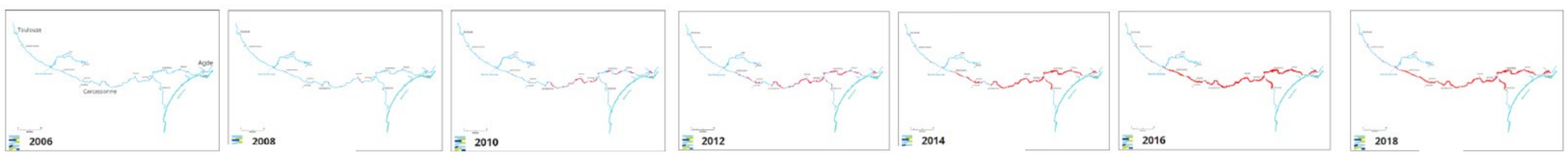


Figure 1-24 Spead of colored canker between 2000 to 2018,
Source: i-pat, Dec, 2020

-02- REGIONAL ANALYSIS

2.2 THE GEOGRAPHICAL CANAL

2.2.5 Water risk

Most parts of the canal suffer from arid weather conditions especially the east part. But next to extreme draught the area is facing a high flood risk, especially along costal of Mediterranean and river Orb, as is the middle part of the canal near Carcassonne and the city of Toulouse suffered from flood risk. Overall, the region is highly sensitive to climate change and extreme weather depending on the season.

A study from Water resource management plan (PGRE) for the Aude watershed (validated on January 27, 2017) concluded that: a situation of quantitative deficit of the Mediterranean basins; significant vulnerability to climatic risks in these same basins; water demands with a strong seasonality, which reach their maximum in summer (cf. tourist attendance + agricultural irrigation) (i-pat, Dec, 2020).

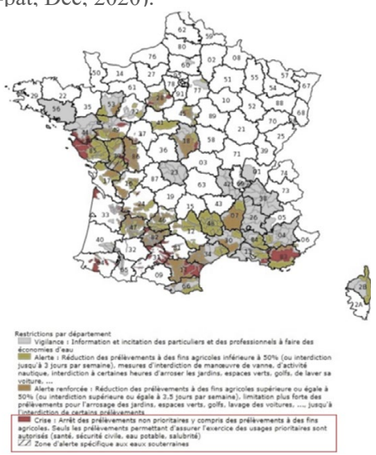


Figure 2-26 One of the most critical area of water risks in France

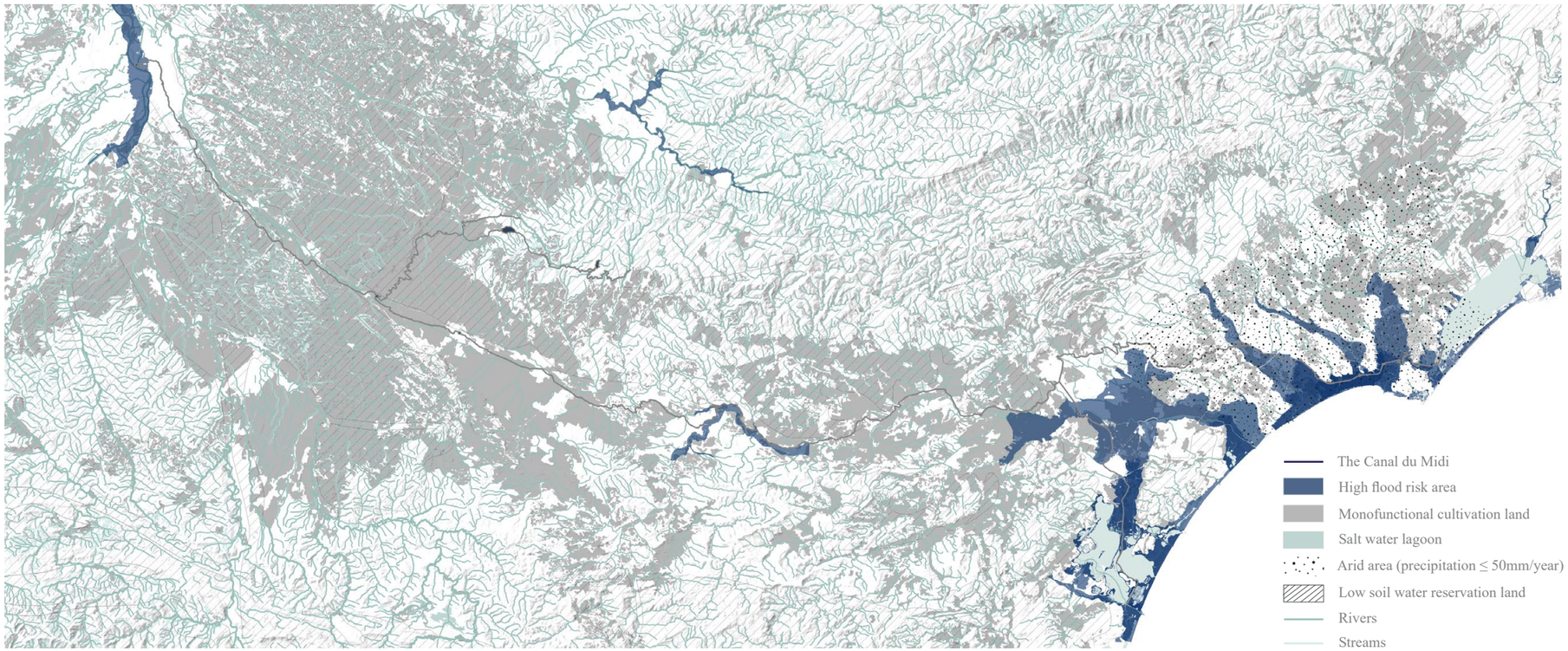
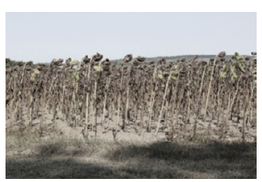


Figure 1-25 Water risk



Source: https://www.connexionfrance.com/French-news/How-climate-change-will-affect-major-cities-in-France-by-2050; https://www.thelocal.fr/20181015/in-pictures-deadly-floods-hit-south-western-france/; https://www.connexionfrance.com/French-news/Hotter-drier-summers-will-be-the-new-normal-in-France

-02- REGIONAL ANALYSIS

2.3 THE HISTORICAL CANAL

2.3.1 Development process

Figure 1-26 Hitsorical picture of a view of lock in the Canal du Midi
Source: https://www.europeanwaterways.com/blog/historic-iconic-canal-du-midi/

The building of a canal was an old idea. Numerous and sometimes utopian projects were devised to build a waterway between the Atlantic Ocean and the Mediterranean Sea (wikipedia, May 15, 2020). The construction of such a structure would save vessels and goods from sailing around the Iberian Peninsula which could take a month to complete. At that time shipping was fraught with dangers such as piracy (Ferrand, 2013). The major problem of the project was how to supply the summit sections of the canal with enough water (Rolt & May, 1994).
Pierre-Paul Riquet, a wealthy collector of salt tax in Languedoc proposed a more convincing project than his predecessors. When Louis XIV received his proposal (wikipedia, May 15, 2020) in 1662 through the Archbishop of Toulouse (Charles-François Anglure of Bourlemont), he saw the opportunity to deprive Spain of part of its resources and to mark his reign with an imperishable work (Ferrand, 2013).

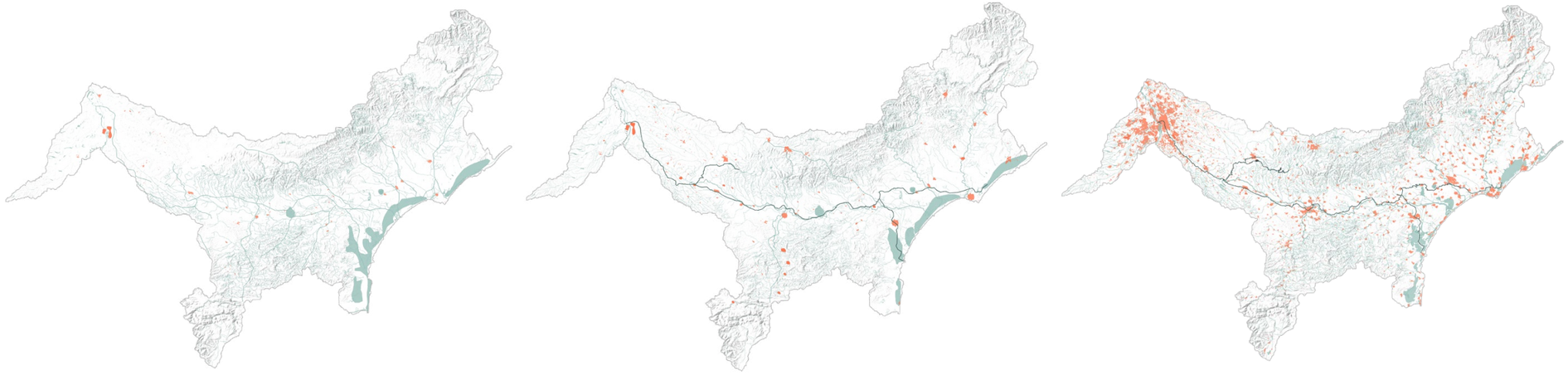


Figure 1-27 the development process

-Period before the canal construction:

During this time, Toulouse, Castelnaudary, Carcassonne, Trèbes, Narbonne, Béziers, Agde were all castle-shaped cities, they are situated at higher ground along the rivers running mainly from north to south, ending up in the salt water lagoon areas along the coast mud that linked to the Mediterranean Sea.

-Period of the canal construction:

The construction of the Canal du Midi started in 1665 by creating a test canal between Alzeau and Naurouze to check the project's feasibility. The year 1666 marks the official permission of the navigation canal to be built - works started on the creation of the port of Sète. Later, the canal was constructed by drawing off some flows destined for the Mediterranean Sea that Riquet diverted for Canal du midi, by abstracting water flowing at Naurouze, the water from Montagne Noire being used for the water resource for the canal. Then branches of the canal were added, including the 'Canal latéral de la Garonne' and the 'Canal de la Robine Narbonne' (France, May 12, 2022). In 1681, the Canal was completed, filled, and inaugurated in May(Team, 2017).

-Period after the canal construction:

Trade blossomed and brought wealth to the communities along the Canal du Midi (France, May 12, 2022). Thanks to the post boat service which linked Toulouse to Agde in 4 days (France, May 12, 2022), the Canal was popular for transporting goods (great diversity of products such as cereals - wheat, barley - wine and brandy, but also marble from Caunes, used for the construction of the Trianon, etc.) and passengers. Today the canal is used mainly for recreation.

-02- REGIONAL ANALYSIS

2.3 THE HISTORICAL CANAL

2.3.2 Chronicle

For cultural heritage, the chronicles are a significant source to tease its development context, and connection with social & historical background, by providing a linear timeline of all the stories. In this thesis, the author tries to combine a self-organized simple chronicle (data from multiple sources) with historical maps, to make the clue clearer and more visualized.

-Before construction;

-1666-1681: Main construction period, the Malpas tunnel excavated in 1679;

-1681-1693: The second phase of the construction of the canal. The willow was widely used for its rapid growth. The engineer also planted irises on the side of the canal to reduce subsidence of its banks (wikipedia, May 15, 2020);

-1697: complete of the lock at Fonseranes;

-1730: The first planting program began - with the cultivation of olive and mulberry trees, become a source of income. The desire is to remedy these attacks on the royal domain by the appearance of an element which marks a break in the landscape history of the canal and a new temporality: the appearance of trees on the edges of the banks, cereals against trees or with trees initially to avoid any irreparable damage to the route of the canal (Ballester, 2015);

-1755-1775: Plant more trees - the expected profit was less than expected, hence the need to make room, between 1755 and 1775, for elms, ashes and poplars (Ballester, 2015), Structures and lock-keepers' houses were decorated with fruit trees (wikipedia, May 15, 2020);

-1789: renamed by French revolutionaries from the Canal royal en Languedoc to the Canal du Midi (beginning of the revolution) (wikipedia, May 15, 2020);

-1850: apogee of commercial activity (wheat, wine, wool, ammunition, etc.);

-1856: new reach with the seventh basin - abandonment of the passage of the canal to the Orb river bed, complete of the Orb Aqueduct (a bridge which carries the Canal du Midi over the Orb in the city of Béziers);

-Second half of the 19th: began to suffer from competition of railway transport; Plain trees were planted, being between 120 and 150 years old, these trees protected the canal against the summer heat;

-1914-1945: WWI and WWII, trading interruption;

-1950: Decay of trading - grow of road transportation and the modest dimension of the boats allowed by the canal lead to trading declined and became secondary;

-1956: codified in the Public Code of waterways and inland navigation, then in the General code of the property of public persons (A. Homont, 1963);

-1980 - the importance of the canal for both tourist and leisure activities became clear; the conflict between water use in terms of irrigation and tourism starts (Vallerani & Visentin, 2018);

-1989: freight transport on the canal definitively stopped;

-1997: listed on the UNESCO world heritage, became landscape icon of Southern France;

-2016: designated as an International Historic Civil Engineering Landmark

-02- REGIONAL ANALYSIS

2.3 THE HISTORICAL CANAL

2.3.2 Chronicle

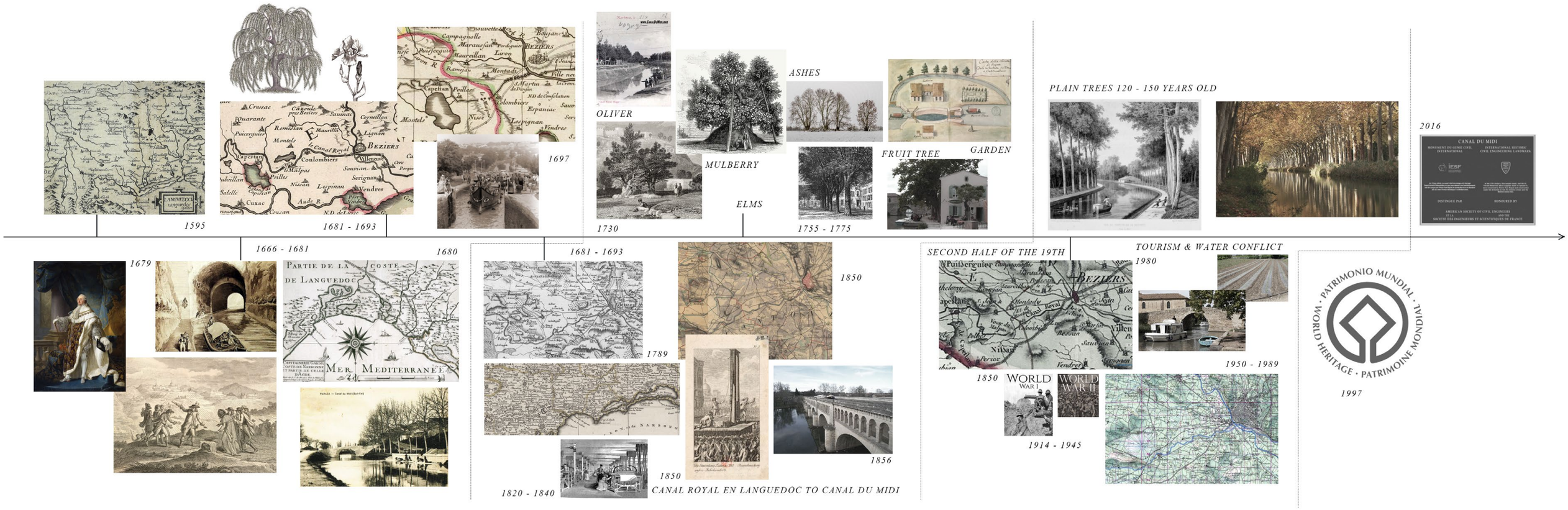


Figure 1-28 Chronicle

Main sources: https://www.ub.unibe.ch/ub/index_ger.html ; https://www.replantonslecanaldumidi.fr/the-canal-du-midi/; David Rumsey Map Collection; https://www.montrealdelaude.fr/le-canal-du-midi/; https://www.britannica.com/topic/Canal-du-Midi

-02- REGIONAL ANALYSIS

2.3 THE HISTORICAL CANAL

2.3.3 Landscape Author

It is an essential part of the canal story about the people that patriated in building and shaping it. There are different landscape authors in different phases of the canal development, we can imagine the business people in the trading age traveling to the Mediterranean sea with wines, dyes, hides and leather, spices (Braudel & Reynolds, 1976), the farmers and tourists until now are all very important authors that continually shaping the canal. But, to trace the construction of the waterwork, the thesis will focus on the designer and people that participated in building the canal, until now, a tourist can still see the image of these authors through the work they created.

(1) Main designer group
- Pierre-Paul Riquet, designer of the Canal du Midi. He obtained from the king the ownership and operation of the Canal du Midi for life for himself and his descendants. He died in October 1680 shortly before its completion (wikipedia, May 15, 2020). Now his statue is standing in the centre square of the canal city Béziers, his hometown;
- Sebastien Le Prestre de Vauban, the royal architect and engineer who made many improvements to the canal between 1685 and 1686 (wikipedia, May 15, 2020);
- François Andreossy, a close associate and deputy of Pierre-Paul Riquet who continued the work after the Riquet's death (trek.zone, June 15, 2022);
- Louis Nicolas de Clerville an engineer who controlled and oversaw the works and advised Riquet (trek.zone, June 15, 2022);
- Many other engineers and technicians.

(2) Royal power group
- Louis XIV, granted permission for the construction of the canal in 1666 (Clark, Oct. 29, 2021);
- Jean-Baptiste Colbert, Louis XIV's Controller-General of Finances who was commissioned by the king to assess the cost and feasibility of the project (wikipedia, May 15, 2020);
- Louis Nicolas de Clerville, served as Colbert's commissaire general des fortifications building ports, dry docks and fortresses (Mukerji, 2009). Clerville was Colbert's eyes and ears keeping track of Riquet's efforts.


Figure 1-29 Pierre-Paul Riquet

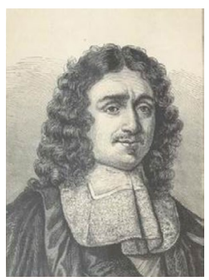


Figure 1-30 Jean-Baptiste Colbert


Figure1-31 Sebastien Le Prestre de Vauban


Figure 1-31 François Andreossy

(3) Main worker group
- The construction of the canal is a large teamwork. Maistre describe that, there were thousands of laborers on the canal whose knowledge of hydraulics was just as crucial to the success of the project, and whose heritage is silently embedded in the waterway (Maistre & Ourliac, 1968). The Canal du Midi was too complicated to build using the formal knowledge of engineering in its period. It took peasant knowledge of landscapes as well as hydrology to transform into physical reality the abstract idea of a canal through Languedoc to join the two seas (Rolt & May, 1994);

Figure 1-32 The laundries records the women peasants story

- These workers include people with different identities and talents, including masons, stonecutters, peasants, artists, soldiers, etc. The achievement and creative approach of the construction of the canal is the result that combined diverse groups of people's intelligence and cooperation;
- One thing worth to be highlighted is that the women peasants from the Pyrenees in particular brought traditions of Roman hydraulics to the Canal du Midi that had been incorporated centuries before into local ways of controlling and using water. Pyrenean women built water systems with weirs, diversionary channels, sluices, settling ponds, mills and irrigation systems - all cantered on public laundries (To make their chores easier, they learned to do what the Romans had done for their baths: use contour cutting to guide water from rivers and sources to towns, using weirs to slow the movement of water, sluices to direct it to where it was needed for different uses, and settling ponds to clarify water and keep the system easier to maintain - all parts of the Roman heritage of hydraulics in the Pyrenees). These women with Roman hydraulics knowledge create big contributions for building the canal, such as contour cutting, dug the lock, etc. (Vallerani & Visentin, 2018).

2.3.4 Recordation

It is significant of the recordation of different ways including official documentary and folk & oral records. The social media and internet also play an important role of the documentary. For example, there are travellers made films about the journey and experience, there are local speciates wrote books and local residence creating websites for collecting and sharing the valuable historical pictures and stories of the canal.

Main sources: 2-29 - 31 (https://ebooks-bnr.com/ebooks/html/fernay_riquet_et_canal_midi.htm; https://www.canaldumidi.com/Personnages.php); 2-32 (https://www.pinterest.fr/pin/299841287667946246/visual-search/?x=16&y=10&w=530&h=341&imageSignature=ba29b-81b12a9480113a9802846279a94, https://www.canalmidi.com/aufildlo/photanci/cpaparaza.html)

-02- REGIONAL ANALYSIS

2.3 THE HISTORICAL CANAL

2.3.5 Canal panoramas

-The key nodes

The key nodes are the important waterworks, which highlighted the unique character of the canal, with the high potential to become an attraction for tourism. For the Canal du Midi, the (1) first hierarchy of the key nodes would be the most creative civil engineering waterworks. That is the Fonserances lock, the St. Ferreol basin, and the Malpas Tunnel, represent one of the most ambitious and innovative hydraulic achievements of the seventeenth century (Marconis et al., 2016), studied by engineers, architects, philosophers, and politicians (Vallerani & Visentin, 2018).

Figure 1-33 Panoramas - first hierarchy

-02- REGIONAL ANALYSIS

2.3 THE HISTORICAL CANAL

2.3.5 Canal panoramas

The (2) second hierarchy would be important and special hydraulics works such as the Argent-Double spillway, the Répudre Aqueduct, the Ouvrages du Libron, etc.;

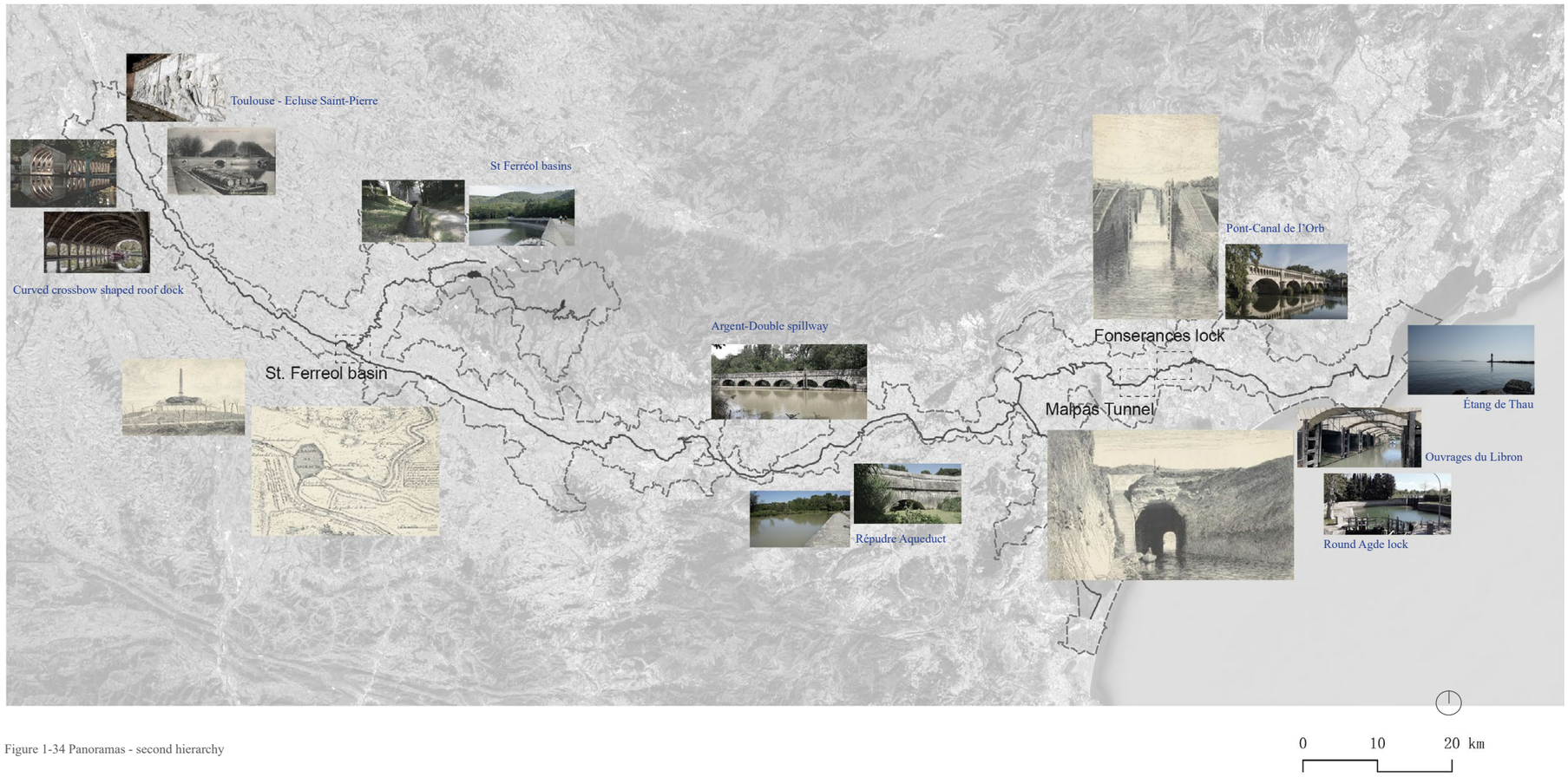


Figure 1-34 Panoramas - second hierarchy

-02- REGIONAL ANALYSIS

2.3 THE HISTORICAL CANAL

2.3.5 Canal panoramas

The (3) third hierarchy would be the repeating elements that have been constructed in different sections of the canal which demonstrate the basic function of the canal, these elements are usually with a clear standard of construction or following the same logic of principles, such as the lock house, the laundries, the canal bridge, the canal inn and chapel, the small water inlets and outlets, etc.

