Ancient salination

A generator for a sustainable development of the salt villages in Danzhou

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ANCIENT SALINATION

A generator for a sustainable development of the salt villages in Danzhou

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Flowscape - Circular Water Stories
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Acknowledgement

I always enjoy researching the background knowledge of a landscape site. Getting to know the knowledge of a new site is like an in-depth journey: every step can be a new surprise. This final thesis provides me with a lot of time and opportunity to study in-depth about a place that I had never been before. Although there were many difficulties and twists, I was delighted with the unexpected knowledge I had learned along the way. I do cherish the time that I spend on the storyline, and the hand-drawn skills I had picked up after drawing the whole process of salt harvesting.

Firstly, I would like to give my gratitude to my mentors, Dr. IRL. Inge Bobbink for her invaluable guidance and advice. Throughout the design process, she continued to guide me, provided reference materials, and always encouraged me, push me to produce better output. I was fortunate to have a professor who paid that much attention to me, who recognized my efforts and guided me enthusiastically till my final presentation. Without her support, I would not have enjoyed this hard but rewarding journey that much.

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I'd like to thank our fellow CWS lab students. We have experienced confusion and joy together, zoomed together, worked overnight together and travelled around the major attractions in the Netherlands together. Thanks for spending this special year together with me.

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