Figure 1-35 Panoramas - third hierarchy

-02- REGIONAL ANALYSIS

2.3 THE HISTORICAL CANAL

2.3.5 Canal panoramas

Even though these are not the most eye-catching elements, because of the obvious and unified characters, these elements can easily remind the identity of the canal.

-Connections

One key connector of the canal is the surrounding heritage sites and historical cities as well as rich landscape such as vineyard, mountain, lagoon, etc. These are elements that highly related and binding to the canal in a circularity system and the economical / cultural / tourism development network, which with potential to extend the space and increase the influence of the canal traveling.

-Line

The liner waterways of the canal itself as well as the green banks link the key nodes, and cartographies of leisure (Hvattum, 2016). The route along the canal bank is an essential part of the traveling experience of tourists and also an important public space for local residents for their daily practice such as jogging, walking the dogs, etc.

Figure 1-36 Panoramas

-03- PROBLEM FIELD

3.1 OPPORTUNITIES

Three main opportunities can be summarized.

3.1.1 There is the unique value of the canal. The canal is in a degree of preservation, which provide opportunities to regenerate the canal in its entirety. The canal is a rare case that embodies both modernity and tradition or as Vallerani and Visentin describe in their book Waterways and the cultural landscape (Ser. Routledge cultural heritage and tourism): the canal was built from separate shards of the classical past that were maintained as distinct living traditions, but were integrated to build the Canal du Midi when it was formally not possible to do so. The result was a breathtakingly modern form of engineering with ancient roots that is rightfully celebrated now as a world heritage site' (Vallerani & Visentin, 2018). The incredible imagination and innovation of human intelligent all visible through the canal. But it is also a complicated landscape, difficult to understand and to appreciate. However, if there could be find more experiential and clear ways to reveal more stories of the canal, there are rich resources waiting to be explored.

3.1.2 Since the canal was constructed, it influenced the territory a lot. Diverse landscapes can be found along the canal. It's an opportunity to explore the different relationships and mechanisms behind the development of this system and how they blend in to specific landscape types along the canal.

3.1.3 The canal is also a lever of attractiveness for the territories, the long liner structure connects tons of other heritages and historical towns, there is potential for the design to stimulate the joint force of the different types of attractions along the routing, bring more interest in a way that the local communities can be better involved and be benefited. However, today the canal faces difficulties to adapt to its role as a landscape icon and worldwide tourism destination.

3.2 CHALLENGES

Three main problems can be summarized.

3.2.1 the entire Canal du Midi remains a fragile heritage, still under rehabilitation (Vallerani & Visentin, 2018). The tourism development situation of the Canal du Midi is not optimal. The Canal du Midi is a rigid long functional quite narrow water structure, with many magnificent waterworks separated into different parts of the canal, gradually being neglected, and forgotten due to low population and low accessibility. When referring back to the shipping trading era, there is a sharp contrast between its flourishing past and the desolate status quo.

3.2.2 330 years ago the construction of the canal allows water passing through the rocky landscape of western Languedoc where no one had been able to navigate before, it brought prosperity to the region, while today it is one of France's poorest regions. The economic and social development in the area highly relies on agriculture and wine industry, which both met significant crisis during complex reasons such as water shortage, climate change, etc. In essence, the rise and fall of the canal has always been closely related to the economic development and the livelihood of the people in the surrounding areas. Trade once brought wealth to the region, but the current economic recession has brought difficulties to the further development of canal tourism.

3.2.3 apart from navigation, the canal works like a huge Roman aqueduct, bringing fresh water from the Montagne Noire to the Languedoc plains - the most arid and hottest region of France. Now climate change brings more extreme weather conditions, seasonal floods and droughts, seawater intrusion, and scarcity of fresh and underground water occur more frequently. This posts a crisis in terms of water usage, for both the irrigation of the fields and attractiveness for tourism. In addition, the disappearance of the old plane trees that line the banks of the canal due the epidemic of colored canker is inevitable (Ballester, 2015). The linear "park" landscape, an essential identity of the canal, is in danger. Furthermore, except the green bank, most land around the canal is monofunctional cultivation land, which results in a vulnerable eco-system that might lead to ecological degradation.

Figure 1-37 Old photos and paintings documenting the glory days of shipping

Source: https://www.canaldumidi.com/Photos.php; https://ebooks-bnr.com/ebooks/html/fernay_riquet_et_canal_midi.htm

-03- PROBLEM FIELD

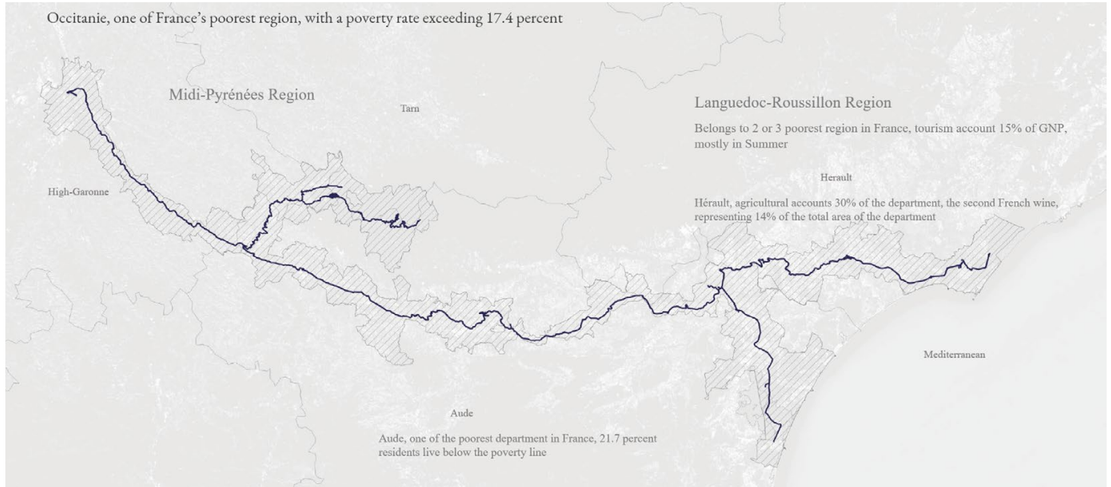


Figure 1-38: Social & Economical risk

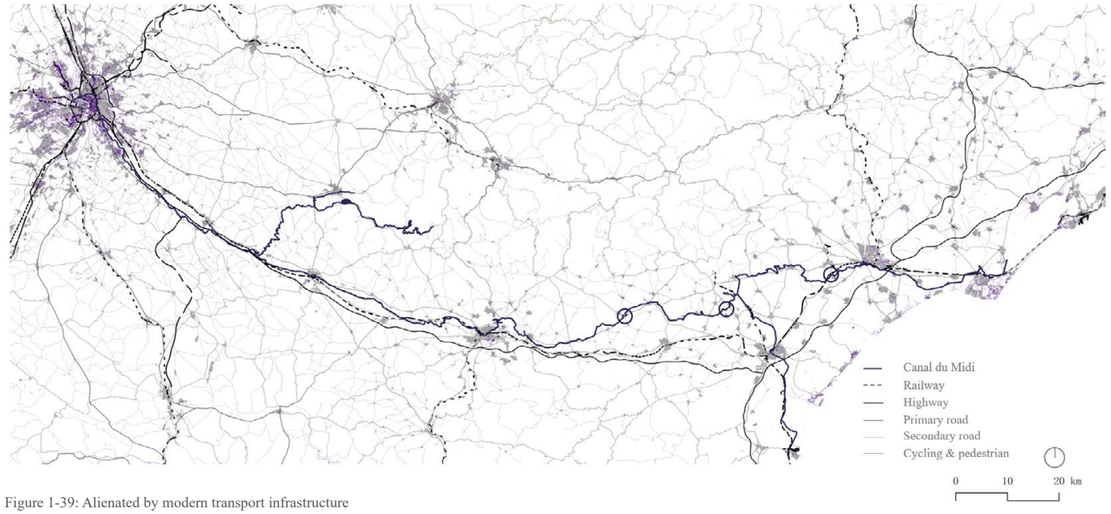


Figure 1-39: Alienated by modern transport infrastructure

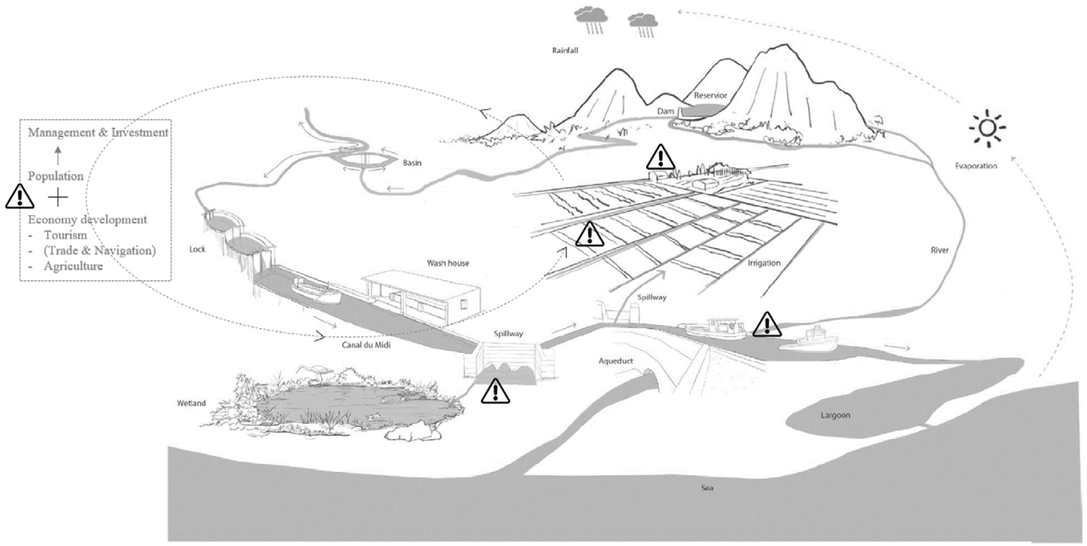


Figure 1-40: Risks in the Circularity

-03- PROBLEM FIELD

3.3 PROBLEM STATEMENT

Faced with such a magnificent water system that has been in operation for more than three centuries, this project hopes to read and tell the story about the canal, about its past, its today's challenges, and its tomorrow. What could be the story worth telling? And with the spatial design approach, how can we prescribe a future of the canal that will maintain a continuity with the past and will also be flexible enough to face the transformation and challenges in the future? The problems faced are complicated, the project will concentrate on four main challenges, defined as follows:

3.3.1 Potential of strengthening of tourist infrastructure and involvement of local communities;

3.3.2 Anticipate on water shortage and flood risks;

3.3.3 Prevention of further ecological degradation and adaptation to changing climate conditions;

3.3.4 Improve the readability of this fascinating historical landscape and improve its attractiveness while addressing above mentioned challenge.

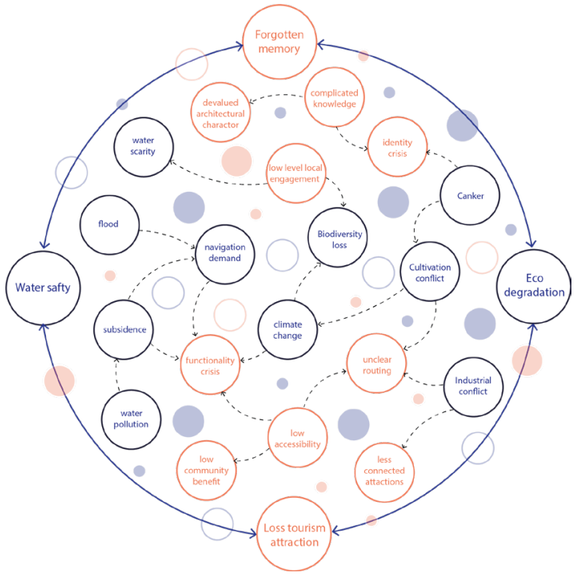


Figure 1-41: Problem statement summary diagram

-04- RESEARCH QUESTION

4.1 MAIN QUESTION

How to articulate the main stories of the Canal du Midi through a series of spatial interventions that supports the sustainable development of this water heritage and the territory?

4.2 SUB-QUESTIONS

4.2.1 How to read and reveal the different stories of the canal?

4.2.2 How to improve the accessibility and traveling experience along the canal and involve local communities?

4.2.3 How to make the Canal du Midi and the surrounding landscape more resilient and strengthen its ecological health and biodiversity?

4.2.4 What defines the architectural characteristics of the building elements along the canal and how to relate to them in the design?

CHAPTER II

METHODOLOGY

This chapter demonstrates and discusses the exploration and application of the research method and theory, concept, approach, case withdrawn from literature or from studios and lectures.

One Section of the history map of the Canal du Midi
https://www.davidrumsey.com/rumsey/download.pl?image=/D0109/5024015.sid
Author: Cassini, Cesar-Francois (1714-1784)

-05- THEORITICAL FRAMEWORK

5.1 RESEARCH AIM

As Robert Scholes writes, the role of theory is "not to lay down laws but to force us to be aware of what we are doing and why we are doing it". Therefore, it is important to name the multiple realms of landscape narratives, track their interrelationships, and understand how we engage them. (Potteiger & Purinton, 1998).
From the summary of the problem statement, the challenge is not only about the preservation of heritage, but it is also about a regeneration of larger heritage-related territory that supports the vitality of the waterway and dealing with upcoming climate and ecological crises. This is a huge goal that needs multiple actions and small design interventions to explore ways to achieve the formulated goal.

5.2 THEORY BASED RESEARCH

The thesis builds up on one main theory and multiple supporting theories & approach.

(1) In order to find a theoretical basis that can provide a method of telling the story of the landscape, Landscape narrative (Potteiger & Purinton, 1998) was used as the theoretical was used as the theoretical framework and guidelines, combined with (2) Design research for urban landscapes: theories and methods (Prominski & Seggern, 2019); (3) Site matters: design concepts, histories, and strategies (Burns & Kahn, 2005); (3) Culture as the Fourth Pillar of Sustainable Development (Commonwealth, 2007) provides a systematic approach to defining the research framework and scales, understanding the relationship between culture and sustainability; (4) theories related to Landscape-based solutions/Landscape approach indicates the design methods in terms of water heritage, ecological & water design, and site-specific context about the Canal du Midi, France and the Mediterranean.

-05- THEORITICAL FRAMEWORK

5.3 DEFINE SCALE

Area of Influence - "Comprises the domains beyond the given site that are affected by the design, not to be seen as an intervention scale. Regional scale. Broad domains which can impact or being impacted by the local intervention and its influence in the systems. Wider processes like gradual ecological improvements, air quality or appropriation by users, transformation on how a landscape/area will be understood (imaginary). Sometimes unpredictable changes, long term changes are also included on this scale. The focus here is mainly on historical development and processes." (Burns & Kahn, 2005); In the thesis, the area of influence is regional scale contains the whole canal and surrounded territories.

Area of Effect - "Comprises systems and forces that act upon the given site (area of control) even if they do not take place within its boundaries, such as hydrological features and geomorphology. It is named as inter-mediate scale. The focus here is on understanding and designing forces/actions on the system level like water systems, ecological/green networks, roads/paths network. It has defined boundaries. It establishes a relation between here (the place where you are in) and there (the horizon). (Scales - 1:10.000, 1.1000). (Burns & Kahn, 2005)"; In the thesis, the area of effect is a selected area of mediate scale to explore systemic design.

Area of Control - "Comprises the site of intervention within its limited spatially boundaries. The area of control is where the design actions happen, it comprises the design of places and level detailing and materialisation. (Scales - 1.1000, 1.500, 1.200). (Burns & Kahn, 2005)" In the thesis, the area of control is a zone in area within the area of effect for detail design.

Figure 39: Book cover
Burns, C., & Kahn, A. (2005)

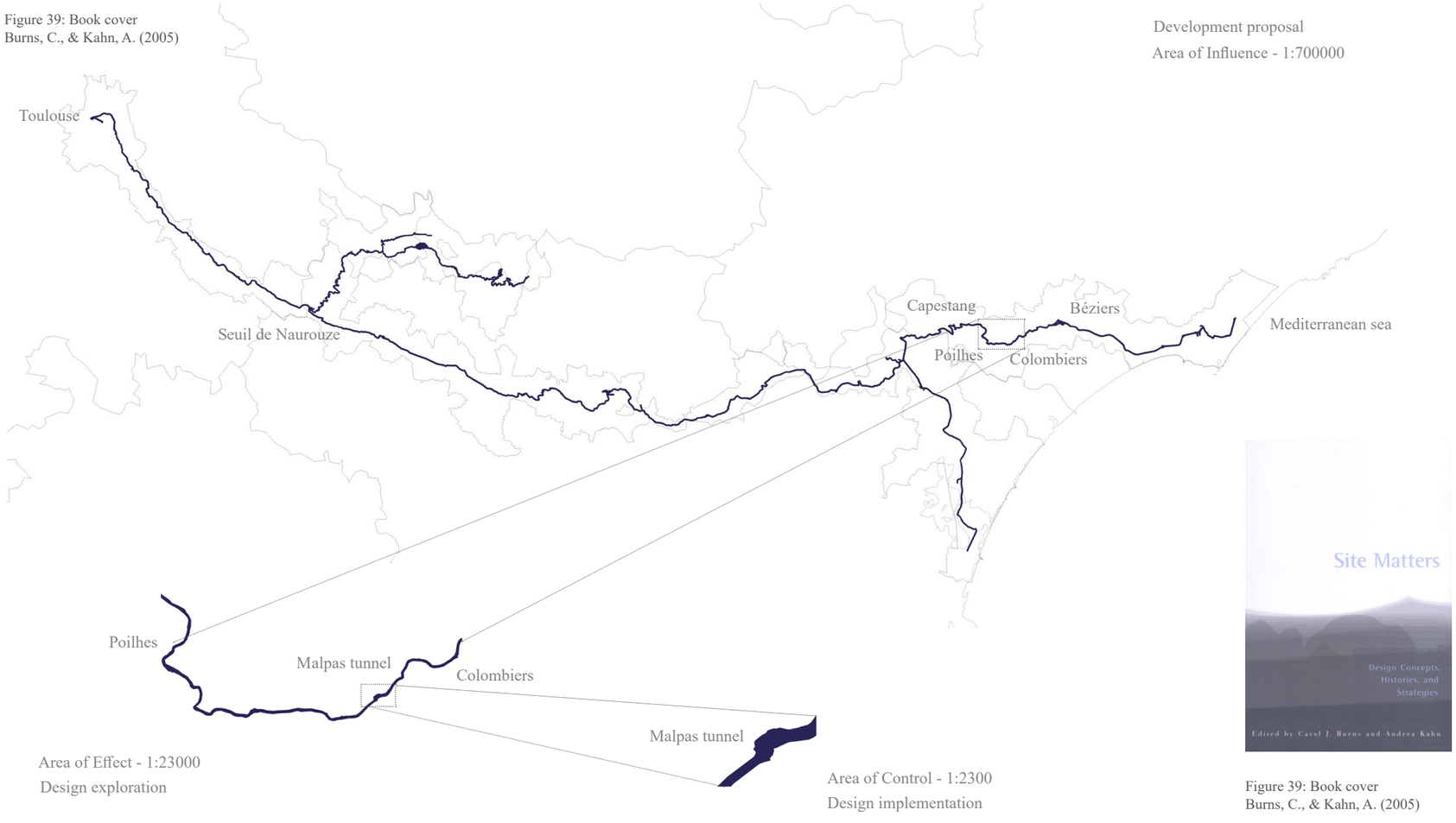


Figure 2-1: The three scales

Figure 39: Book cover
Burns, C., & Kahn, A. (2005)

-05- THEORITICAL FRAMEWORK

5.4 LANDSCAPE NARRATIVE

The idea that narratives are integral to the making of places was first posed in Matthew Potteiger's master's thesis in Landscape Architecture at the University of California, Berkeley, in 1980. The project is about the landscape narratives of the Mission District of San Francisco, his inquiry into the storied nature of landscape began with that project. It is interesting that the author weaves these narratives into a set of new stories that followed several fictional characters through the district (Potteiger & Purinton, 1998).
Since the topic of this thesis project is called ''the canal story'', and one of its main goals is to represent the landscape narrative, it is essential to understand and identify what is a landscape narrative in theory and in this project. Therefore, the book ''Landscape narratives: design practices for telling stories (Potteiger & Purinton, 1998), is the essential reference. Then, the questions start from, what is narrative?

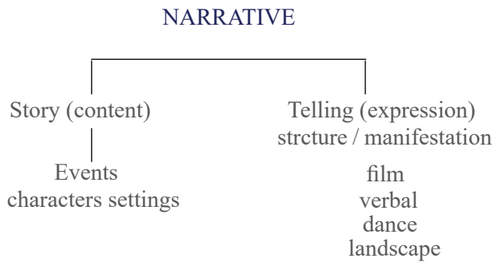


Fig 2-2 The distinctions and relationships between story and narrative (Adapted from Chatman 1978, 26)

What is narrative?

Coming from the Latin gnarus and the Indo - European root gna, ''to know,'' narrative implies a knowledge acquired through action and the contingencies of lived experience (Turner, 1980).
Narrative refers to both the story, what is told, and the means of telling, the how (Fig 3-1). Thus implying both product and process, form and formation, structure and structuration. Beyond conscious awareness or inherent in daily actions, it may be as mundane, varied, scripted, or open-ended as our own lives (Potteiger & Purinton, 1998).

Historians, who once attempted to emulate models from the physical sciences by eliminating narrative, now reaffirm its necessity to historical consciousness (Danto, 2007). Thomas Kuhn in The Structures of Scientific Revolutions (1960) demonstrated that what passes for progress in science has as much to do with the acceptance and succession of stories as it does with compiling objective descriptions (Potteiger & Purinton, 1998).

What is landscape narrative?

Places configure narratives. Landscape not only locates or serves as background setting for stories, but is itself a changing, eventful figure and process that engenders stories. A road establishes a sequence while opening the possibilities of chance encounters. The scale of space becomes the scope of an epic or the confines of a personal drama. Traces in the landscape hold secrets and invite interpretation. We come to know a place because we know its stories (Potteiger & Purinton, 1998).

Essentially, narratives construct meaning (Swaffield, 2002), or signify, much like the cultural system of language. By combining events in sequences to tell a story, narrative is homologous to the combining of words to construct intelligible sentences. This idea of linguistic system provides a framework for understanding how information, ideas, and experience are transposed from one medium to another (Duncan, 1990). Just as language can be communicated in hand gestures, glyphs, or other means besides verbal signs, narratives can be told in almost any means including landscape (Potteiger & Purinton, 1998).

For a designer, then, it is a matter of not only learning how to tell stories in landscapes but developing a critical awareness of the processes and implications of narrative; whose story is told and what values and beliefs inhere in the telling? (Potteiger & Purinton, 1998)

Note: Most of the contents of this page are from the book ''Landscape narratives: design practices for telling stories (Potteiger, M., & Purinton, J. 1998), therefore it will not be cited in each paragraph. The citation in the books will be shown.

-05- THEORITICAL FRAMEWORK

5.5 LANDSCAPE NARRATIVE

Story, Space and Time

There is a tendency to think of narrative primarily as a temporal art and landscape as something visual, spatial, an unchanging background and therefore non-narrative. However, narratives combine two dimensions, one a temporal sequence of events and the other a nonchronological configuration that organizes narrative into spatial patterns. Stories can plot events into lines, create hierarchies, unite beginnings and ends to form circles, or tie knots and design labyrinths. Likewise, through landscape and temporal dimension of narrative becomes visible, and space becomes charged and responsive to the movements of time, plot and history (Bakhtin & Holquist, 1981). Landscape narratives mediate this crossing of temporal and spatial experience. The continuous narrative also uses spatial depth to represent temporal position, with the present occupying the foreground and the past in the distance, or the reverse (Potteiger & Purinton, 1998).
Singular events such as floods, urban renewal, or more quotidian happenstance leave their marks in the landscape. Ensembles formed by one building episode or any site carefully restored to a historic period of significance also tell of one moment in time. The sequence of moving through a series of settings becomes analogous to a linear narrative. Filled with multiple layers of history and simultaneous events in a common context, landscapes seem most like continuous narratives. (Potteiger & Purinton, 1998)

Memory landscapes

Places that serve as the tangible locus of memory, both public and personal. The ancient rhetorical practice of delivering long speeches was aided by the mental construction of ‘‘topoi,’’ or places organized into spatial complexes or ‘‘memory palaces.’’ and so on. To remember was to walk through these spaces, noting what was “in the first place” and so on (Potteiger & Purinton, 1998).
As a locus for individual and collective experience, the landscape become a vast mnemonic device. Almost any element in the landscape - woodlots, street corners, old trolley tracks, thresholds, or even tools used to shape the landscape - provide access to this memory landscape (Potteiger & Purinton, 1998)

Engaging process

Landscape narratives need not to be limited to telling what has already happened. They can be an implicit part of daily actions, exchanges, interpretations, and other ongoing processes. Likewise, narratives emerge from the interplay of natural processes and cultural processes. So often the inscription of stories into the landscape ignores the narratives of the medium itself. In contrast, the work of an increasing number of landscape architects seeks to reveal the effects of wind, water, and other processes, while also setting up conditions for continuous change and evolution. Rather, landscapes offer the unique potential to engage narrative as an integral part of ongoing cultural and natural processes (Potteiger & Purinton, 1998).

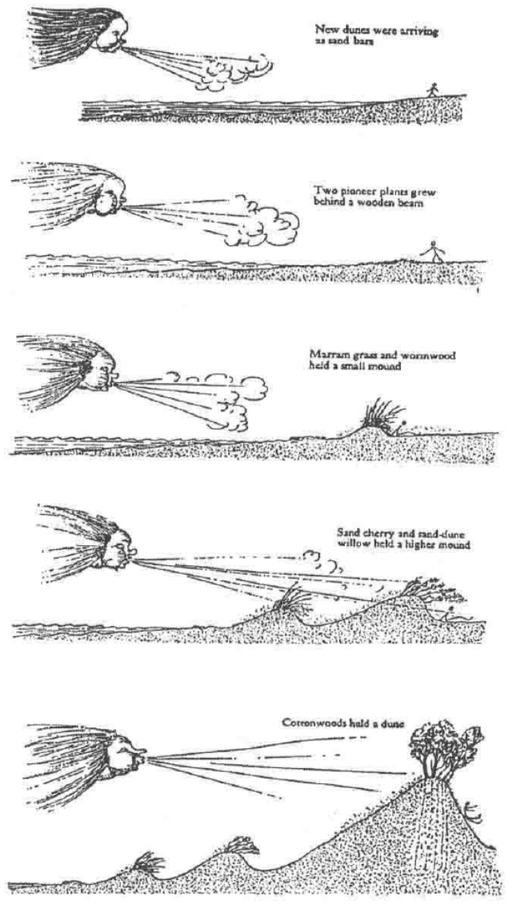


Fig 2-3 Story of dune formation, Source: Watts,1999

-06- THE THREE LANDSCAPE NARRATIVES

Through the analysis of the canal in the area of influence from multiple layers and perspectives: the functional canal – water as infrastructure, the geographical canal – water as nature, the historical canal – water as culture, the three narratives of the canal start to become clear. To summarise the main narratives about the story, the UNESCO description of the canal uniquity is used as a reference.

The three narratives will help to guild the analysis and design intervention through different scales, and allows further interpretation within the outline depending on the site-specific condition and the scales.

Figure2-4: Vue du contour de la Redorte, un cadre agréable à la navigation et à la contemplation, 1820. Archives du canal du Midi
Source: VNF©, 2008

6.1 WATER AS INFRASTRUCTURE

“The Canal du Midi is notable as the first major summit level canal built to meet a strategic territorial development objective” (UNESCO, May 12, 2022);

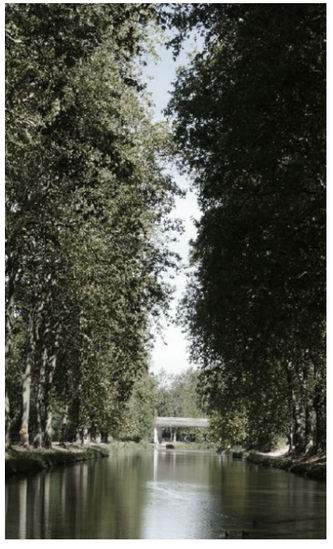
The strategical realm highlighted the functionality of the canal always represents regional interest - the water infrastructure that is closely linked to larger development strategy and ambition, as a dynamic exchange system that brings benefit to the region and also demands powerful maintenance.

Water as INFRASTRUCTURE

6.2 WATER AS NATURE

“As soon as it was built, the Canal du Midi became the most striking feature of the territory through which it ran, all the more integrated into the environment as it gently modelled the landscape” (UNESCO, May 12, 2022);

The natural realm highlighted that once the canal had been built, the waterway emerged into the natural base of the territory, being part of the local landscape and gradually transforming and shaping the landscape through time.

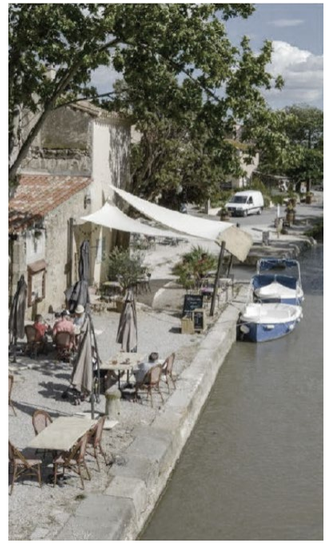


Water as NATURE

6.3 WATER AS CULTURE

“Constructed from 1667 - 1694, it represents a significant period of European history, that of river transport through the mastery of hydraulic civil engineering, and reprehensive of the technological breakthrough paved the way for the Industrial Revolution and contemporary technology” (UNESCO, May 12, 2022);

The cultural realm highlighted that the Canal du Midi represents a transforming point of history - the water that combined old and new knowledge links an old era to a new one, the spirit of innovation and adventure, and a common memory with universal value.



Water as CULTURE

-07- REASEARCH STRUCTURE

7.1 FRAMEWORK

According to the large scale and complexity of the project, the aim of the research structure is to be able to build up a 'flexible' research framework that adapts interdisciplinary knowledge and supports an open-ended design process where through different scales, the research and design process would support and evaluate each other back and forth.

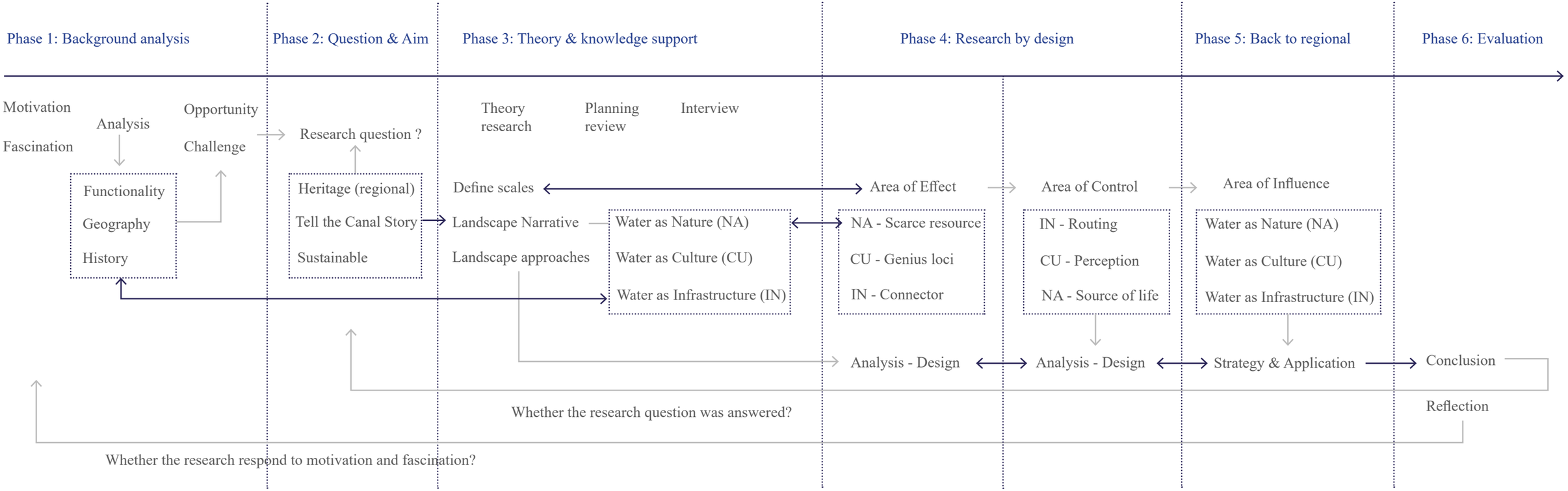


Figure2-5: Research framework

-07- RESEARCH FRAMEWORK

7.2 PLANNING REVIEW

A summary of the landscape challenges and aspact of improvements defined in this plan:

1. **Heritage preservation** - Value and identity of the heritage – the universal value of the canal is ignored, enhance living memory and restore small heritages;
2. **Attractiveness** – promote the international impact and local economic especially tourist economy of the 'canal areas';
3. **Adapted to climate change** – anticipate, monitor and control the use of water.

The difference of the plan and my design:

1. Management approach vs spatial approach;
2. Immediate actions of problems control vs Long-term landscape improvement through time;
3. Seperated management aspects vs comprehansive design through scales

Conclusion:

The challenges and aspects needs to be renovated and improved of the Canal du Midi that be defined in this plan are similar. While by using different approaches, my design can contribute to provide a landscape based spatial proposal which would be able to defining more spesific design assignments, adding aesthetic spatial quality and sustainble methods to the overall management plan of the canal.

The Canal du Midi, World Heritage Site

MANAGEMENT PLAN

Final version
December 2020

Thematic	No.	Title of the action
Patrimony	1	Inventory the heritage (attributes) of the Canal du Midi
	2	Perpetuate navigation on the Canal du Midi
	3	Restore and enhance a first series of works or sites of the Property
	4	Continue the restoration of the tree-lined vault of the Canal du Midi and the banks
	5	Adopt a strategy to promote public buildings
	6	Develop exemplary actions for the restoration of small heritage
Landscapes	7	Reconcile the development of the territories and the preservation of the large landscapes of the Property
	8	Integrate the challenges of the Canal du Midi in land use planning
	9	Revise the buffer zone, taking into account the reality of the challenges of the territories
	10	Support the promoters of public or private projects in development projects
Water and climate change	11	Anticipate and adapt to the impacts of climate change
	12	Install measuring devices and automate the hydraulic structures of the canal to monitor and optimize water consumption
	13	Install liquid waste collection systems from boats Sustain the water quality
	14	observatory
	15	Build an incentive policy to improve stationary boats on the canal and provide them with a sufficient level of service
	16	Establish and disseminate an annual report on water
	O1	flows Maintain coordination of water stakeholders

Thematic	No.	Title of the action
Knowledge and valuation of the documentation	17	Maintain and develop documentary knowledge on the Canal du Midi
	18	Organize the collection, conservation and enhancement of living memory
	19	Make an inventory of objects and collections related to the Property (location, status / ownership)
Radiation good	20	Define the identity of the "Canal du Midi" property, and define a strategy for promoting it
	21	Build and implement a global strategy of cultural animation around the values of the Canal du Midi property, integrating "flagship" events
	22	Develop cooperation with other properties inscribed on the World Heritage List, contributing to the international influence of the canal
Economy and vitality territories	23	Finalize the port strategy and implement it to upgrade the range of services
	24	Ensure cycling continuity along the canal
	25	Act for the attractiveness and vitality of the "canal areas"
	26	Set up a permanent observatory of the number of visitors and the tourist economy generated by the canal
	27	Promote the local economy of the canal areas Promote the
	28	development of freight
	29	Encourage the conversion of the existing commercial fleet (rentals, trips, freight) to develop "zero emission" propulsion, modernize it, and integrate it better
Assessment and governance	O2	Create a scientific council for the canal
	O3	Integrate citizen representation into the governance of the Canal du Midi
	O4	Evaluate the management plan

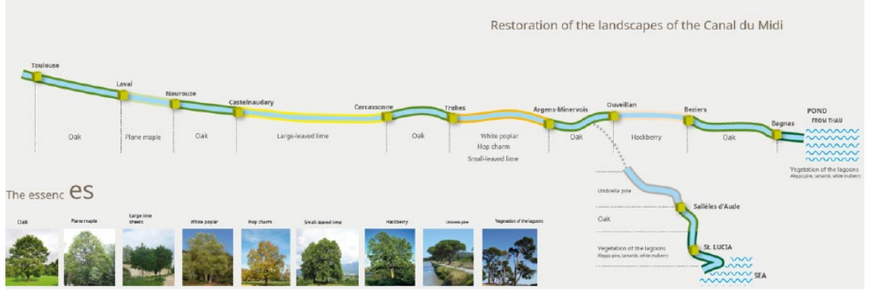


Figure 2-6: Planning review

-07- RESEARCH FRAMEWORK

7.3 INTERVIEW

During the first site survey, I conducted oral interviews and questionnaires with the staff of the canal du midi museum and visited the museum. This interview and research provided important prerequisites and materials for the start of the entire project. In addition to the understanding of the canal in terms of technology and significance, it also learned about the tourism status of the entire canal and the difficulties it faced from the perspective of the museum staff.

Highlights from several interviews:

- In addition to the condition of renting a boat, cycling is the most recommended way of travel to fully understand the canal landscape;

- Pollution is not a serious problem facing the canal, because there are many local laws to protect the water quality of the canal, but the infection of the plane tree has brought a major crisis to the overall ecology and identity protection of the canal;

- The lost of historical value of the canal and the loss of resources (including population loss, economic recession, etc.);

- The number of people who can visit the Canal du Midi Museum is limited, the knowledge and value of the canal are difficult to attract ordinary tourists, and the tourism development is not international enough

Interviewing with the Canal du Midi muesum staff

Interviewing with the local residents live in the canal communities

The second site survey mainly focused on the area of effect, including interviews with professional staff and interviews with residents. This survey provided important information and perspectives from local people for the project to continue to delve into the design. Some of the main points are as follows:

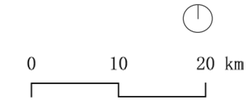
For local residence

-Love the peaceful & natural quality;
-Love to sit on the canal bank and watch the boats passing by, it brings a lot of feeling of peace;
-Proud of living beside the cultural heritage;
-Miss the childhood memory of the canal market & trading;
-Wild asparagus on the site!
-The water is very important for the local agriculture

- The biggest problem is the landscape and the water knowledge of the site is difficult to understand for tourists;
- Visiting by bike getting more and more popular in these years;
- The climate change and water conflict is a big risk for the area (the lady also guide us to see the draninage system and the canal, and provide very valuable research reports about tousirm and cliamte change).

Interviewing with the manager and staff of the Tourist information center La Domitienne La Maison du Malpas

Figure 2-7: Interviews



CHAPTER III

RESEARCH BY DESIGN

This chapter presents research in the design process through three landscape narratives. The study is based on a preview analysis of the area of influence (Chapter II), starting with an exploration of the area of effect situation and possible design interventions, and then zooming in on the control area to further implement the design intervention into a detailed design tailored to local specific conditions.

-08- AREA OF EFFECT

The area of effect is one significant section on the east part of the canal, starting in the west of the Poilhes commune and ends in the east of the Colombiers commune with the Malpas tunnel carries the Canal du Midi under the d'Ensérune hill in the middle.

It is an area that left me a deep impression during my first-time visit to the canal, with an extremely attractive and cultural-rich landscape of the canal itself and the surroundings, but also with extremely complex routing and wayfinding. From the tourism data, benefit from being close to one of the most famous tourist attractions spot of the canal - Les 9 Écluses de Fonseranes, this is an area with high potential for developing tourism, while currently, even the Malpas tunnel (World's first canal tunnel (wikipedia, May 15, 2020)) in the site also been considered as significant as Les 9 Écluses de Fonseranes, it seems like being neglected and forgotten by tourists together with other heritages nearby.
To understand the area, the three narratives provide a structure, in this specific site, the more local interpretation of the narratives will be: Water as nature – the scarce resource; Water as culture – the genius loci; Water as infrastructure – the connector.

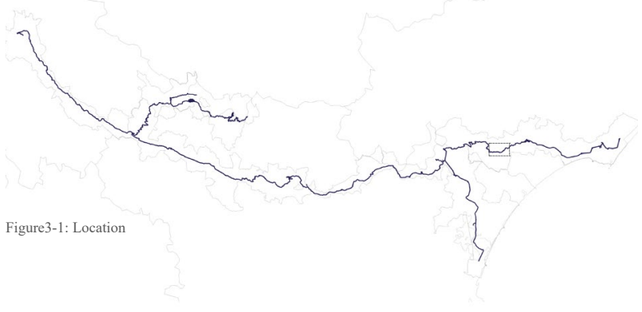


Figure3-1: Location

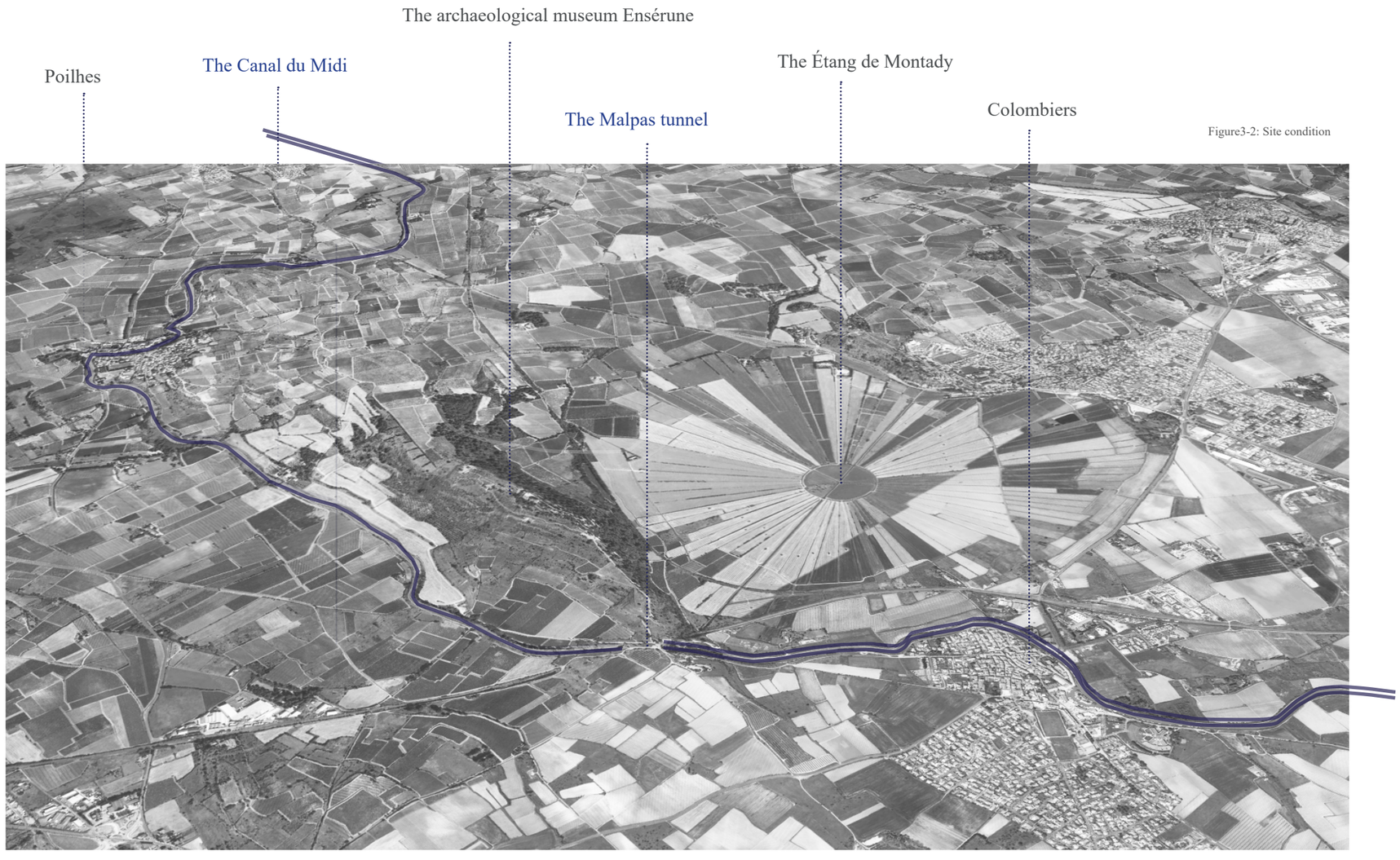


Figure3-2: Site condition

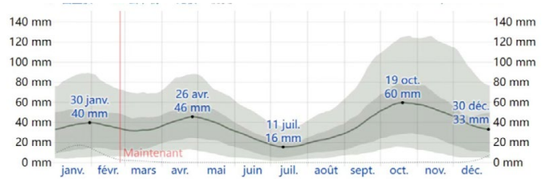
-08- AREA OF EFFECT

8.1 WATER AS NATURE – THE SCARCE RESOURCE

8.1.1 Analysis

Arid condition & high demands of water

From the regional analysis map, it is clear that the region is located in the aridest area of the plain. At the same time, it is within the Peyne watershed which is mainly dedicated to vine growing, and within the department of Hérault which is currently the second largest French wine growing region (services, 2022) that highly relies on agriculture (agriculture accounts for 30% of the department). The canal water is an important source for agricultural irrigation, but it would threaten the navigation function of the canal if there is too much water being used for irrigation in the dry season. The tense conflict of water usage becomes one of the main challenges.
However, the Montady itself is a powerful drainage system with a geometrically designed agrarian landscape. The system was created between 1247 and 1270 that was equipped with a network of drainage canals which, like the spokes of a wheel (Carrière, 1980), drain the water from surrounding rivers and streams through the wheel shape canals system towards an underground tunnel. the section of the Montady system shows (Haartsen, 2013)



Three months raining season, Nine months dry season, with 440mm annual precipitation

Figure 3-3: Precipitation

Climate change

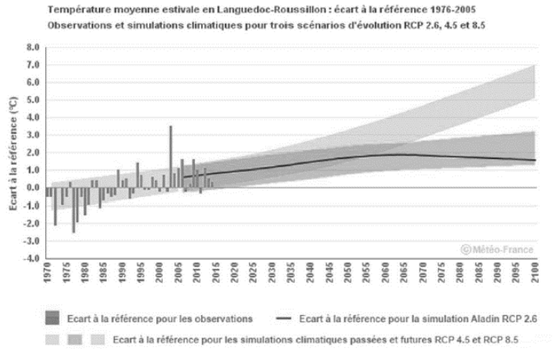
The more critical situation is that this is an area highly impacted by climate change. From the latest study of the local authority, the climate change models predict an increasing number of abnormally hot days by around 20-30 additional days compared to 2005 in the intermediate scenario, and up to 70-90 additional days for the pessimistic scenario (until 2080). The prediction of the average summer temperature shows it will be hotter in summer by 1 to 3°C according to the intermediate scenario, and up to 7°C in the worst of the pessimistic scenarios (until 2080). (biterrois, 2019). The critical climate situation in the upcoming future further increases the importance and emergency of finding solutions for water usage.

Vulnerable eco system
Apart from the emergent tense and future crisis of the water usage, this is also the region with less vegetation and attacked by the colored canker of the canal bank, while it is also the habitat for many special local plants and animals in this Mediterranean climate zone.

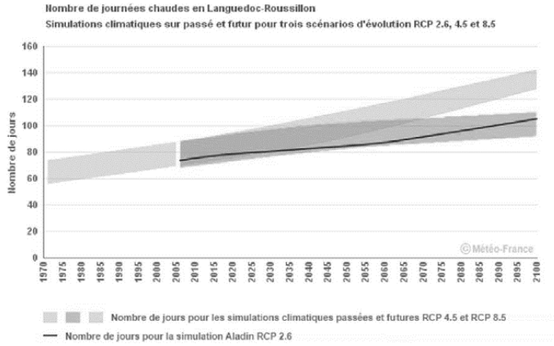
Picture took in March (raining season)

Picture took in July (dry season)

Figure 3-4: Seasonal Dry & flood situation



The prediction of the abnormally hot days



The prediction of the average summer temperature

Figure 3-5: The climate change senario prediction of the area
Source: ETIENNE (2019)

-08- AREA OF EFFECT

8.1 WATER AS NATURE – THE SCARCE RESOURCE

8.1.1 Analysis

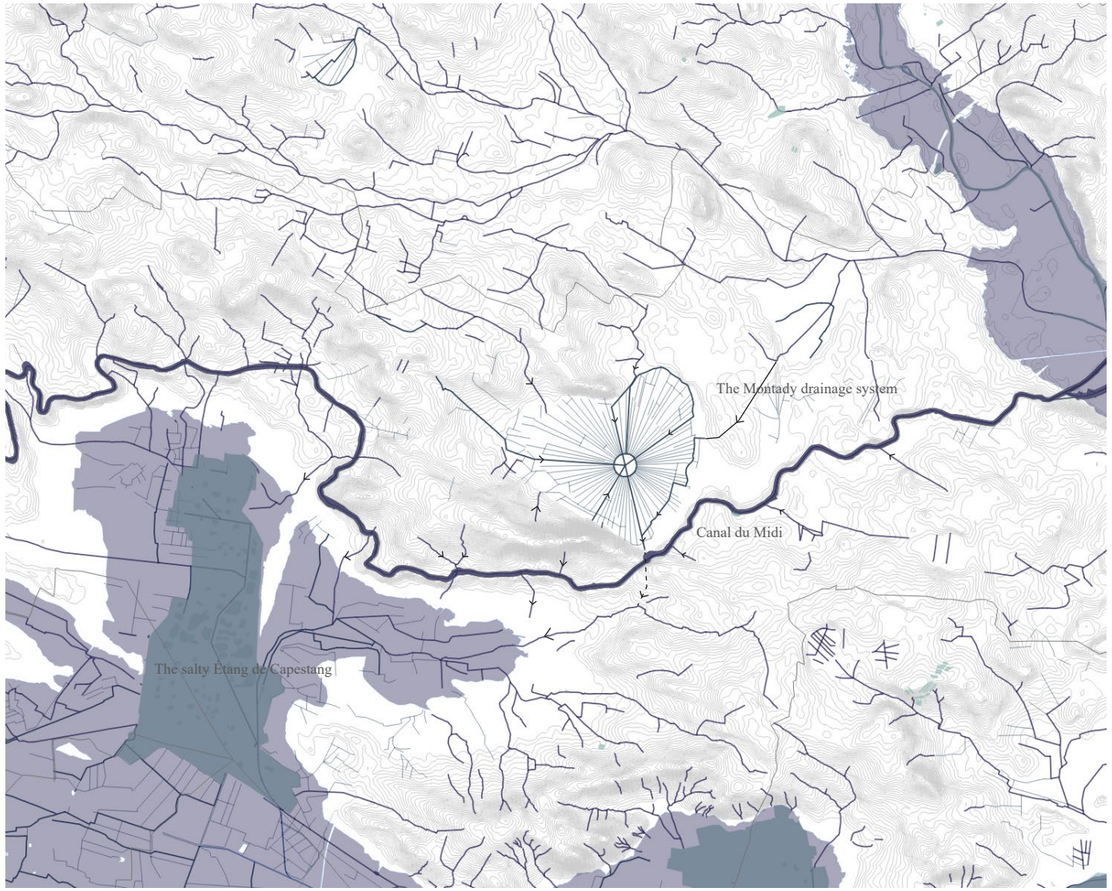
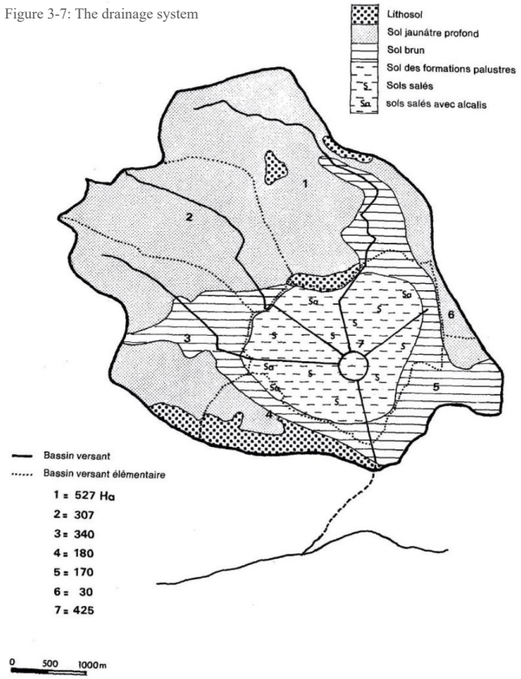


Figure 3-6: The water system analysis

Figure 3-7: The drainage system



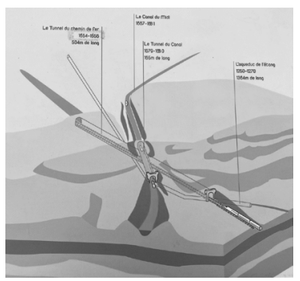


Figure 3-8: An axonometric view of the underground tunnel system

The Montady drainage system

The Montady is a former lake which was drained in the middle of the thirteenth century for the need for more agricultural land. Through literature study and interviews, here are some main conclusions about the system:

- The system is a purely powerful drainage system that the ditches have been dug at the edges to collect the surface and seepage water of the surrounding higher soils, ends up in the Étang de Capestang through a underground drain tunnel;

- Initially, the new land was mainly used to grow grain (rye and especially barley), later most of it was used as pasture. This is partly due to the heavy rain, the country is flooded, as happened in 2003. For arable crops, such a flood is fatal, grassland can cope well with it; Another reason mentioned is as the lowest land in the area, the saltwater seepages also affect the crop growth.

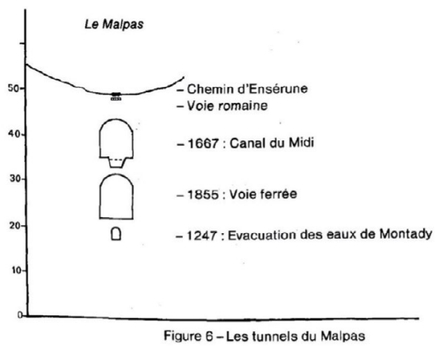


Figure 3-9: A section of the underground tunnel system

Figure 6 – Les tunnels du Malpas

Source: (Haartsen, 2013); (Carrière, 1980)

-08- AREA OF EFFECT

8.1 WATER AS NATURE – THE SCARCE RESOURCE

8.1.2 Design

The aim of the design of water as a scarce resource layer is expected to achieve an adaptive, robust water system when facing the climate change which would be able to:

-Save as much as water by adaptive to seasonal and climate change (muddy road, flood risk, landslide & erosion, arid, water shortage);

-Fits in or integrated into the local economical / social demands (especially related to the tourism development and the interest of local communities) and landscape character;

-Increase ecological diversity & value.

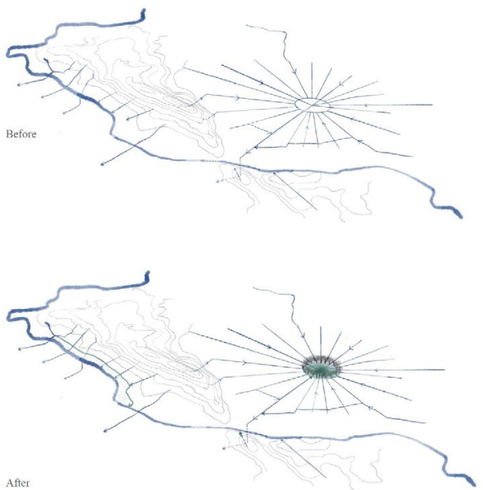
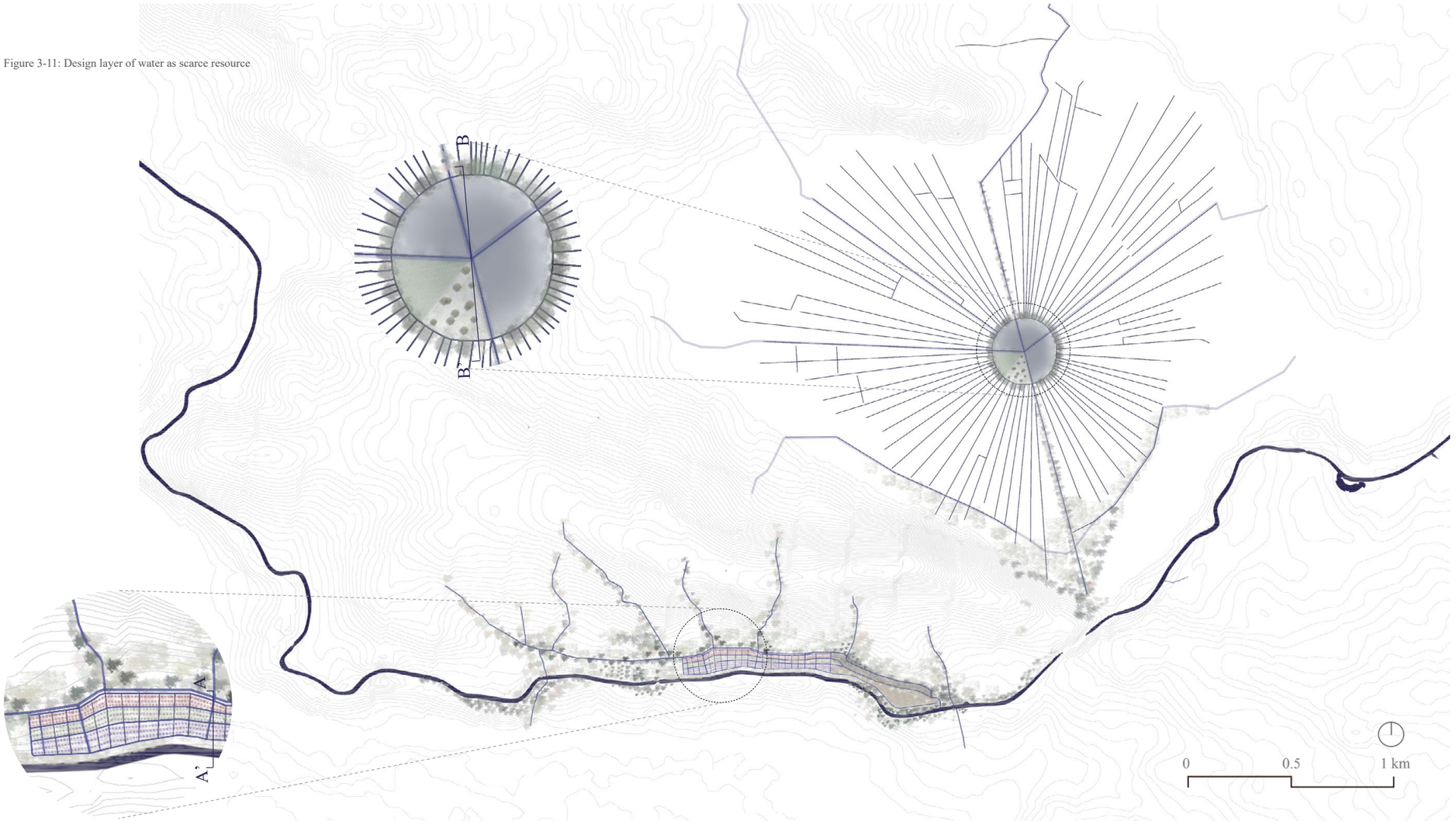


Figure 3-10: Design idea draft drawing

Figure 3-11: Design layer of water as scarce resource



-08- DESIGN INTERVENTION

8.1 WATER AS SACRED RESOURCE

8.1.2 Design

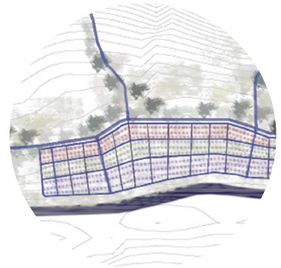
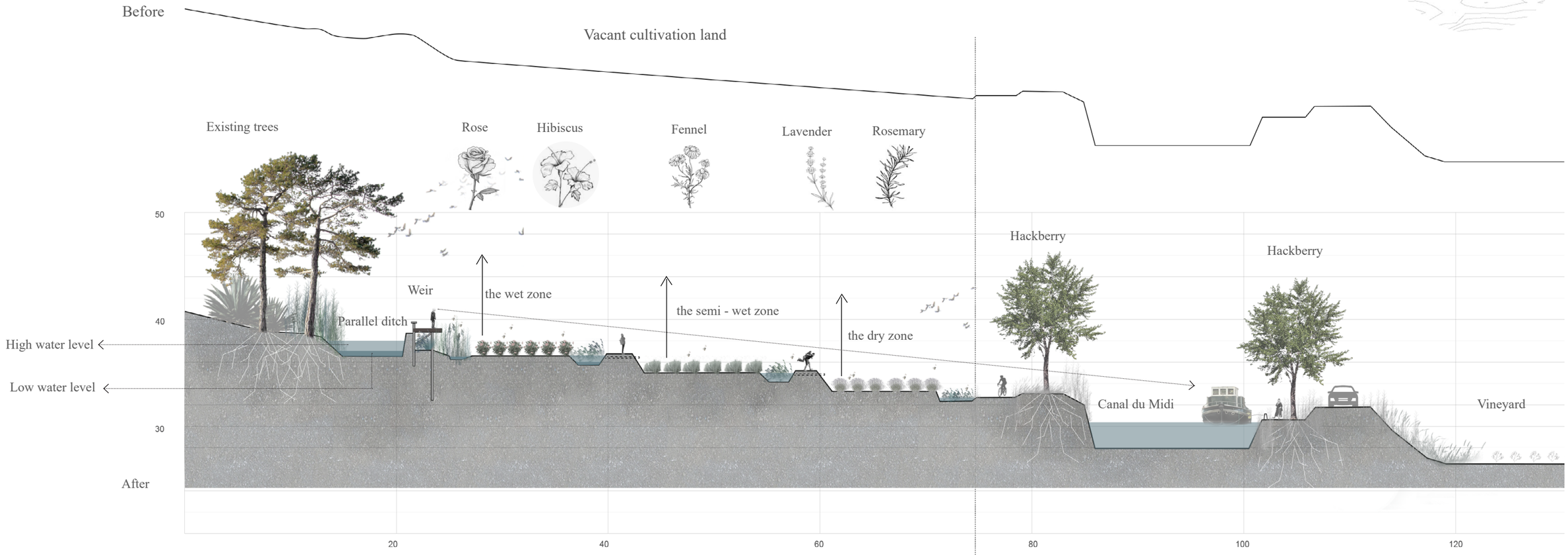


Figure 3-11: The parallel ditch and the productive garden



-08- DESIGN INTERVENTION

8.1 WATER AS SACRED RESOURCE

8.1.2 Design

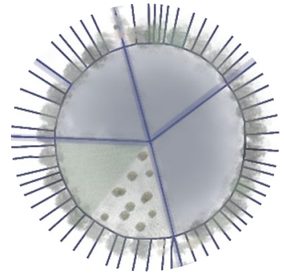
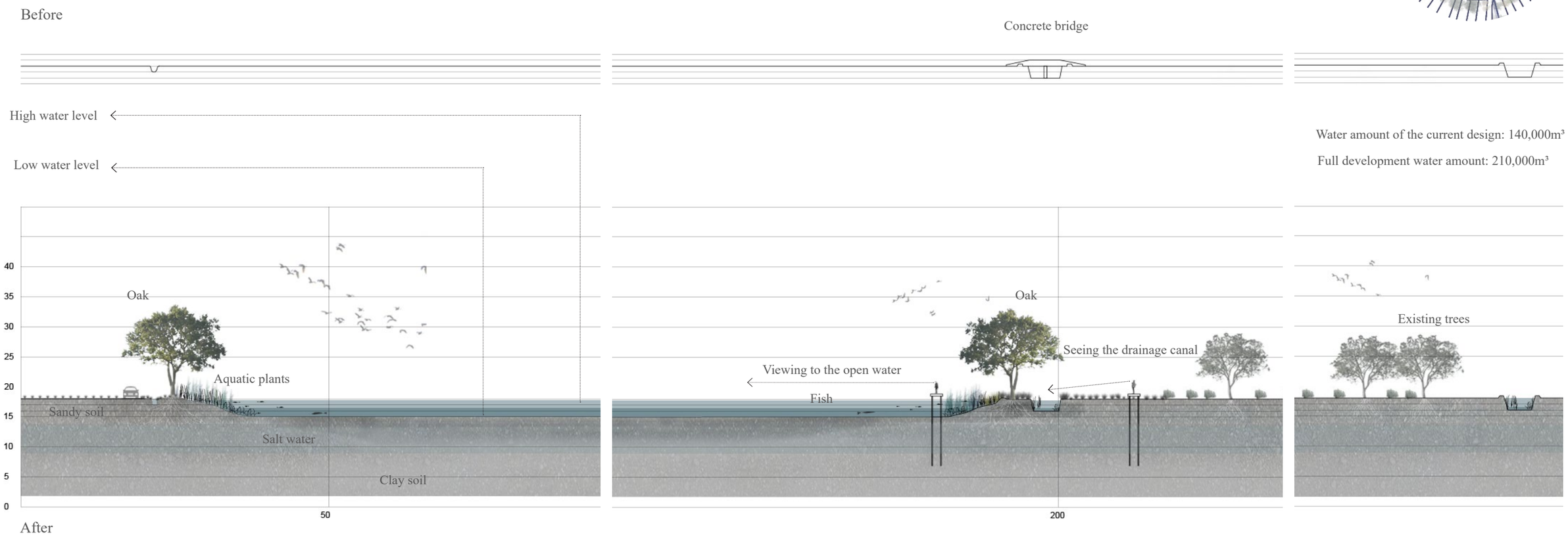


Figure 3-12: The Montady water pond design



-08- AREA OF EFFECT

8.2 WATER AS CULTURE – GENIUS LOCI

8.2.1 Analysis

Genius loci is a Roman concept. According to ancient Roman belief every “independent” being has its genius, its guardian spirit. This spirit gives life to people and places, accompanies them from birth to death, and determines their character or essence. (Norberg-Schulz, 1980) In contemporary usage, Genius loci usually refers to a location’s distinctive atmosphere, or a “spirit of the place” (Wikipedia, 2022).

Perception of the Mediterranean landscape and canal

In the area of effect, there are several spots along with the water bank that is decorated with landscape elements that are strongly reselected to the identity and character of the place, such as the Mediterranean garden, winery, and vineyard, these elements are combined perfectly with the canal, and forms into a pictural space together with the elements of the canal such as water bank tree, inlet, outlet, bridges. The combination of these landscape elements can be perceived as special quality and spatial experience of the place.

In the tale of Oedipus at Colonus by Sophocles, the blind Oedipus is led by his daughter Antigone. When he asks where they are, she replies that where they now stand “… is surely sacred ground, where vines and laurels and olive trees grow wild; a haunt of birds, where nightingales make music in the coverts.” The landscape is understood here as abundance, and the perception of this fullness is multisensory, by means of immersing oneself in it. (Wit, 2018)

As described in the book Hidden Landscapes, how we perceive a place is through sensory perception, which is a multi-sensory experience where visual understanding of space is aided and complemented by auditory, basic-orienting and haptic stimuli (Wit, 2018). In my understanding, this is also the way how people can involve in a place by perceiving the spatial elements such as forms, light, colour, sounds, texture, etc. that are reflected in the identification of the place.

Through the sensory perception, the specific colour and structure of the laundries and lock house, the combination of the canal bridge and Italian cypress tree, the rough texture of the sandy stone and yellow-grey colour of the tunnel surface, the Mediterranean sun and wind, the sound of the flowing canal, the ditches running through the geometric shape of the ancient drainage lake, all can be described and remembered as the identification of the place.

Water

The history of landscape painting illustrates the importance of water as a life-spending element. The “ideal” landscapes of the fifteenth and the sixteenth centuries usually contain a centrally placed river or lake along which man’s settlements are located, and from which the cultivated land extends. Later, water is justly understood and depicted as a local element of primary characterizing importance (Norberg-Schulz, 1980).

The water here is indeed the life-spending element, with the ideal landscape of the canal water along with settlements and agricultural land. The canal is an icon, but the water story is more than this, apart from the canal, in the multiple layer landscape, there is the green canal water crossing the site, there is runoff water from the hill to the plain run into or cross underneath the canal, there is water running in the underground world flowing to the saltmarsh, and there is water penetrated in the soil and evaporated to the air. The visible water and the knowledge and imagination of the invisible water both constitute the genius loci.

Time

Time is not a phenomenon, but the order of phenomenal succession and change. Buildings and settlements, however, are static, apart from certain mobile elements of secondary importance. Nonetheless, man has succeeded in ‘’building’’ time, by translating basic temporal structures into spatial properties (Norberg-Schulz, 1980).

One of the most important characteristics of the canal landscape is that there are diverse historical spatial properties (the waterworks of the canal and the heritage sites nearby) that reflected the different times and contexts of the history.

Figure 3-13: The drawing showing the construction process
Souece: The exhibition photos on the tourism center

-09- DESIGN INTERVENTION

8.2 WATER AS GENIUS LOCI

8.2.1 Analysis

Figure 3-14: Sketch of the laundry and lock house with old bridge and Italian cypress tree

Figure 3-15: Sketch of the Malpas tunnel, made by author

Figure 3-16: Serious vision

-08- AREA OF EFFECT

8.2 WATER AS CULTURE – GENIUS LOCI

8.2.2 Design

The aim of the design concerning ‘water as genius loci’, is expected to create a space or a frame to guild the travellers to find out the special or important moments in traveling through the canal which would be able to:

-Catch the place on the move or in motion (Hvattum, 2016), set up some connectors or places for people to find out, to stay, or to involve in the landscape, then let the landscape to tell its own story;

-Participates in the movement of the process / joining in the process of what is already in place (Lassus, 1998).

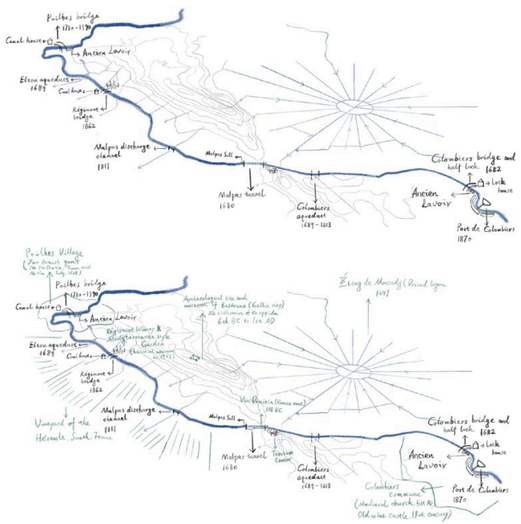
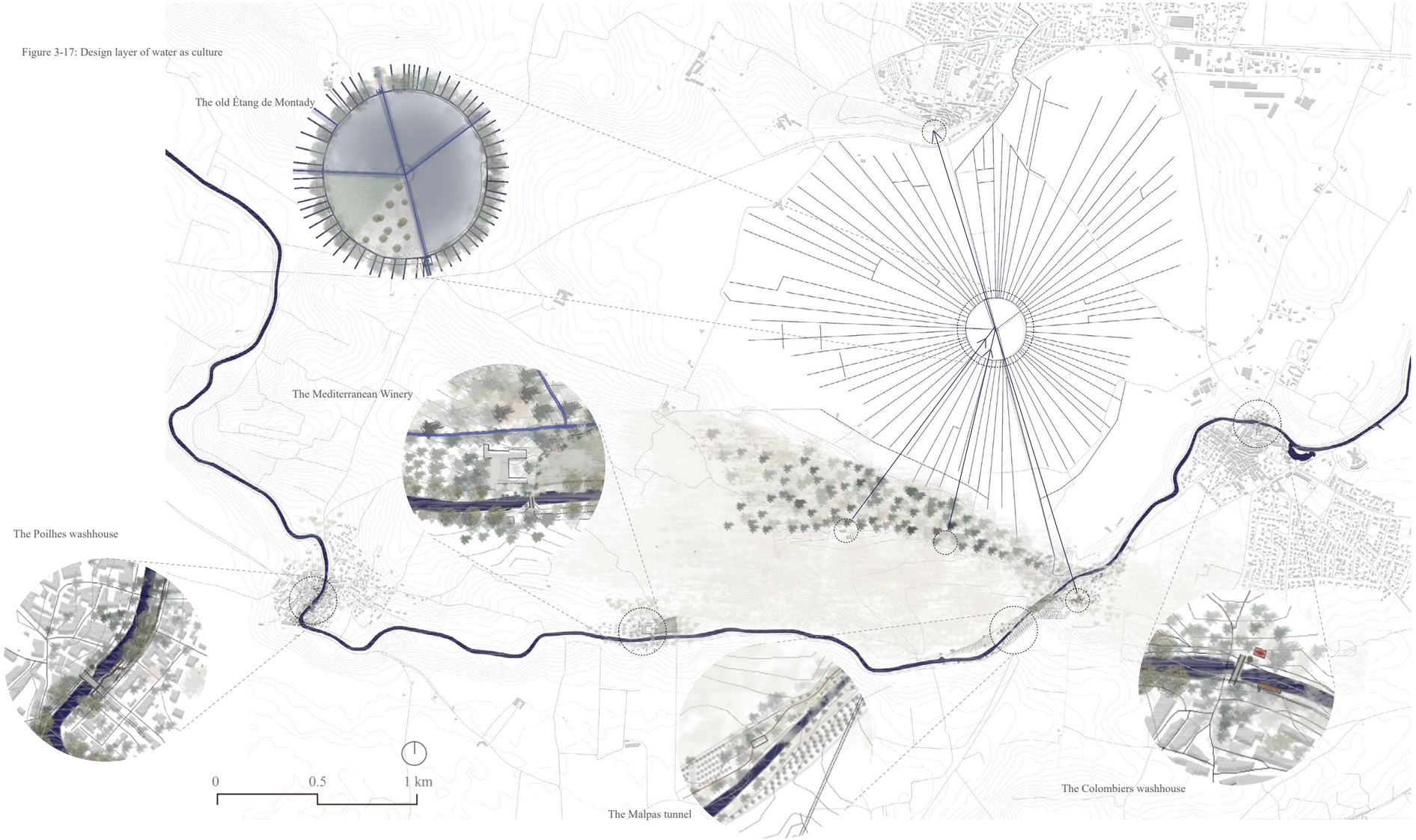


Figure 3-16: Design idea draft drawing

Figure 3-17: Design layer of water as culture



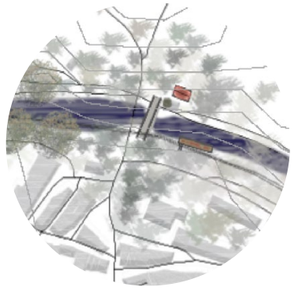
-08- AREA OF EFFECT

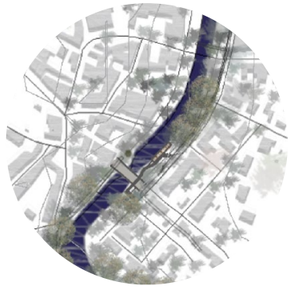
8.2 WATER AS CULTURE – GENIUS LOCI

8.2.2 Design

Before

Figure 3-18: Design of the washhouse area (before and after)





After

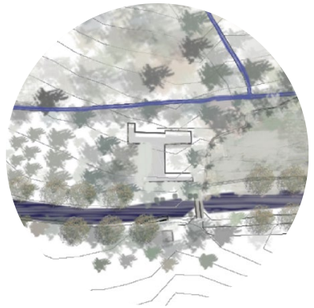
-08- AREA OF EFFECT

8.2 WATER AS CULTURE – GENIUS LOCI

8.2.2 Design

Before

Figure 3-19: Design of the mediterranean winery area (before and after)



After

-08- AREA OF EFFECT

8.2 WATER AS CULTURE – GENIUS LOCI

8.2.2 Design

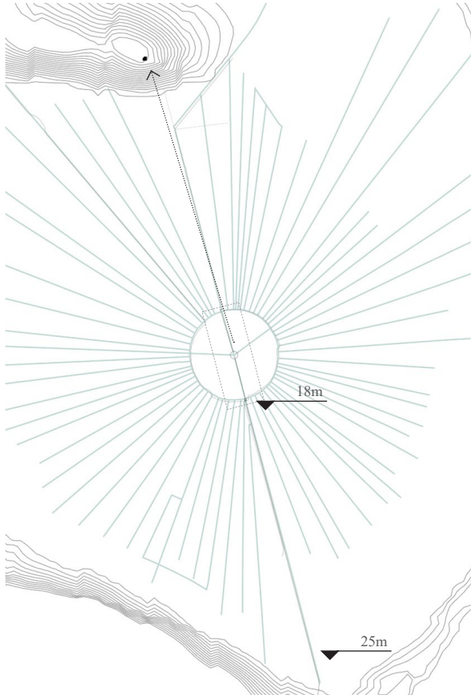


Figure 3-20: The landmark in the North - west

Figure 3-21: Plan

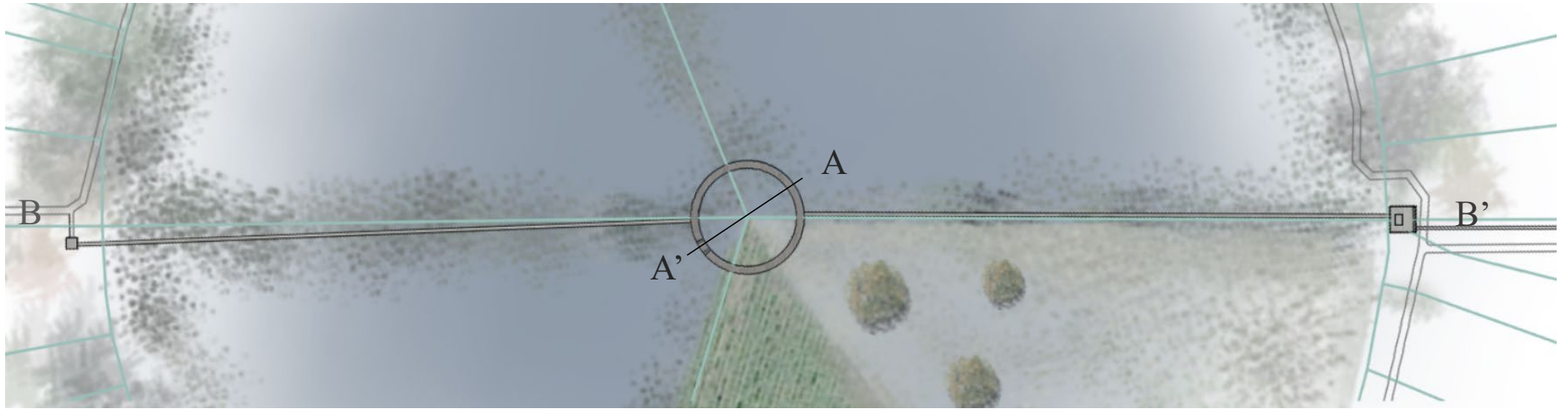
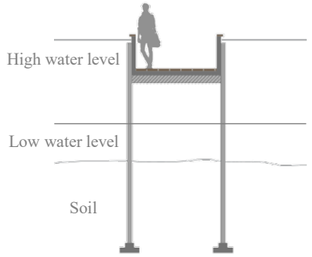


Figure 3-22: Axonometric A - A'

Figure 3-23: In the water



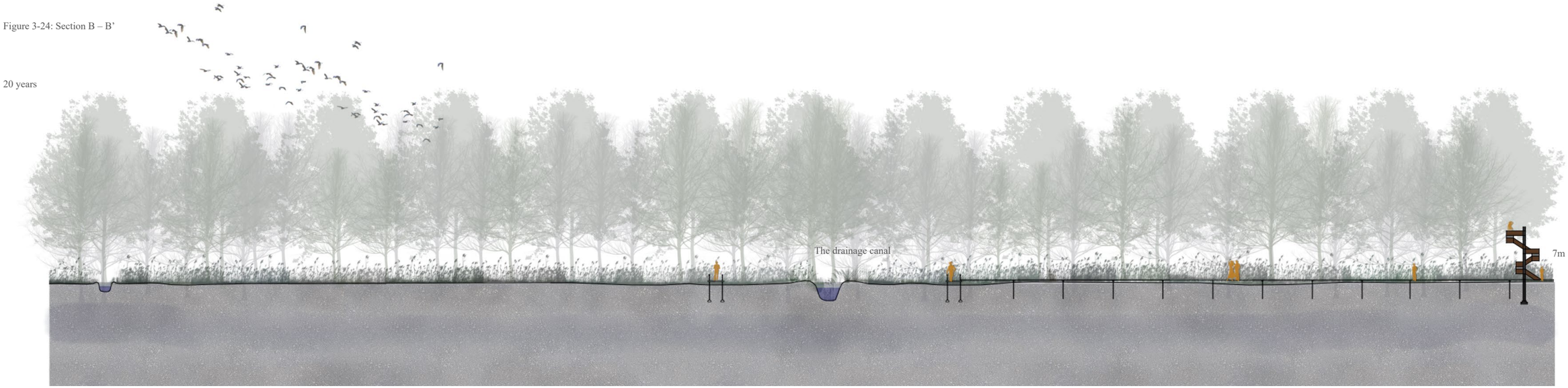
-08- AREA OF EFFECT

8.2 WATER AS CULTURE – GENIUS LOCI

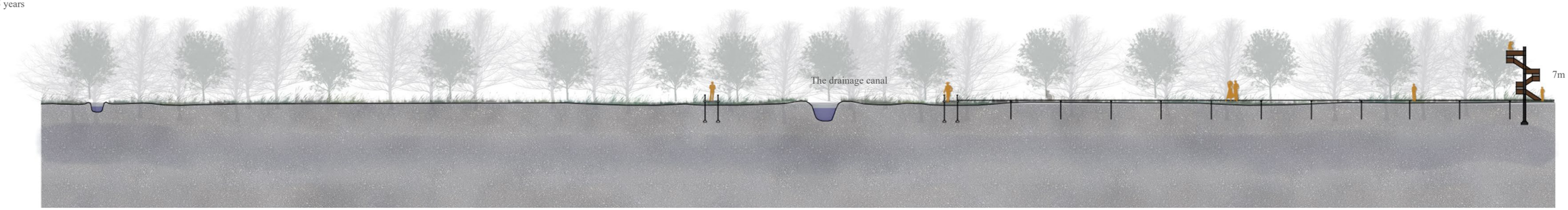
8.2.2 Design

Figure 3-24: Section B – B'

20 years



5 years



-08- AREA OF EFFECT

8.3 WATER AS INFRUSTRCTURE – CONNECTOR

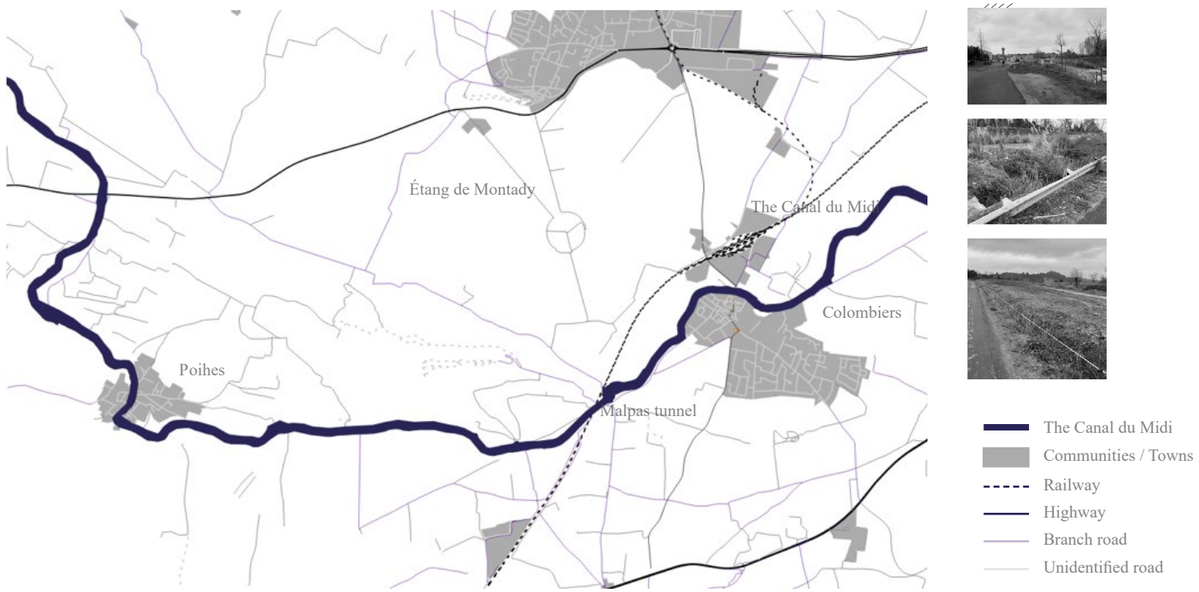
8.3.1 Analysis

In the middle of the routing, there we will see The Malpas tunnel, which will be the culmination of this journey. The Malpas tunnel, is situated between the Roman oppidum Enserune and the medieval villages of Colombiers. An ancient irrigation land Montady lies a flat area of about 425 ha with a radial parceling.

From the hill of Enserune you have a breath-taking view of this wonderful area (Haartsen, 2013).

The Canal du Midi is a long-liner waterway, its fundamental nature is about transportation. It is a passage to transport people and goods and resources from one to another direction through a long continuous journey. In this sense, compared to other forms of water such as lakes or streams, the canal is more like a water-shaped post-road or railway.

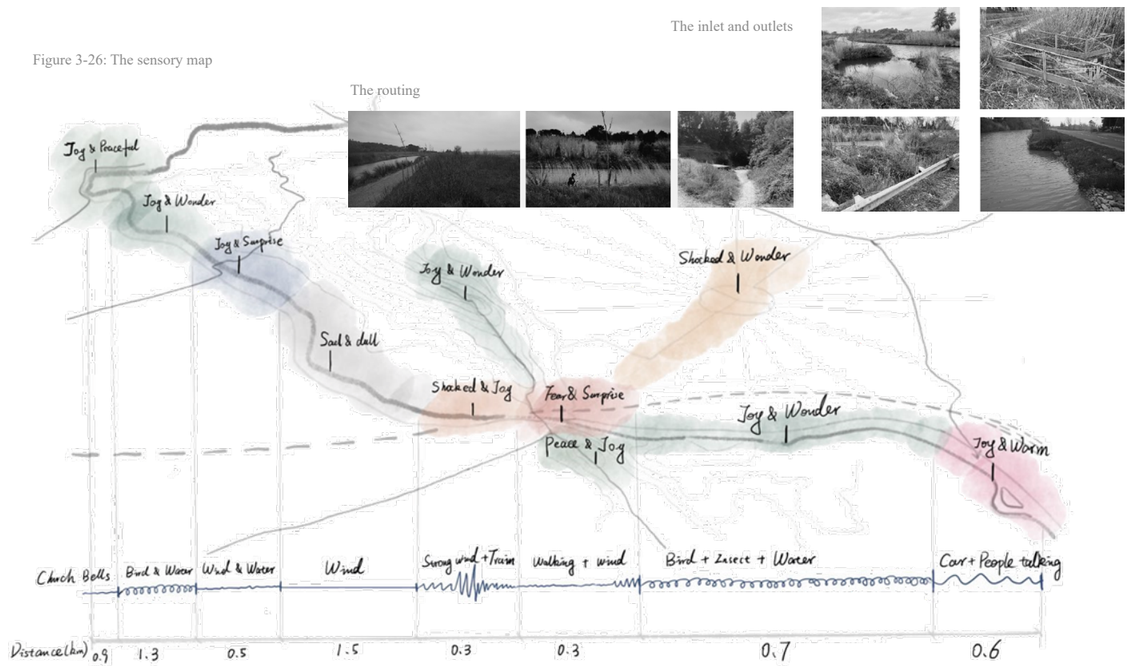
Figure 3-25: The existing transportation



Another similarity of this type of long passage is that it always creates many connections and exchange with the surroundings in order to allow the passengers to rest or do business or recreation. In this specific site, the canal water crossing through two medieval towns, both of the towns have clear canal imprints, the port, the restaurants, the inns, the lock houses, the laundries, even the street names (a canal bank street name of the Colombiers is Allée des Lavandières, means alley of the washerwomen).

In the middle of the two towns, decorated by a large amount of vineyard and agricultural land, the Malpas tunnel, the Ensérune hill, and the Étang de Montady mark the gathering of important heritages which suddenly extended the network of the canal, providing a large space for the visitors to roam through and to explore. The heritage and the routing provide the environment for exploring the tangible and intangible meaning of the landscape through a continuous routing of sensory experience.

Figure 3-26: The sensory map



-08- AREA OF EFFECT

8.3 WATER AS INFRUSTRCTURE – CONNECTOR

8.3.2 Design

The aim of the design in water as connector, is expected to consider the different way of traveling through the area, to create suitable paths for passages which would be able to:
-Increase the accessibility of the area;
-Translate the sensorial experience to a continues routing that promote the traveling experience of different types of passages;
-Involve the local communities and create a green way.

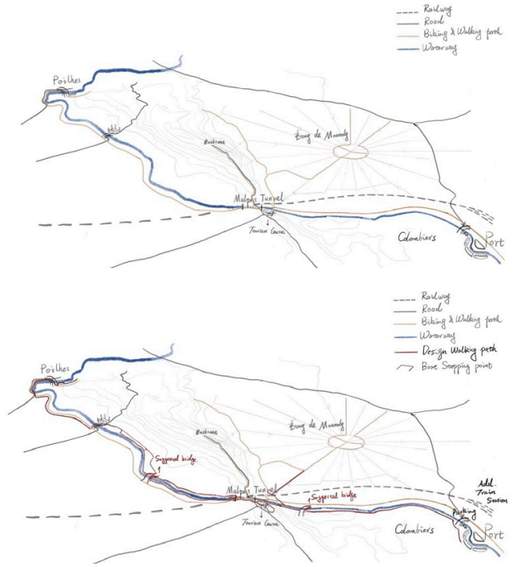
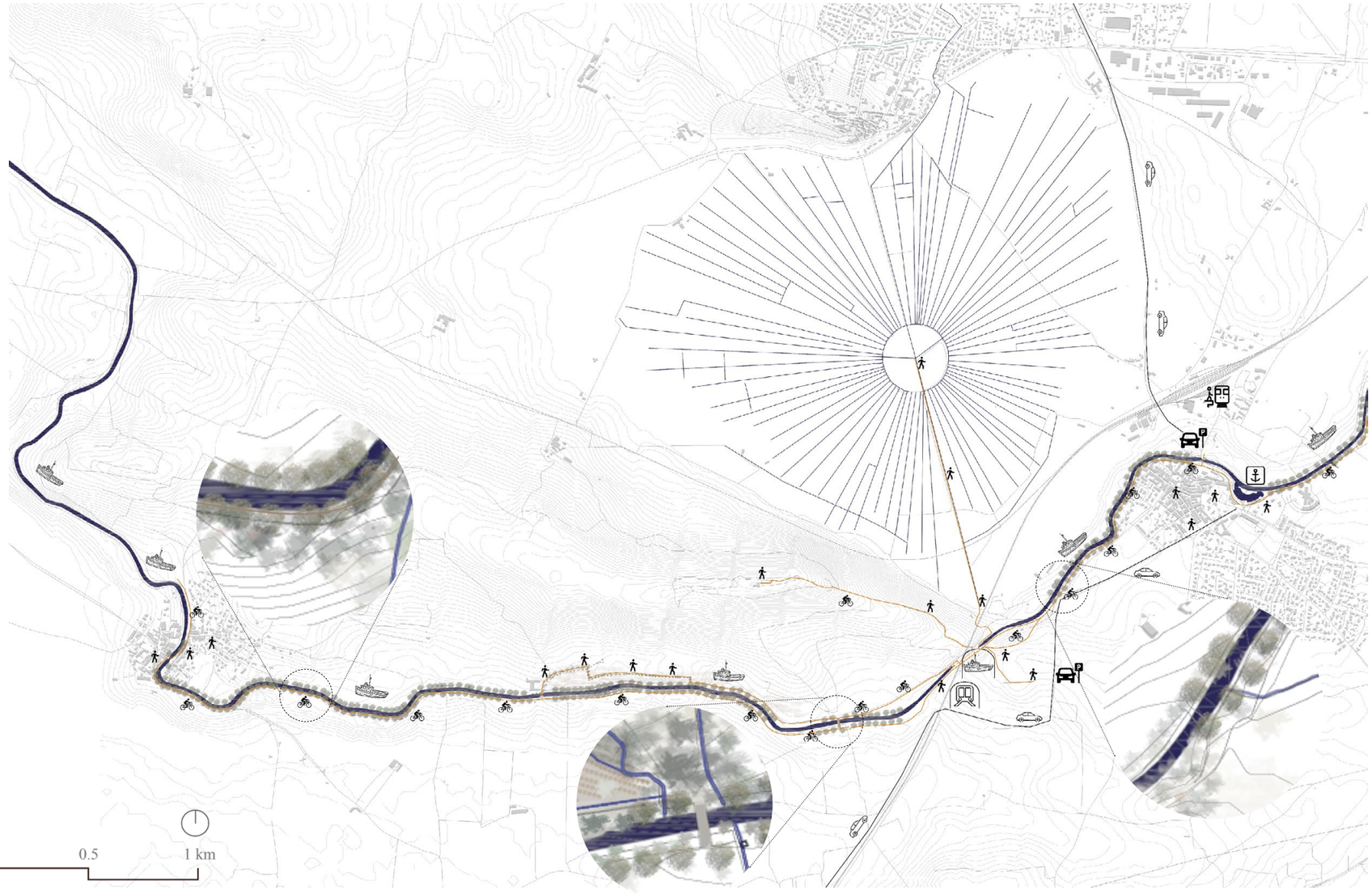


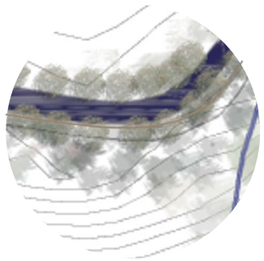
Figure 3-27: Design idea draft drawing



-08- AREA OF EFFECT

8.3 WATER AS INFRUSTRCTURE – CONNECTOR

8.3.2 Design



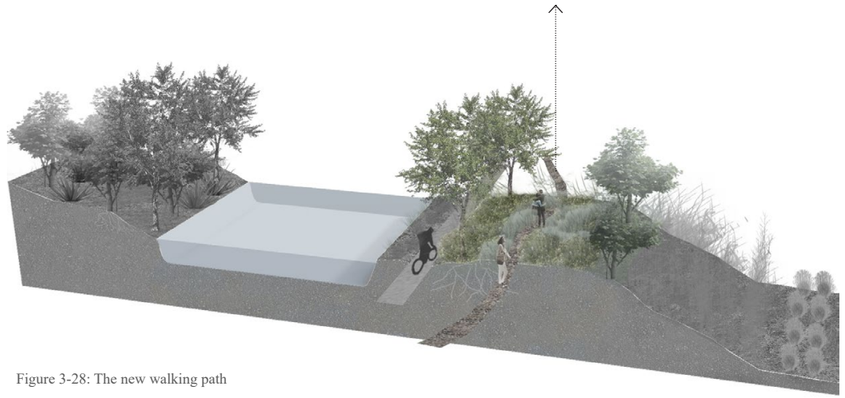
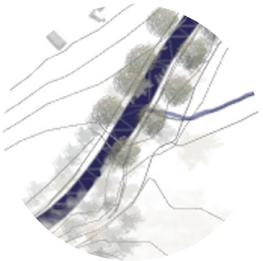


Figure 3-28: The new walking path



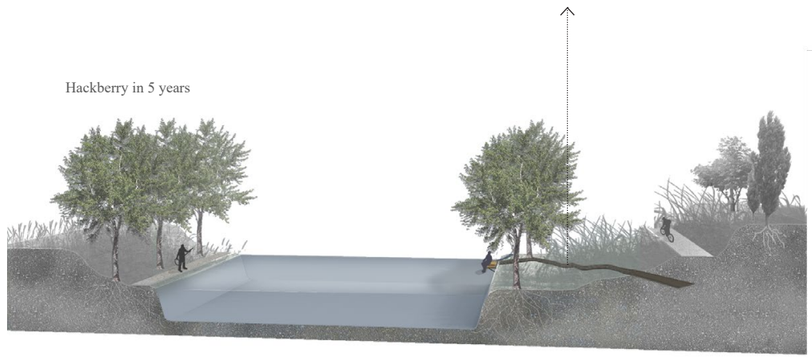
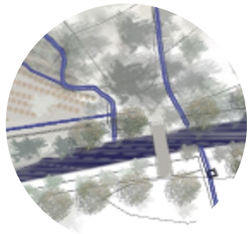


Figure 3-29: The new path and viewing plateform



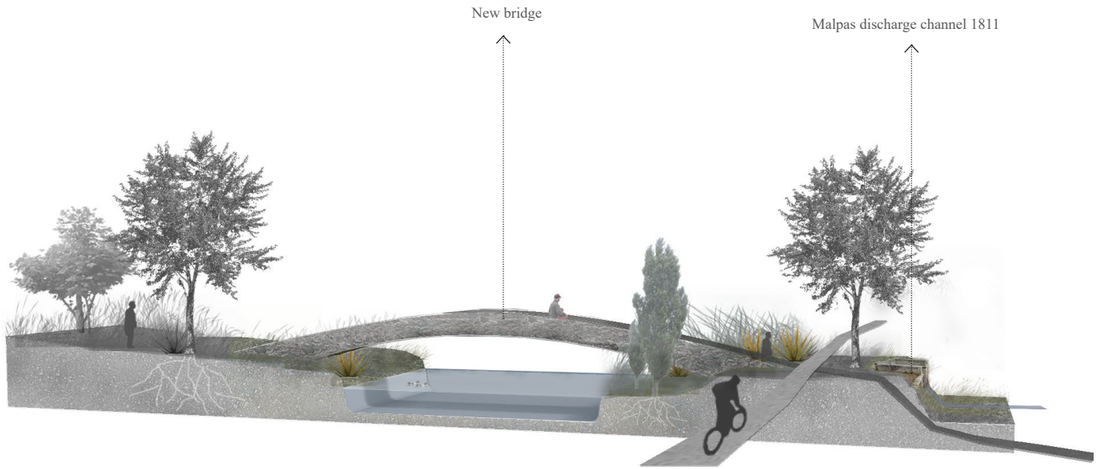


Figure 3-30: The new bridge

-08- AREA OF EFFECT

8.4 MASTERPLAN

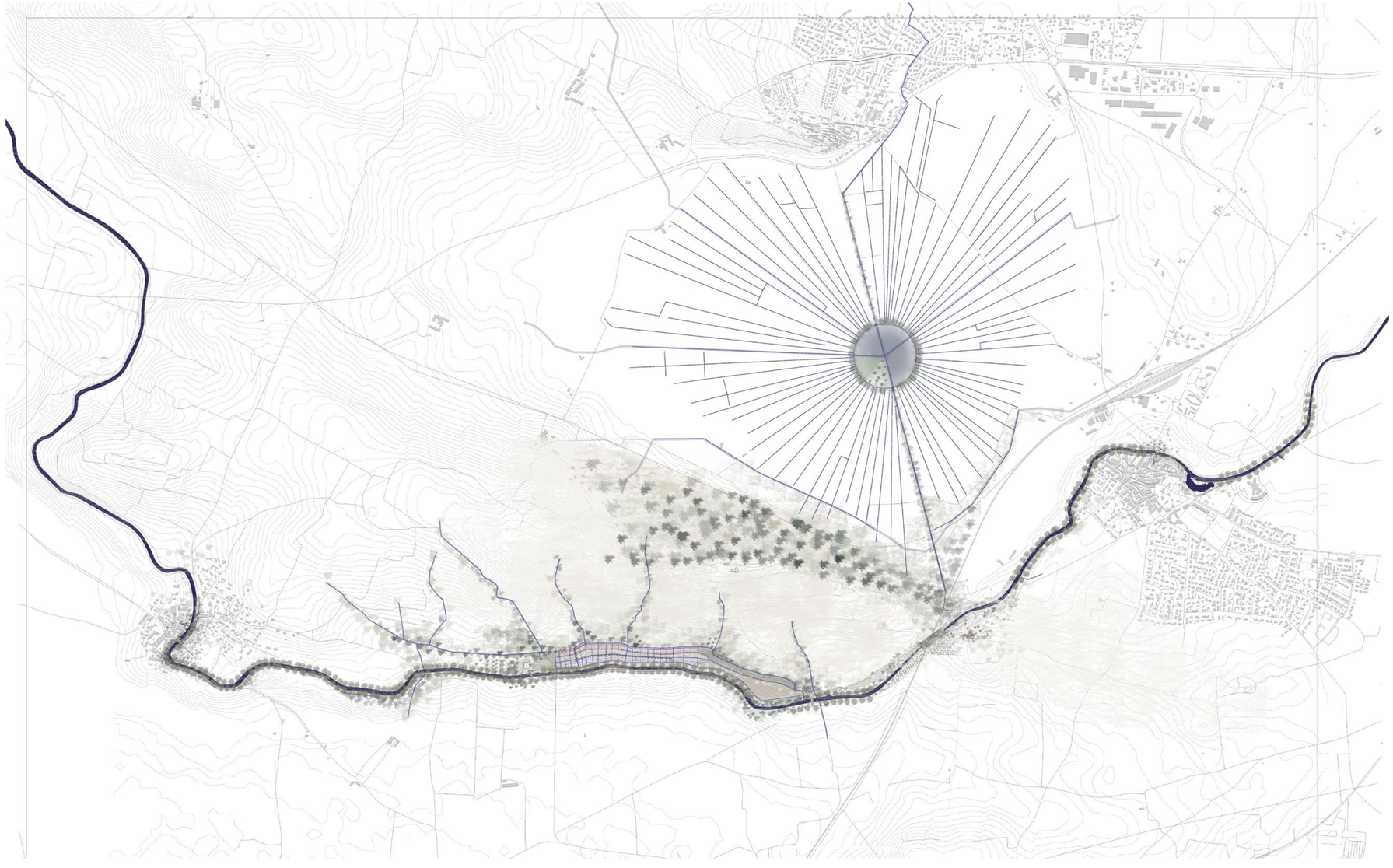


Figure 3-31: The masterplan

0 0.5 1 km

-09- AREA OF CONTROL

The area of control is a further zoom-in of the central portion of the area of effect where the canal meets most other heritage properties. This is the part that attracts tourists the most (the Malpas tunnel in the centre, surrounded by the other two heritage sites: the Étang de Montady, the Site et musée d'enserune), but it is also the part described in the interview: very complex and difficult to understand. Again, these three domains provide a framework to aid in reading complex landscapes.

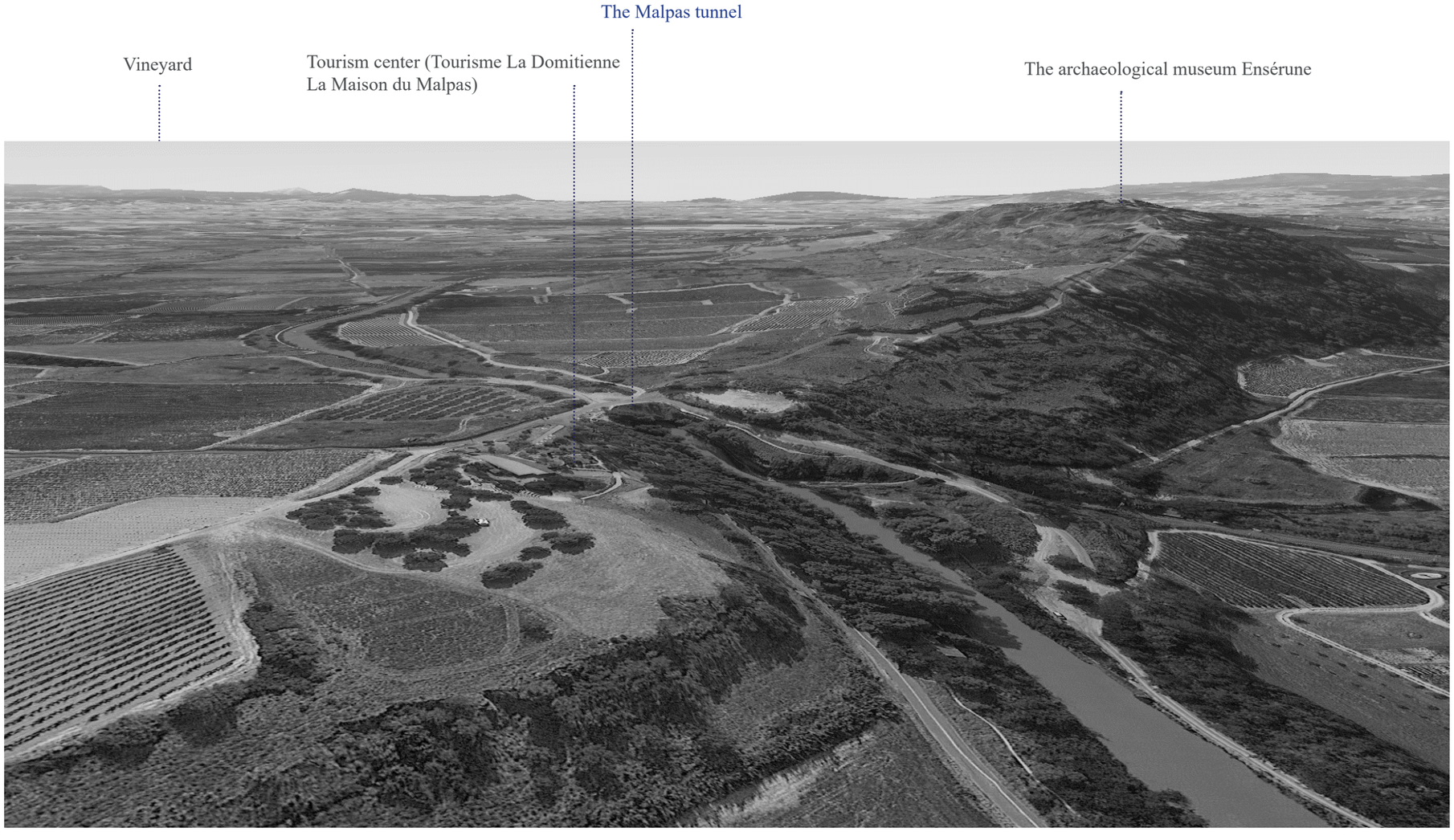


Figure 3-32: A birdeye view of the site
Source: Google earth

-09- AREA OF CONTROL

9.1 WATER AS INFRUSTRCTURE – ROUTING

9.1.1 Analysis

In this scale, it would be possible to carefully analyse the moving trace of people. The routing system combined the path and the nodes connected by the path. The system in this area is chaos with problematic five fork roads, unclear guides, and a mixed hierarchy for cars and pedestrians. Especially the development of roads and the design of the tourism centre are built in a way more against the value of the heritage. For example, the road directly crosses the tunnel and leaves a rough parking site just on top of the tunnel which breaks the heritage into different pieces. The tourism centre is designed in a way that is difficult to discover its existence from the road passed by the tunnel, with only very fundamental functions and without any architectural elements that fit in the spirit of the space.

Figure 3-33: The existing routing system

But, apart from the unclear streamline of the routing, walking through the canal bank and seeing the tunnel is a special experience. It is sometimes a peaceful secret path, where people can enjoy the natural landscape and birds singing, encounter some surprising small animals and wild asparagus, and be surrounded by wild grasses and shrubs. If the tourists manage to find out the right path to walk through the tunnel, it is a very interesting multi-level space that creates diverse choices for exploring it.

Figure 3-34: The problematic routing;

Satelite map source: https://www.youtube.com/watch?v=bmhXAg-3y08

-09- AREA OF CONTROL

9.1 WATER AS INFRUSTRCTURE – ROUTING

9.1.2 Design

The minimal intervention is to bring other tangible dimensions to what is already there (Lassus, 1998). The routing design, in my perspective, is a way of the minimal intervention that not directly transforms the landscape itself but finds out a nice composition for viewing the landscape that is already there by creating frames, viewing and rest nodes, guiding the visitors to discover the landscape from different angles and perspectives, and connecting the frames by the path.

The aim of the design in water as routing, is expected to create a clear path for passengers by revealing the story of the place which would be able to:

-Reorganize and sort out the chaotic road network in this place, aiming at different modes of transportation (walking, cycling, driving, boating), so that different types of passengers, tourists, including locals living nearby can find suitable routes;

-The path needs to ensure the integrity of the heritage itself, while providing attractive routings for viewing and walking into the Malpas tunnel and other surrounding heritages, while providing a certain degree of freedom for visitors to explore the multi-layered space of the place;

-Create a sequence of routes that combine different sensory experiences, revealing and concealing the space narrative.

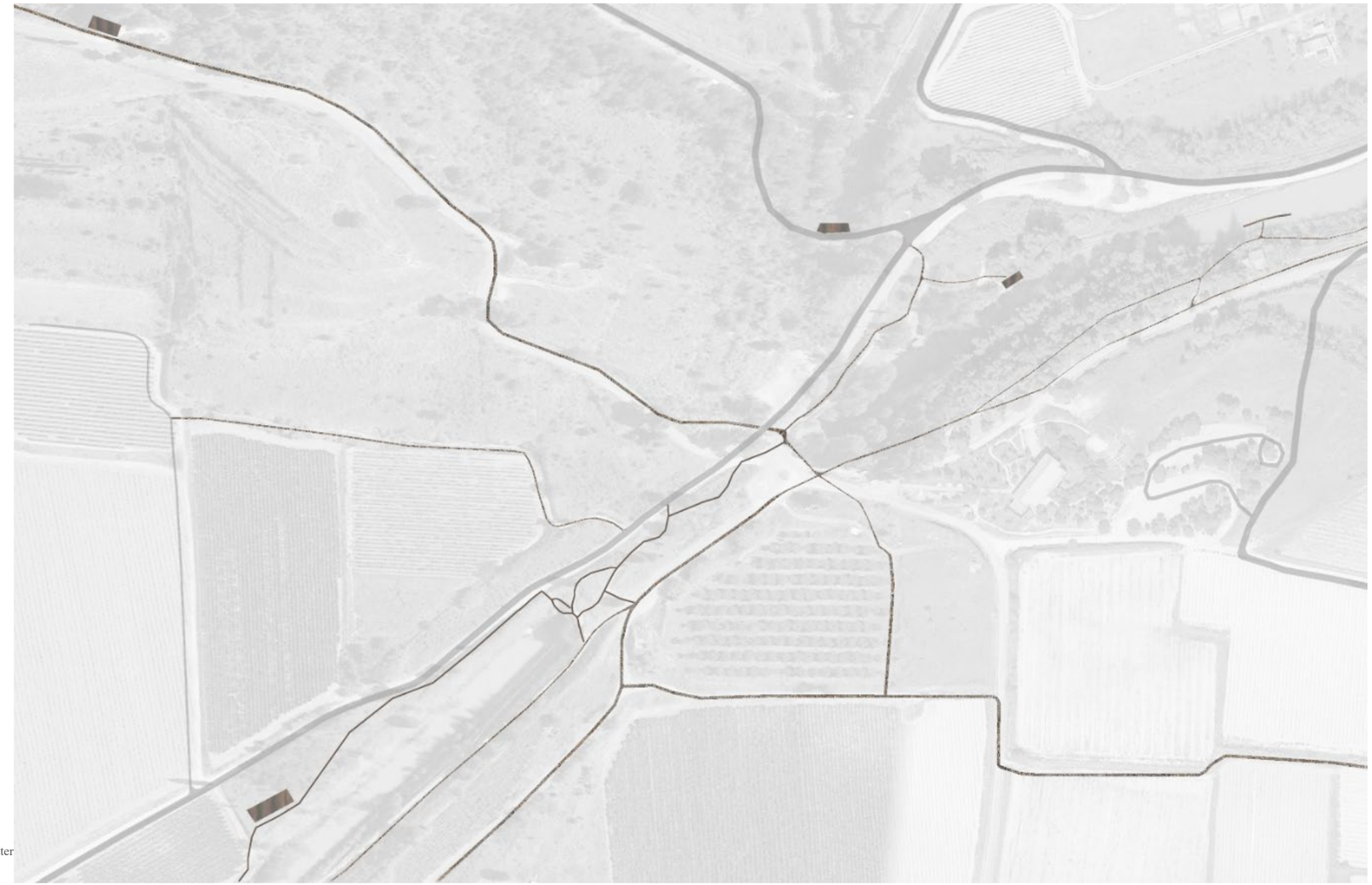


Figure 3-35: Design layer of water as routing

-09- AREA OF CONTROL

9.2 WATER AS CULTURE - THE FORM

9.2.1 Analysis

In the area of effect, the understanding of the genius loci has covered the region, but on this scale, it is a more intense and dramatic experience. The form is the portal for landscape experience.(Layer analysis, 2021) Such experienced can be explained through the form also known as the landscape grammar – the basic form, the spatial form, the image form, and the programme form (Steenbergen & Reh, 2003).

Basic form - series of linear axis united by geomorphology (The tunnel in the middle becomes a focal point, and the surrounding axes converge towards the centre from different directions. The most obvious axis is the skyline outlined by the raised hills on the northwest and southeast sides of the tunnel that are readable as two merged hills);

Spatial form - Routing flows around undulation, the contrast of undulating hills with the low-lying canal in the middle, strong multi-axial viewing system reacts to form, dynamic/puzzle space, and dramatic/gathering compositions;

Image form - Narrative structure, a wild place with secret underground water tunnels, the landscape imagery elements are: underground water world (water tunnels), slopes, hills, grids of the vineyard, inner garden and amphitheatre in the tourism centre, Mediterranean plantation (Oliver tree and rosemary), limestone and sandstone;

Programme form - Connection of navigation, tourism, wine industry, agricultural, the tourist centre provides a space for consultation, education, and rest.

Figure 3-36: The geomorphology- The Montady pond and its surroundings in 1774. Source: Extract from the Map of the Royal Canal of the Province of Languedoc, Carrière Pierre (1980)

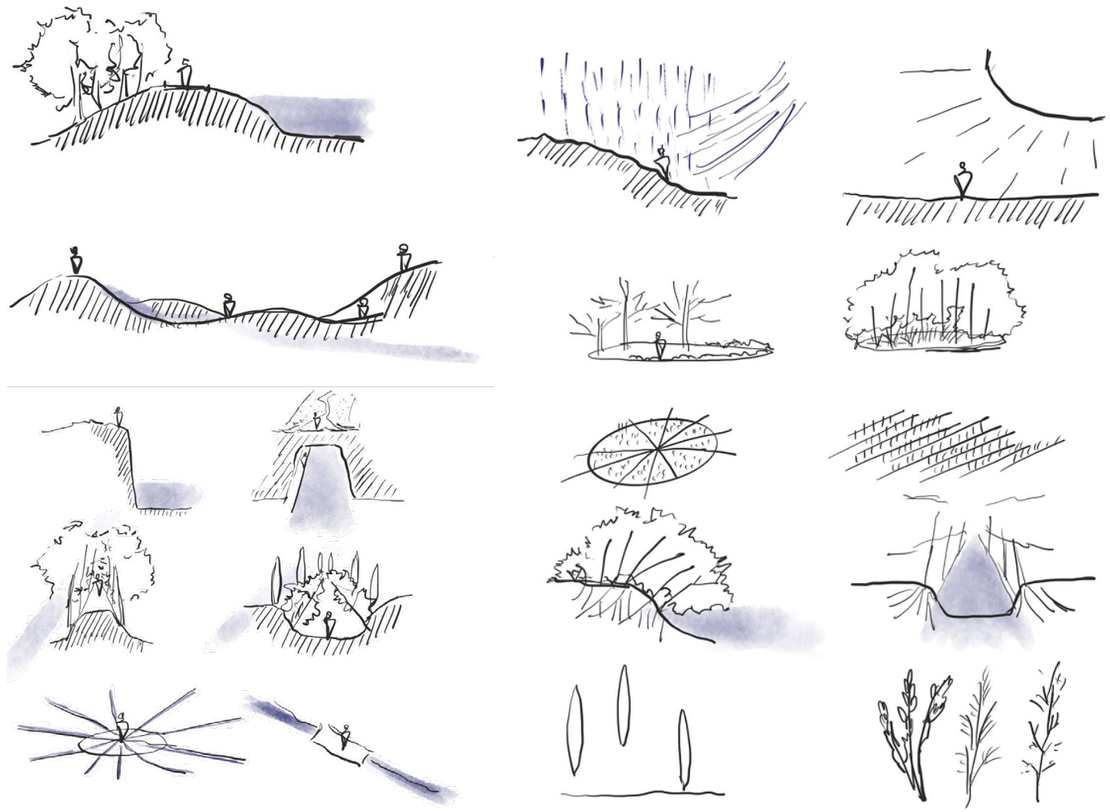


Figure 3-37: Sketchs of the spatial forms of the site

-09- AREA OF CONTROL

9.2 WATER AS CULTURE - THE FORM

9.2.2 Design

The aim of the design in water as landscape grammar is expected to reveal the form of the landscape which would be able to:

-Strengthen the spatial axis, improve the flattened skyline on the southeast side to be closer to the spatial texture of the historical canal construction period, and deepen the undulating walking experience in this area by a groundwork;

-Redesign the tourism centre and the garden based on the site condition and reflect the landscape narrative as a metaphor.

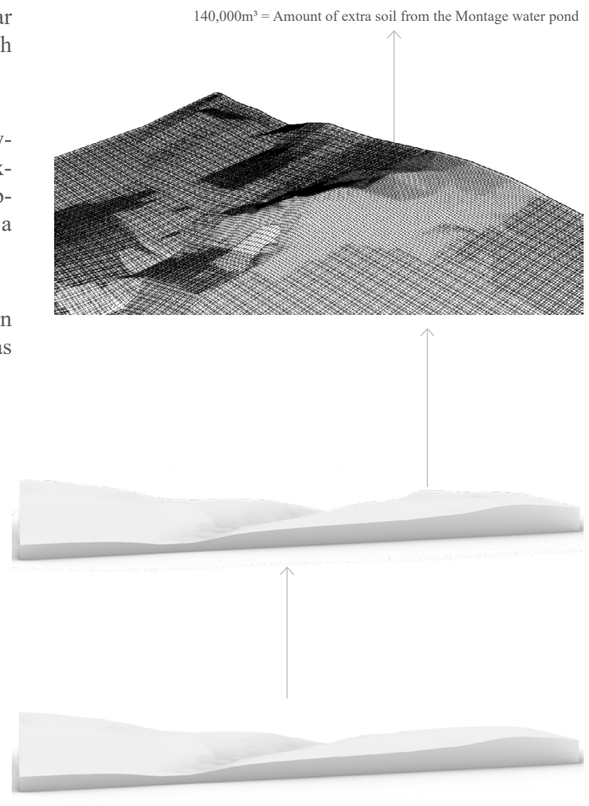


Figure 3-38: The groundwork, reflect the historical topography

Figure 3-39: Design layer plus water as the from

-09- AREA OF CONTROL

9.3 WATER AS NATURE – THE SOURCE OF LIFE

9.3.1 Analysis

In the zoom in perspective, it would be able to see that the water is not only the waterways and watercourses but also represented the living life: the livelihood of the local residents, the demands of the tourists, the growth of the agriculture, flora & fauna, all rely on water. The water is invisible sometimes, but it is actually everywhere as the basic element of life.

Then the design question would be, how to use water to further support the healthy living system in the area and reveals the existing and power of water in the design.

9.3.2 Design

The aim of the design in water as the source of life is expected to create a circular water system in the new designed tourism centre and garden area which would be able to:

Harvesting rainwater to create a self-circulating, self-sufficient, self-purified garden water system;

Use the water circulation system to create a garden water feature, and create more space for flora and fauna, in a way that visitors can perceive the existence and meaning of water.

9.4 MASTERPLAN

Figure 3-40: Masterplan

-09- AREA OF CONTROL

9.3 WATER AS NATURE – THE SOURCE OF LIFE

9.3.2 Design

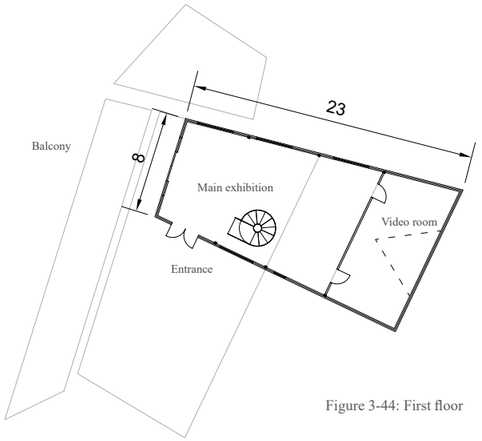


Figure 3-44: First floor

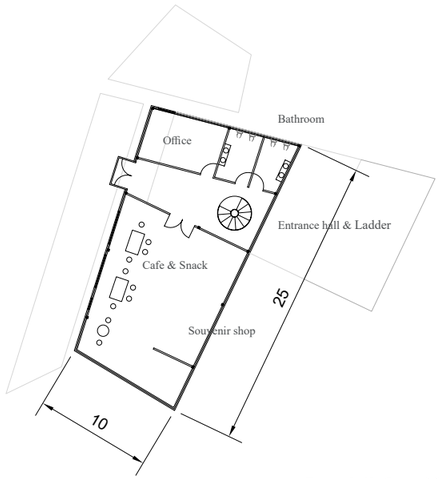


Figure 3-43: Ground floor

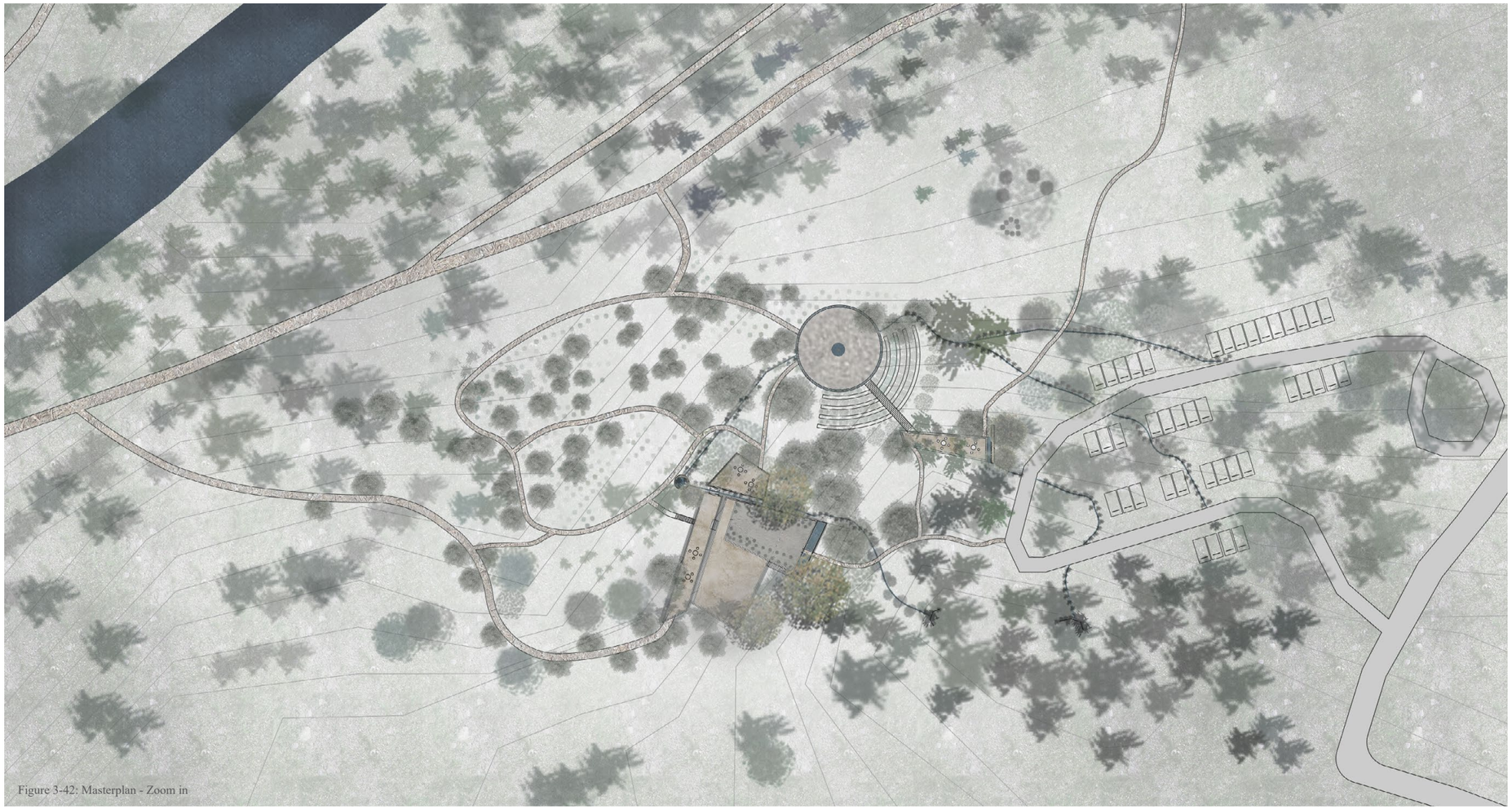


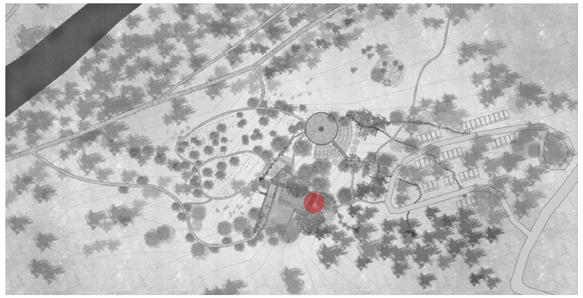
Figure 3-42: Masterplan - Zoom in

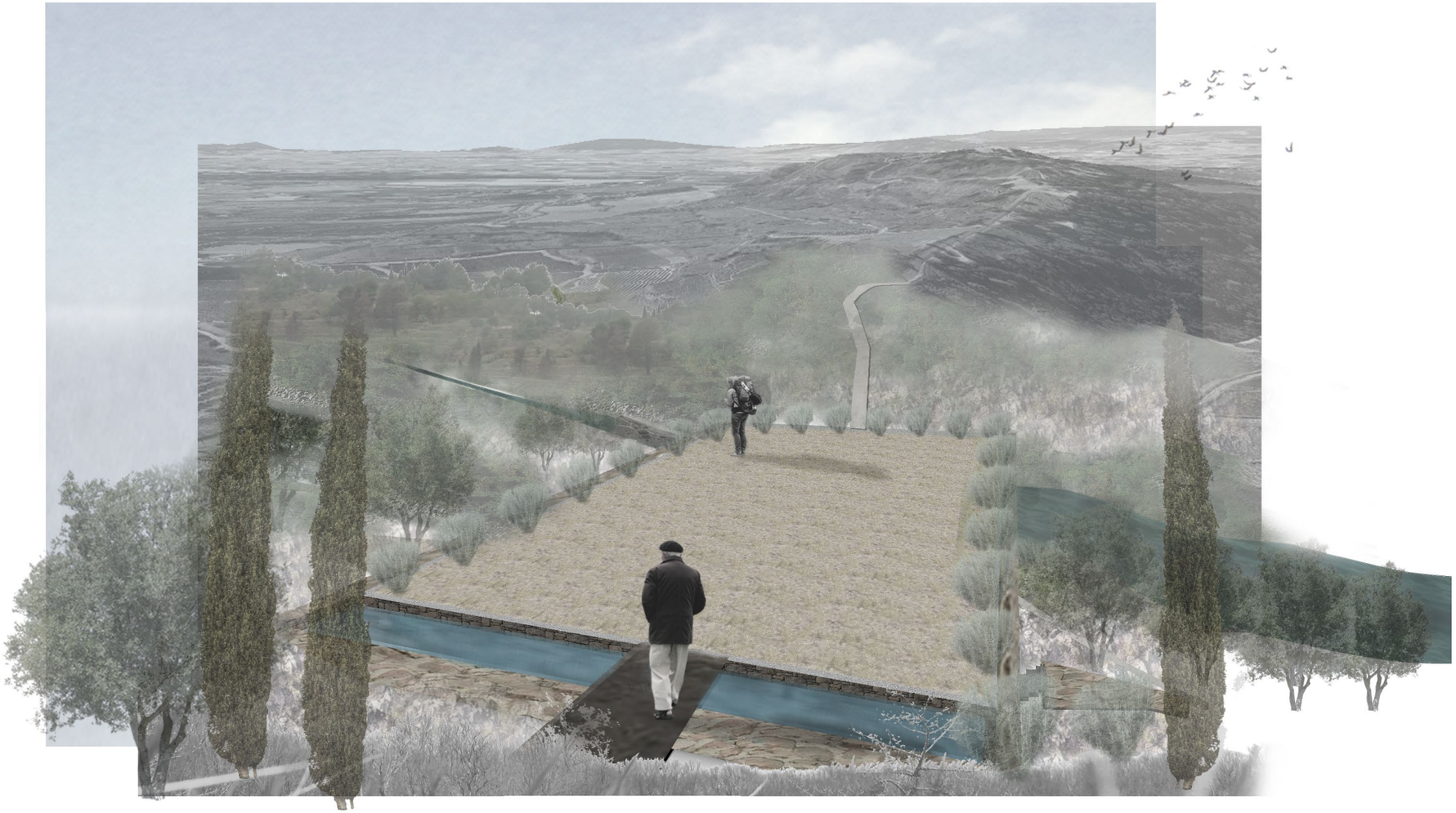
-09- AREA OF CONTROL

9.4 SERIAL PERSPECTIVES

-09- AREA OF CONTROL

9.4 SERIAL PERSPECTIVES





CHAPTER VI

REGIONAL REGENERATION STRATEGY

In the area of influence, the analysis of the three narratives and the research result of the area of effect and area of control provided a foundation to general a regional regeneration strategy for preserving and improving the water heritage and the surrounding territory & communities.

One section of the history map of the Canal du Midi
Source: https://www.davidrumsey.com/rumsey/download.pl?image=/00100/5694015.sid
Author: Cassini, Cesar-François (1714-1784)

-10- REGENERATION STRATEGY OF THE THREE NARRATIVES

10.1 WATER AS CULTURE

10.1.1 The core canal scenic area

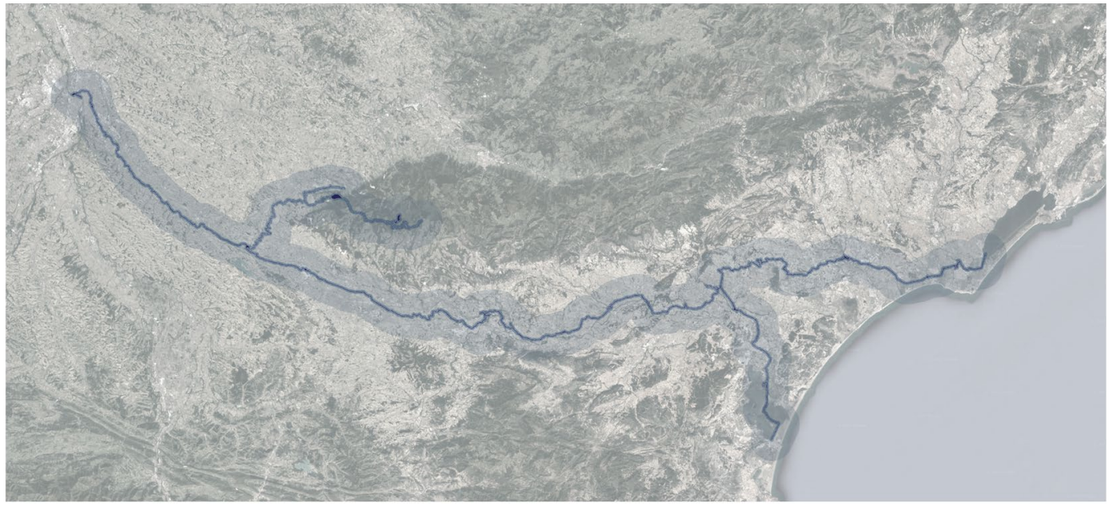
Based on the research in area of effect and area of control, the core radiation area is a range with a radius of 300 meters from the centre of the scenic spot. Within this range, tourists usually spend less than half day visiting the scenic spot and its surrounding areas. Thus, it is most important in this area to preserve the status of the canal itself, develop the tourism service, the routing experience design and the presentation of landscape narrative;

It is important that the smaller waterworks in the belt, are usually the constructions that obey certain criteria that reflect to the canal story itself. For example, the lock houses are all in the same colour and program design, the laundry rooms all reflect the women laborers' story, and the combination of lock, canal bridge, and service facilities all reflect the trading demand of the time. Thus, even though these are not the most attractive tourist spots, it is the essential part of the canal story which carries the DNA of the canal which repeats from different sections and forms the whole canal. Thus, the design of this level can consider some similar design interventions to highlight the canal identity, for example, the design of the laundry house in the area of effect can be considered to apply to other laundry houses.

10.1.2 The canal scenic belt

The canal scenic belt is a range with a radius of 4000 meters of the canal. To this radius, the tourists can be reached within a day and usually spend one to two days or more as the staying time. Thus, it is most important in this area to involve the surrounding communities and other heritages or attractions to develop an overall tourism experience, including highly accessible itinerary and road design, experience of local life and culture, and service facilities such as accommodation, catering, entertainment and education, etc.

Furthermore, the development of service facilities within the belt is recommended to increase the consideration for tourists who cross the entire or most of the canal by boat or bicycle. In addition, special consideration should be given to some professionals who have an archaeological interest in the canal itself, as well as outdoor enthusiasts such as hiking, camping, bird watching, etc.



-10- REGENERATION STRATEGY OF THE THREE NARRATIVES

10.1 WATER AS CULTURE

10.1.3 The cultural & attractions involve area

This area is a supplement of the canal scenic belt, including the important historical cities with its own tourism attaction, and existing tourism places nearby the canal.

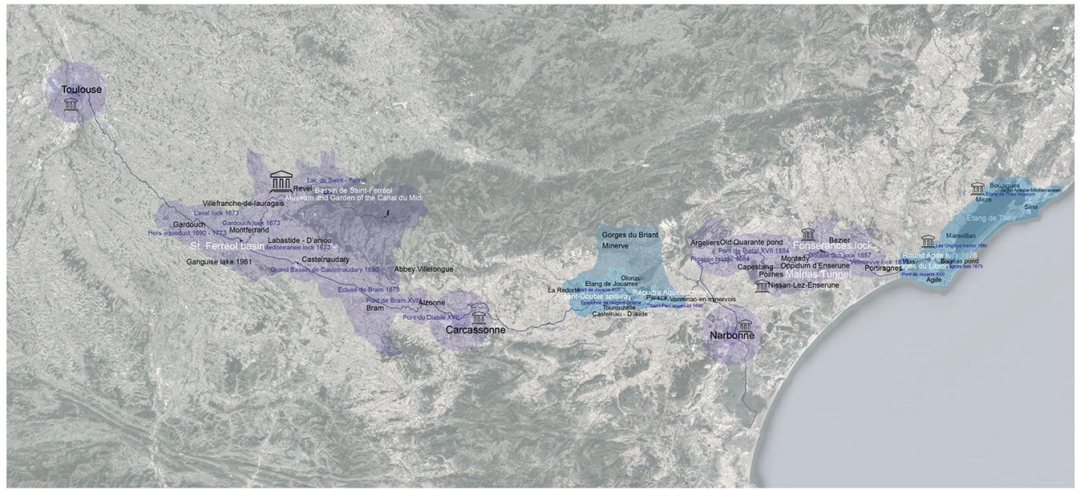
Recommended to pay extra attantion to the the Montagnes Noires from the St.Ferreol basin to Carcassonne. Since this area itself is the starting point of the canal, the relationship between the water source and the mountain should be considered in the design as a whole with narrative integrity. At the same time, the region is rich in mountain tourism resources, including a large number of mountain B&Bs, camping sites and cultural attractions such as Abbey Villelongue, which has the potential to form a whole with the canal tourism resources and become a cultural tourism area that can allow tourists to stay for more than a day.

Also, there is potential to combine the Argent-Double Spillway and the Repudre Aqueductway to the Montagnes Noires. In this area, there is an tourist attraction with an annual tourist volume of 60,000-400,000 including Gorges du Briant, Minerve, Gorges du Briant, which is much more popular than the canal tourism in this section. At the same time, this section is also the part where the canal is interrupted and not close to any major cities, with the highest degree of neglect and poverty in the surrounding communities. Some important canal facilities such as the Argent-Double spillway and the Répudre Aqueductway are also in this section. Therefore, it is suggested to take advantage of the tourist attraction of the northern mountainous area to drive the development of canal tourism and surrounding communities, focus on improving the accessibility and tourism service.

10.1.4 The cultural display & educational node (museums)

The cultural display & educational node is a development proposal based on the fact that the canal itself is long and narrow and its span is too large. Since the canal spans different territories and natural environments, there are obviously different canal stories in different parts. For example, near St Ferréol basins and the Montagnes Noires it is a story about the source and diversion of the canal, in Toulouse it is a story about the canal and the city, near Béziers and the Malpas tunnel it's the story of how the canal cuts through hilly areas and vineyards, at Narbonne is the story of a branch meets historical city and the costal natural reserve, and at the most east of the canal is the story of how the canal eventually converges into the sea.

At present, the only museum directly related to the canal is the Museum and Garden of the Canal du Midi near Bassin de Saint-Ferréol, which is a small museum with simple functions, mainly displaying some engineering and background knowledge of the construction of the canal itself. I think that the function of this museum is far from enough to carry the display of the history of the entire canal and its close relationship with the surrounding area, and the accessibility is also very poor. Therefore, it is recommended to use this museum as the main museum for the overall canal introduction. While improving the service scope and level of the museum itself, it is recommended to set up sub-museums at several other nodes with independent canal stories. For example, in the design of the area of control, the former tourist service center was transformed into a small museum with tourist service functions that tells the story of the canal tunnel.



-10- REGENERATION STRATEGY OF THE THREE NARRATIVES

10.2 WATER AS NATURE

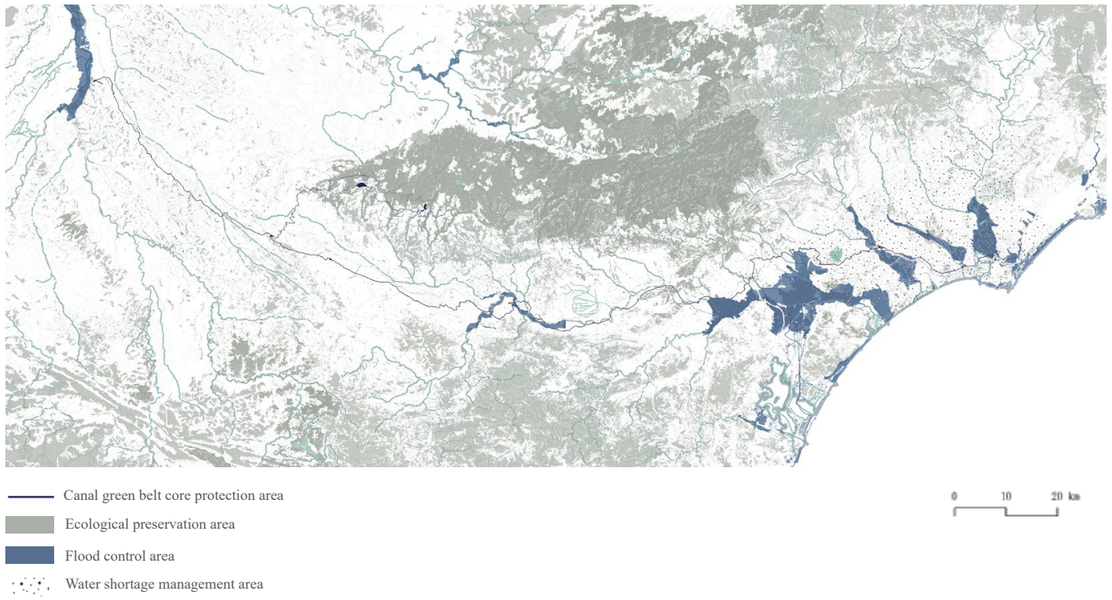
10.2.1 The ecological sensitive area

The ecological sensitive area is an area are mainly ecological protection areas that need to be considered in the design, including three aspects. One is all the ecological patches in the long and narrow plain area that the canal traverses, such as forests, nature reserves, wetlands, lagoons, etc. Second, it is recommended to include the entire canal-related water catchment area on the north of the canal into the scope of ecological protection. This proposal is mainly based on the fact that most of this area is related to the water source of the canal or the upstream area of the river that meets the canal with water exchange. The ecological protection of this area can improve the overall ecological environment of the canal from the source and system; the third is the canal green belt core protection area that radiates 50 meters from the canal to both sides. The 50-meter range is set because of this is the minimum width of an ecological corridor. In this protection zone, it is necessary to focus on the reconstruction of the greenway along the canal after the diseased plane trees are felled. Combine, increase of plant diversity, and integrate with the design of the pedestrian as discussed in the area of effect.

In the entire ecological sensitive area, issues such as regional green-blue corridors, species distribution and biodiversity, and environmental pressures brought about by climate change can be studied and designed.

10.2.2 The water risk management area

The water risk management area includes the flooding risk areas and the water shortage risk areas. In the area, it is recommended to pay extra attention to considering the climate change impact in the coming 80 years. Additionally, the flooding and water shortage problems should not be considered separately. Based on the exploration of the water design in the area of effect, it is proved that the flooding and the arid problem could happen in the same or nearby areas which highly impacted by the climate condition and seasonal change. It is important to consider the time aspect, such as how to save the water from raining season for the dry season.



-10- REGENERATION STRATEGY OF THE THREE NARRATIVES

10.3 WATER AS INFRUSTRCTURE

10.3.1 The agricultural guide area

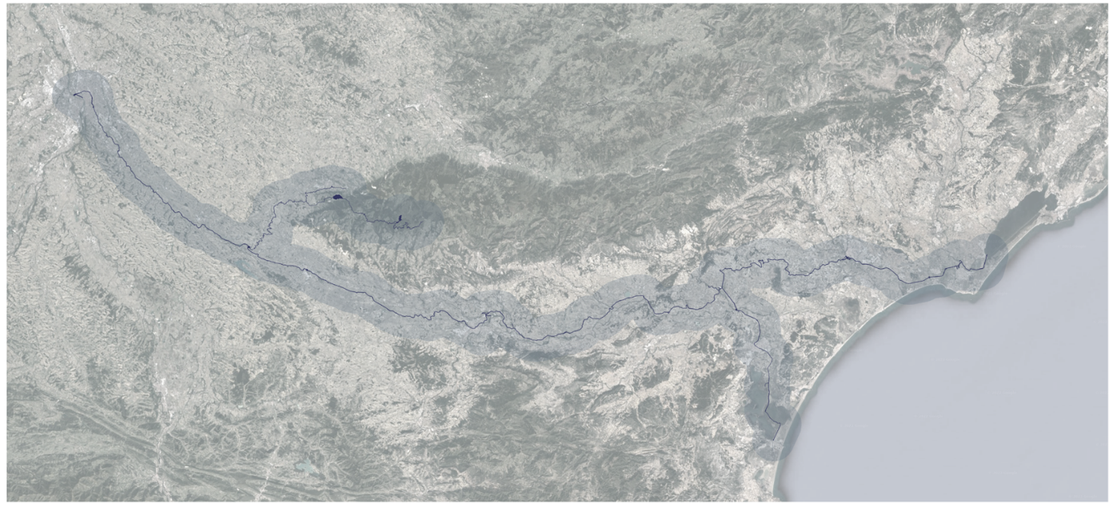
The agricultural guide area is the same area of the The canal scenic belt (4000m radiating). Based on the exploration of the area of effect, in this area recommend to take into account the experiment of new & mixed agricultural methods, reusing some of the vacant or low production farm land, try to integrate with the canal tourism, develop agricultural tourism to increase income. If it is possible, also recommend considering the overall future solution for the agricultural development in the area of influence for the coming 80 years based on predictable climate change scenarios.

10.3.2 The economic stimulation & community involvement guide

The economic stimulation & community involvement area area is the same area of the The canal scenic belt (4000m radiating). From the perspective of economic and social development, it is recommended to carry out comprehensive research work on the distribution of towns and communities, population structure, economic structure, industrial proportion, tourism economic contribution value, infrastructure construction, land use type statistics, etc. within this range, and combine it with tourism development plans. Further discussion on the role that canal tourism can bring to the development of the local design economy.

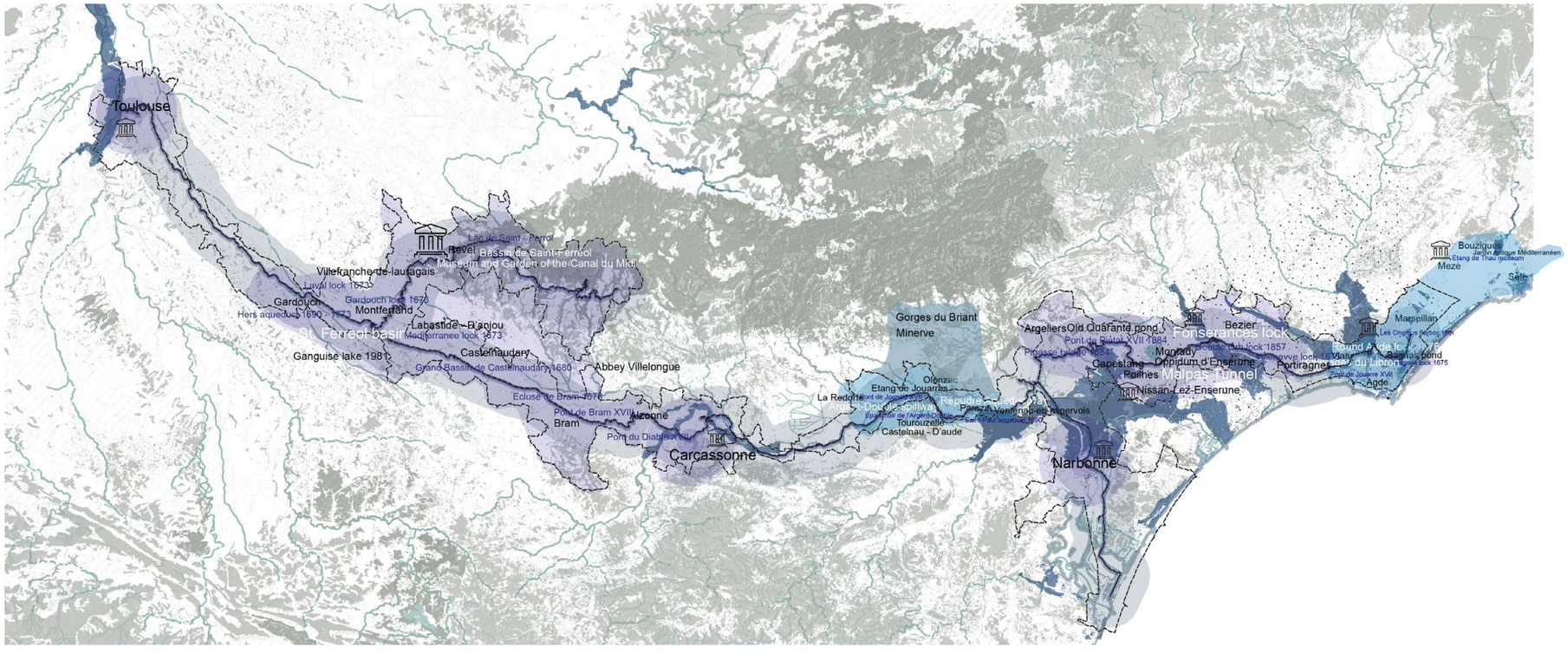
10.3.3 The accessibility improvement guide

The accessibility improvement area is the same area of the The canal scenic belt (4000m radiating). It is recommended to conduct an overall analysis of the transportation modes in this range from the perspective of regional accessibility. Based on the research of area of effect, mainly consider the relationship between the distribution of regional transportation infrastructure (train, motorway, etc.) and the canal tourism, slow traffic and characteristic tourist routes design, the sustainable development of water transportation.



-11- APPLICATION PROPOSAL

11.1 MASTERPLAN



The core canal scenic area
The canal scenic belt / comprehensive development area
Tourism core cluster
Tourism cluster
Existing & proposed museums
Canal green belt core protection area
Ecological preservation area
Flood control area
Water shortage management area
The current buffer zone

0 10 20 km

11.2 PHASING

In the phased implementation, (1) the first focus can start with the improvement of one or two tourist core areas and the related infrastructure support within the core canal scenic area. Driven by the core areas, the overall popularity and attractiveness of the canal will be enhanced, and the brand and international influence of the canal tourism will be built. At the same time, for some of the typical area with serious water shortage or eco degradation area, the ecological preservation and water risk management strategies should also be applied. This stage will be about 10 years; (2) On this basis, the overall cultural & attractions involve area will be further designed to ensure that the canal and the surrounding areas form a mutually reinforcing virtuous development cycle, forming a sustainable development structure with four pillars of economy, society, ecology, and culture which take into account of possible impact of climate change. This stage is probably in the next 10 to 30 years; (3) In the later stage, further consideration can be given to the impact other uncontrollable regional factors in the next 30 to 80 years.

11.3 PARTICIPATION

Limited by time and field investigation opportunities, this thesis cannot propose a detailed design for the participation method. However, as the necessary process of the implemented and an important support for the driving strategy of surrounding communities, the author hopes that participation will be an important aspect of planning and design, and relevant departments will conduct special research, while considering the use of new media, cultural activities, interaction and interactive design and other methods to expand engagement groups and influence.

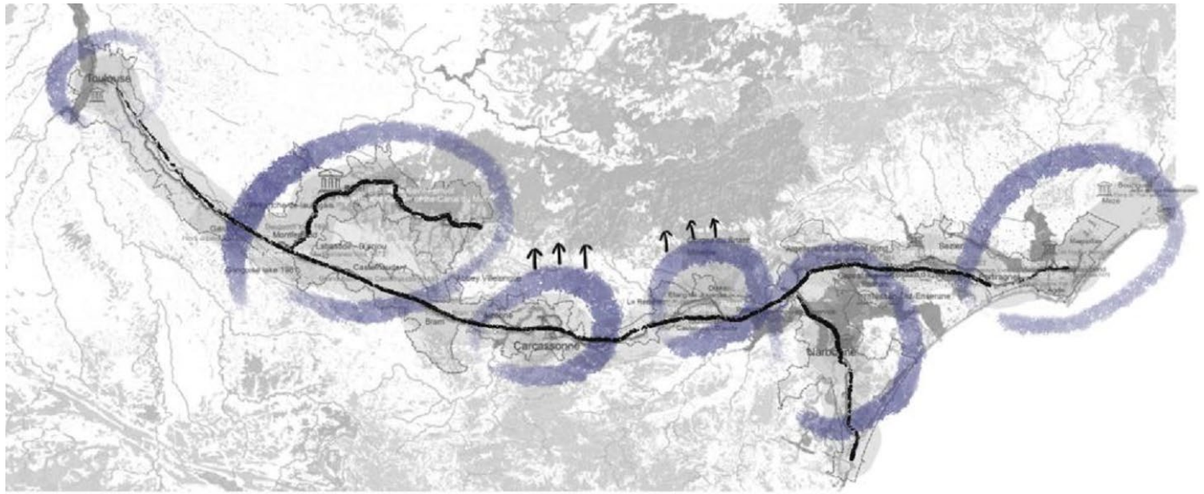
CHAPTER V

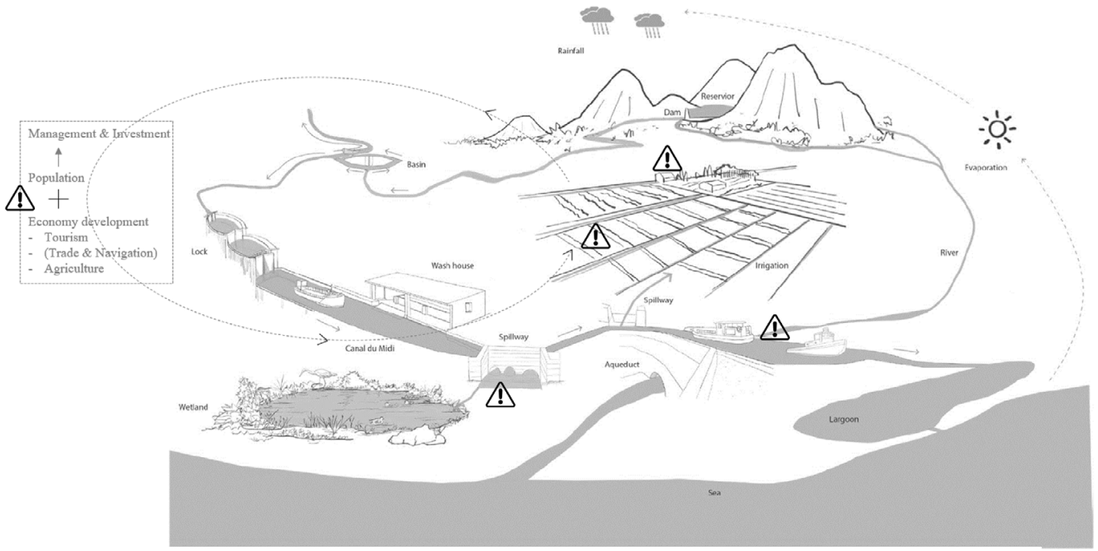
ENDING

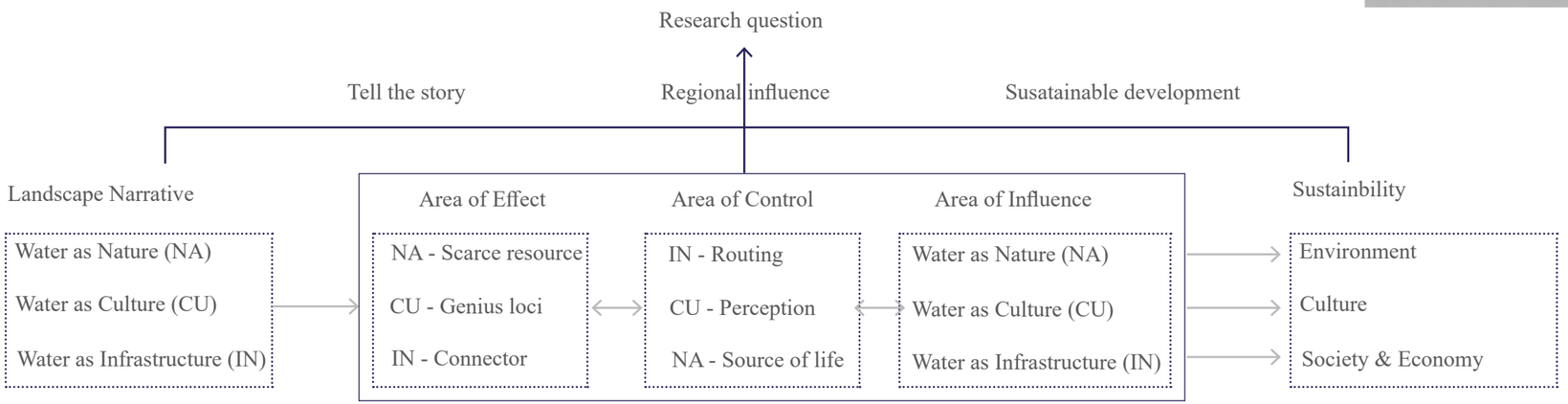
This chapter is a overall evaluation of the project, including the conclusion and reflection.

One section of the history map of the Canal du Midi
Source: https://www.davidrumsey.com/rumsey/download.pl?image=/D0109/5694015.sid
Author: Cassini, Cesar-Francois (1714-1784)

-12- CONCLUSION







The research question is: ‘‘How to articulate the main stories of the Canal du Midi through a series of spatial interventions that supports the sustainable development of this water heritage and the territory?”
The research framework established by this project, by combining landscape narrative and landscape methods, after a series of research and design, finally verified the usability of this design system at various scales, and in the end returned to the revitalization strategy of the entire area, in a way that the canal du midi will not only be preserved as a heritage, but more a stimulator, form a sustainable development system that promotes each other with the surrounding landscape system
Now the research question has a positive answer.

-13- REFLECTION

THE BEGINNING

The beginning of the project was not a clearly defined program for a carefully chosen site. I embarked to explore a realm that was not that familiar to me, but that I could visit in person several times. There have been moments during the research process that I questioned myself if it was a smart choice, it has been a difficult and time-consuming process of digging into a totally new context, especially since there are barriers of languages and data access. Now I still don't know the answer, but I do not regret choosing the site but rather enjoying it, because it is indeed the site is too attractive to complain about the difficulties to understand it. It is also because I think the uncertainty and multiple possibilities of the choice are just like how I read from the landscape narrative theory: beyond conscious awareness or inherent in daily actions, it may be as mundane, varied, scripted, or open-ended as our own lives (Potteiger & Purinton, 1998).

THE PROCESS

The approach - relationship between research and design.

The approach to the project was to build up a 'flexible' research framework that combined interdisciplinary knowledge and supported an open-ended design process. Through different scales, the research and design process have supported and evaluated each other back and forth. It is surprising to find out that this approach worked very well, as a mutual interacted system. On the one hand the theory provided a flexible framework to guide the complicated research process, and on the other hand, the exploration of the design, developed in a freer way, reflected back to the research methods.

In certain respects, places only exist because they have stories associated with them. But once they have acquired this story-based existence, the landscape itself acquires the power of "telling the story" (Potteiger & Purinton, 1998). Therefore, when dealing with a project related to an abstract topic like the meaning of the place, or a memorial landscape, etc., it is important that apart from a top–down rational process, also space is left for a bottom – up intuitional process, which will allow the site to speak for itself. In this project the three landscape narratives were not the starting point of the research, but came up during the exploring design process within the research framework. In the end the three narratives became the guide line for the overall project.

To conclude: I don't think this is a generic approach that can be apply in any project, the approach was based on the research question of this specific project, namely, to represent the landscape narrative of this fascinating heritage landscape.

The limitation of the project

It is a reality that I can only look at the Canal du Midi with the eyes of a stranger. I realize that local experts who grew up in the region, will have a different and much deeper understanding of the narrative and genius loci of the place. This is related to another limitation of the project; I have not really been in touch with the many stakeholders in the area, and due to this, local participation could only be mentioned as a regional strategy and framework. Nevertheless, I was lucky to have the opportunity to talk with some local people and through short conversations and simple questionnaires, I already received a lot of inspiration from them. Next to that I have tried several times to get in touch with some relevant local organizations, such as the Voies Navigables de France, some website operators, etc. However, in the end, apart from the staffs of the museum and tourism centre interviewed during the investigation, there was no reply from the relevant units, which made the verification of the practical applicability of this project to be lacking.

The feedback from mentor

The feedback is an essential part of the whole process of the design. There are multiple times that the design is going in the wrong direction, especially for such a large-scale and complex project, there are too many topics that seem relevant and interesting, plus my personal uncertainty about the direction of heritage design. The regular feedback from mentors helps a lot to keep the research in the right direction.

The relationship to circular water lab and landscape architecture track

My graduation topic is a comprehensive landscape design about a water heritage – Canal du midi. This is highly related to my master track and studio topic: Circular Water Stories lab - Graduation studio Landscape Architecture: Flowscapes. The design has not started from certain problems or challenges but started with a topic about the traditional water systems with unique value. The design assignment is defined based on reading and understanding the knowledge embedded in the water system and its relationship with people and landscape.

The lab focuses on the water stories, encourages students to explore broad possibilities behind this topic, and provides a set of methods to study and design for the water issue. For example, looking at the climate zone and water catchment area, researching the circular water system, understanding the relationship between people and water, etc. By using these tools, my graduation project has explored and experimented with possibilities for the canal, looking at both the problems and the opportunities and trying to integrate the landscape narrative into a sustainable development plan. By doing so, I explored the meaning of 'Flowscapes' in landscape architecture, which is a view and method of looking at complex and dynamic spatial issues and making design decisions where there is no certainty, but the changing interaction and process. In the end, landscape design should contribute to a better future, by exploring different design interventions in this unstable context.

-13- REFLECTION

Applications of the results in practice

In the larger social, professional, and scientific framework, there are three aspects that I hope my graduation work will contribute to.

Firstly, the research and design methods used in this project contribute to the further development of landscape research methodologies. Especially the method of reading and designing a heritage landscape through multiple layers and meanings, based on the concept of landscape narratives, was explored in this thesis. To create a research & design framework based on landscape narratives is an interesting perspective that could be used in real projects as well.

Secondly, the research and design outcome could be of relevance for similar projects in which protected heritage needs to be modified to save it for the future.

Thirdly, the part of the design which targets to solve the water management issues have the potential to be adopted in the real world. Especially the techniques and methods that are proposed for the arid and semi-arid area could be relevant for practice. In the current circumstances of climate change water scarcity is becoming a world-wide problem.

Last but not least, in the relevant documents of the UNESCO, it is pointed out that currently the buffer zone of the canal has certain limitations, and that considering expanding the scope is needed (UNESCO, May 12, 2022). In the Regional Regeneration Strategy Chapter of this report, some regional regeneration principles are proposed, and some areas are initially delineated.

Although the area divisions are not accurately based on the limitation of research materials and time, the author believes that these frameworks and strategies can provide some suggestions and new perspectives for expanding the buffer zone.

THE END: IS IT AN END OR A BEGINGING?

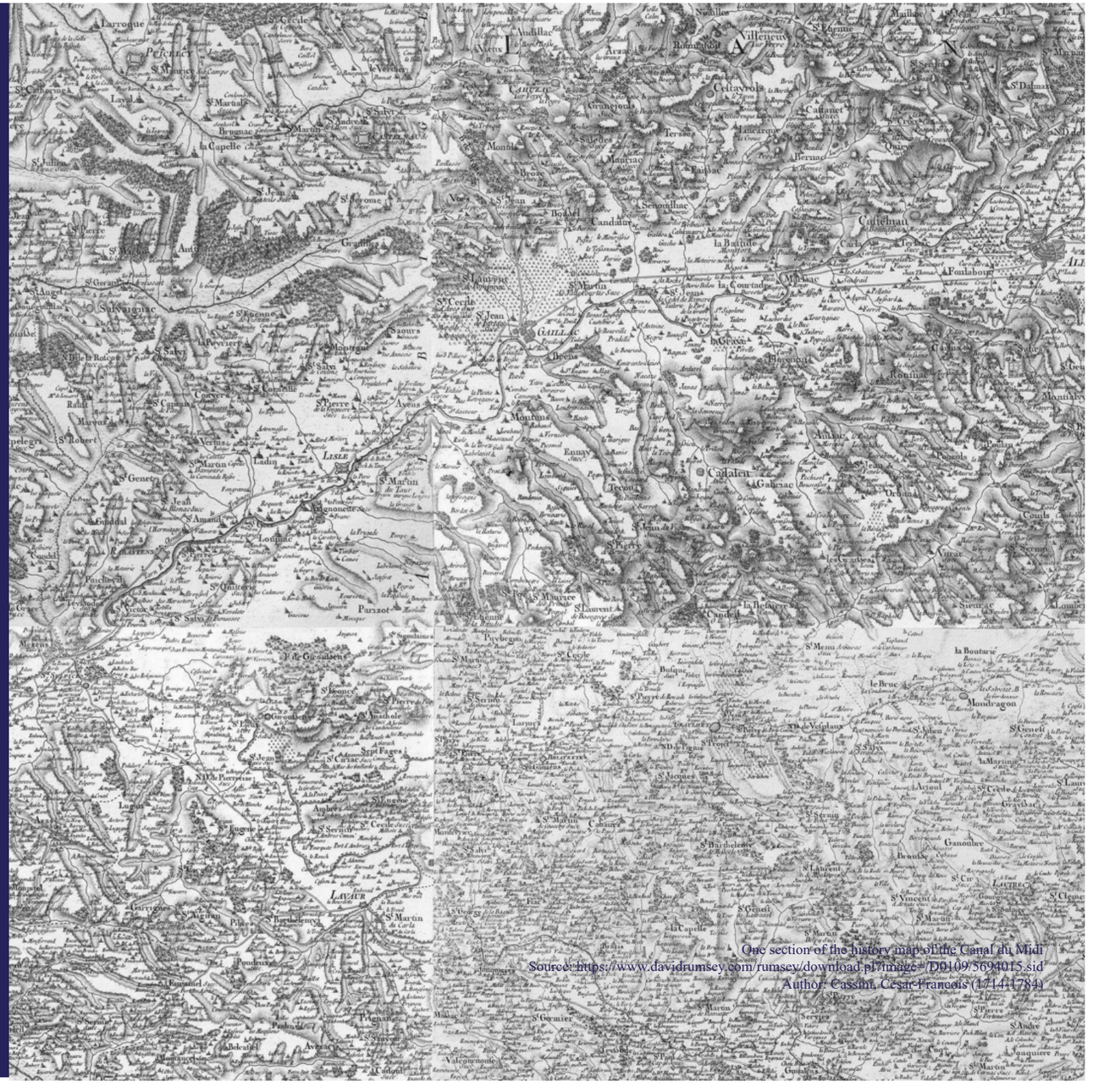
Nowadays we often hear people talk about lost, loss of character, loss of identity, loss of meaning, etc. My intuitive impression of the Canal du Midi is also a lost heritage: on the one hand, it is still actively functioning and modifying, but on the other hand, it seems like it is now experiencing a huge transformation, and some of the historical contexts are becoming vague and invisible, triggering the risk of being forgotten.

I realized that in large parts of the thesis I recorded the information of the canal in detail and in many layers. They show an intention against loss, because the simplest way of fighting with forgotten, is to write it down. Thus, the process of research and design is also a process of writing a note or mapping and picturing an image of the Canal du Midi in a way that it can be read, seen, and remembered.

Facing a heritage like the Canal du Midi, nine months is too short, the “notes” I am writing so far are only a small piece of the whole story. Additionally, the landscape narrative is such a complex theory that not only needs reading but also demands experimenting and involvement which should be a long-term process. Until this stage, there are still a lot of materials that I hope to catch, and a lot of possibilities to adjust and improve the design. At the end, I believe that I’ve used these nine months to try as much as the possibilities to answer the research question: How to articulate the main stories of the Canal du Midi through a series of spatial interventions that supports the sustainable development of this water heritage and the territory?

But maybe it is the topic that I am dealing with, or maybe it is the limitation of the capability, the result of the project ‘the Canal Story” seems more like a start, offering a ticket to enter the world of infinite possibilities to bring alive this water heritage – the Canal du Midi.

APPENDIX



One section of the history map of the Canal du Midi
Source: https://www.davidrumsey.com/rumsey/download.pl?image=/D0109/3694015.sid
Author: Cassini, Cesar-Francois (1714-1784)

CASE STUDY

A long-term development landscape design through a green routing network - Emerald Necklace project

What I learn:
1. A systematic landscape development framework;
2. Clear overall target: green infrastructure and stormwater management;
3. Specific sub – projects for different purpose: planting, eco system, resilience, accessibility, historical preservation, etc;
4. More specific analysis for zone in projects response to the big framework and goal;
5. Complicated partnership and landscape management

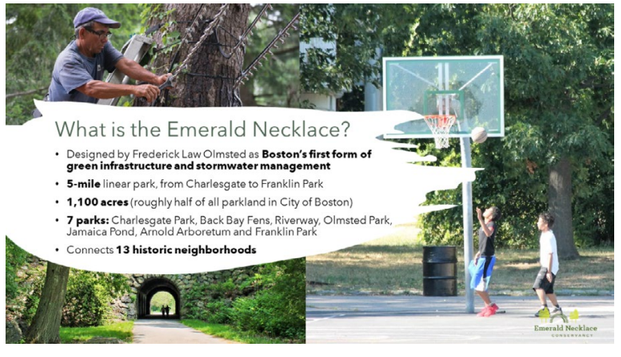
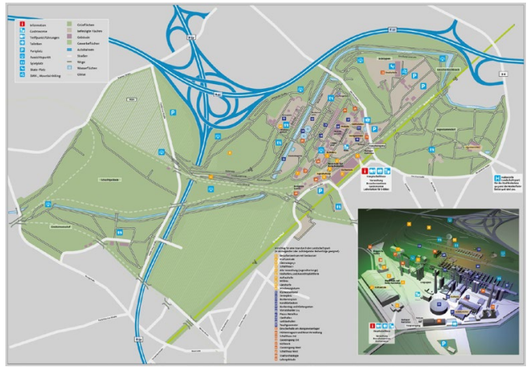


Figure 1: Masterplan
Figure 2: A concept of the emerald necklace
Figure 3: Drawing of a spesific site plan on one spot of the necklace
Source: https://www.emeraldnecklace.org

CASE STUDY

A industrial heritage design - Landscapechaftspark Duisburg - Nord

What I learn:
1. Face to visitors and creators of the site that considered a lot about diverse experiences;
2. Three division: discover (industrial heritage oriented), wonder (natural environment oriented), experience (activities oriented) ;
3. Water concept – rain water collection and help visitor understand the value of a canal in seasonal change and process;
4. Memory matters (for both people with memory and people new to the place) – path design, waterway, materials, etc.



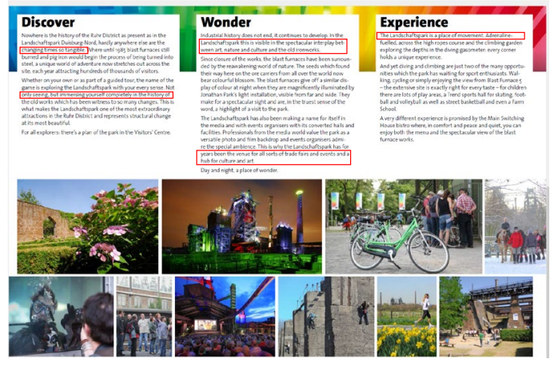


Figure 4: Masterplan
Figure 5: Classification of the visiting exprience
Source: https://www.landschaftspark.de/en/visitor-information/downloads/
Figure 6: A view of the water manegement design
Source: https://en.wikipedia.org/wiki/Landschaftspark_Duisburg-Nord

Memory does not equal preservation but instead has a transient quality. It implies a re-representation or understanding of the past, as memories constantly shift and change as one experiences life.
The memory of a site should be used as a design strategy, as it shows depth and a process of connection.
Interrelations must be made concrete and visible and that the viewer will create their own picture of a place, not the designer (Latz, 94, 96).

PROCESS

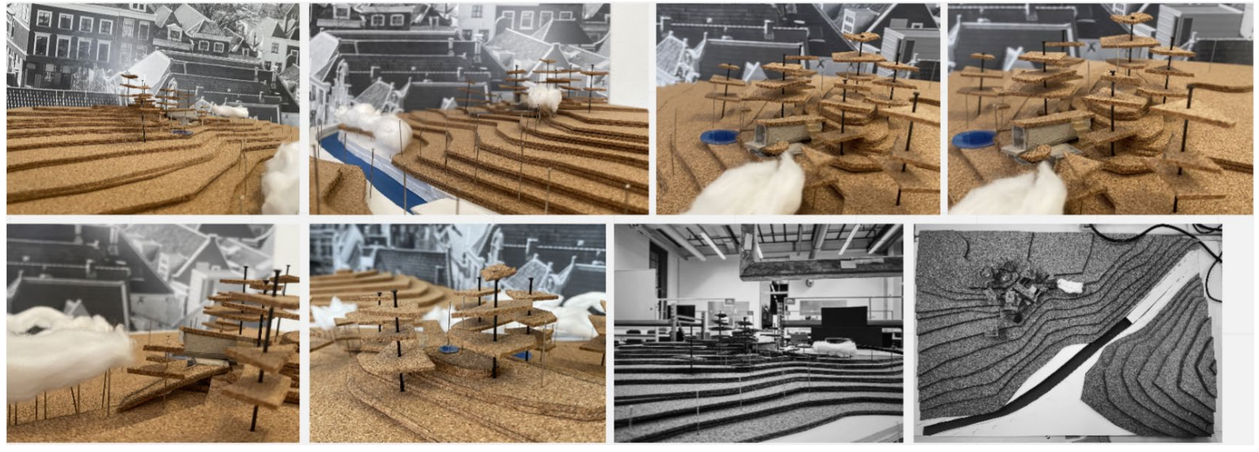
Explore the spatial quality through models during the design process; collect local flora information on site;
A poem about the Canal du Midi

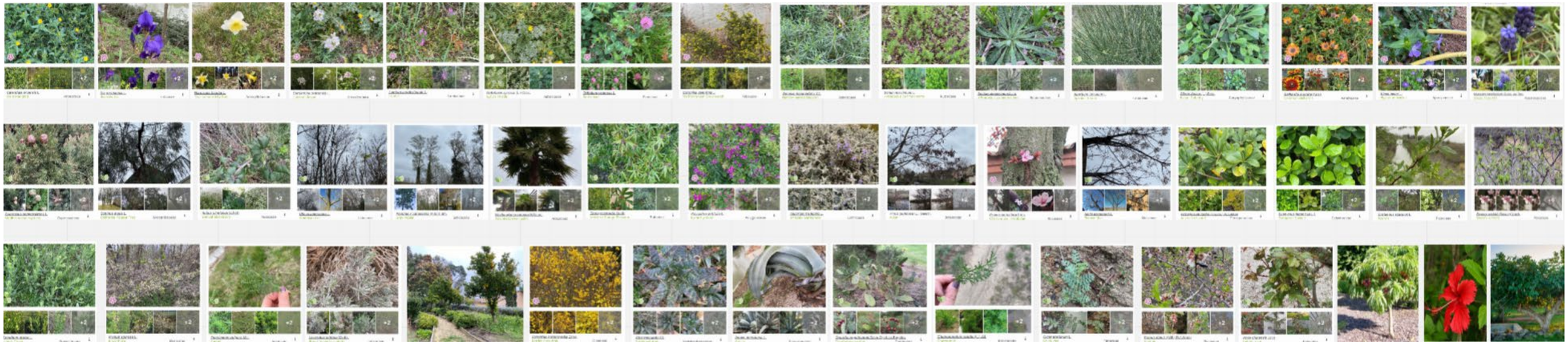
Leurs décors sont naturels
Un coin de terre, un coin de ciel L'étang de Thau,
l'étang de Bages
Tournons la page
Le canal du Midi
Et la province qui dort la nuit Et bien souvent,
mon vieux Paris
Dans mes bagages

—— Chansons en liberté,
Charles Trenet, 1976

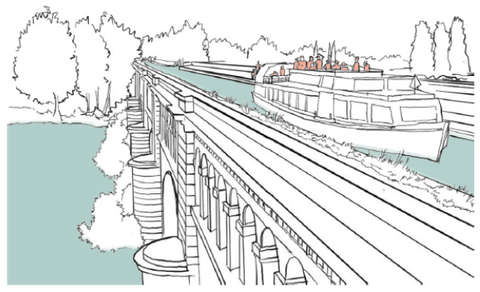
Their scenery is natural
A corner of earth, a corner of sky
The Etang de Thau, the Etang de Bages
Let's turn the page
The Canal du Midi
And the province that sleeps at night
And very often, my old Paris
In my luggage

—— translation of Chansons en liberté,Charles
Trenet, 1976





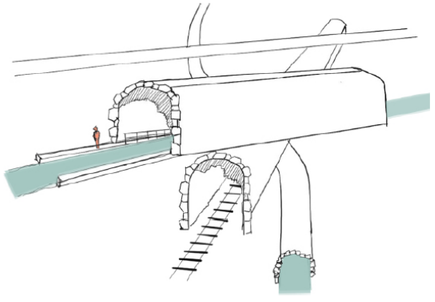
CIRCULAR WATER STORY



Aqueduct
Pont - canal de l'Orb

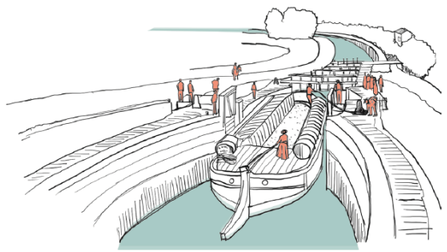
The Orb Aqueduct is a bridge which carries the Canal du Midi artificial made watercourse over the Orb in the city of Béziers. The aqueduct is the longest on the Canal du Midi.

Project: The Canal story - Canal du Midi, a water infrastructure in Southern France.
Climate: Hot-summer Mediterranean
Year: 1858 till now
Water type: Freshwater
Landscape: Canal landscape
Soil condition: Fluviosols
Material: Stone
Temporality: Maintaining
Form: Surface (Mid-air)
Use or Function: Navigation



Canal tunnel
Malpas tunnel, beneath l'Oppidum d'Ensérune

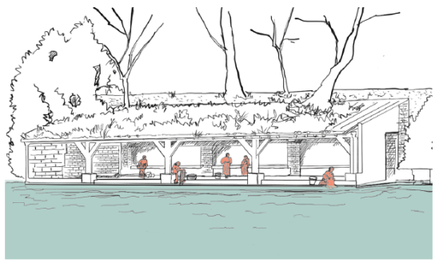
The Malpas tunnel carries the Canal du Midi under the d'Ensérune hill in Hérault, France. It was Europe's first navigable canal tunnel and is a monument to the determination of Pierre-Paul Riquet, the chief engineer.
Project: The Canal story - Canal du Midi, a water infrastructure in Southern France.
Climate: Hot-summer Mediterranean
Year: 1679 till now
Water type: Freshwater
Landscape: Plain landscape
Soil condition: Calcosols
Material: Concrete
Temporality: Maintained
Form: Carved tube
Use or Function: Navigation



Lock
Lock keeper and sailers

The locks are water works to help the boat to overcome height difference. There are several actions needs to be take to cross different levels of water, the lock keeper open and close the lock and left water in and out into the compartment, the visiors always like to watch the whole process and interacted with the people on boat.

Project: The Canal story - Canal du Midi, a water infrastructure in Southern France.
Climate: Hot-summer Mediterranean
Year: 1685 till now
Water type: Fresh water
Landscape: Canal landscape
Meaning: To overcome height differences and to meet
Water workers and users: Lock keeper and crew
Material: Brick, stone, concrete, iron
Temporality: All seasons
Use or Function: Navigation



Wash house
Washing & cleaning

People built the wash house alongs the canal to use the water from the canal to cleaning clothes. Water was taking out of the canal and after washing released in the canal.

Project: TThe Canal story - Canal du Midi, a water infrastructure in Southern France.
Climate: Hot-summer Mediterranean
Year: around 17th to 18th centruy
Water type: Fresh water
Landscape: Canal landscape
Meaning: cleaning
Water workers and users: Fishers
Material: wood, brick, concrete
Temporality: All seasons
Use or Function: washing and cleaning

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“Leave as water, be back as water”

——Turkish proverb

06.2022
Delft, The Netherlands


Cazouls
Lezignan la Cebe
St Jean de Bebian
MONTAGNAC
Aumes
PEZENAS
Conas
Castelneau de Guers
St Alban
Lezignan la Cebe
St Hyppolite
St Thibery
Florensac
Bessan
Vias
AGDE
Villevayrac
Vallemagne
POUSSAN
Balaruc
Bouzigues
Loupian
FRONTIGNAN
ND d'Aix
MEZE
St Martin du Crau
St Joseph
Pinet
Pomerols
MARSEILLAN
CETTE
Etang du Bagnas
Etang de Thau
MER MEDITERRANÉE
Etang de Taine
Cap d'Agde
Fort de Brescou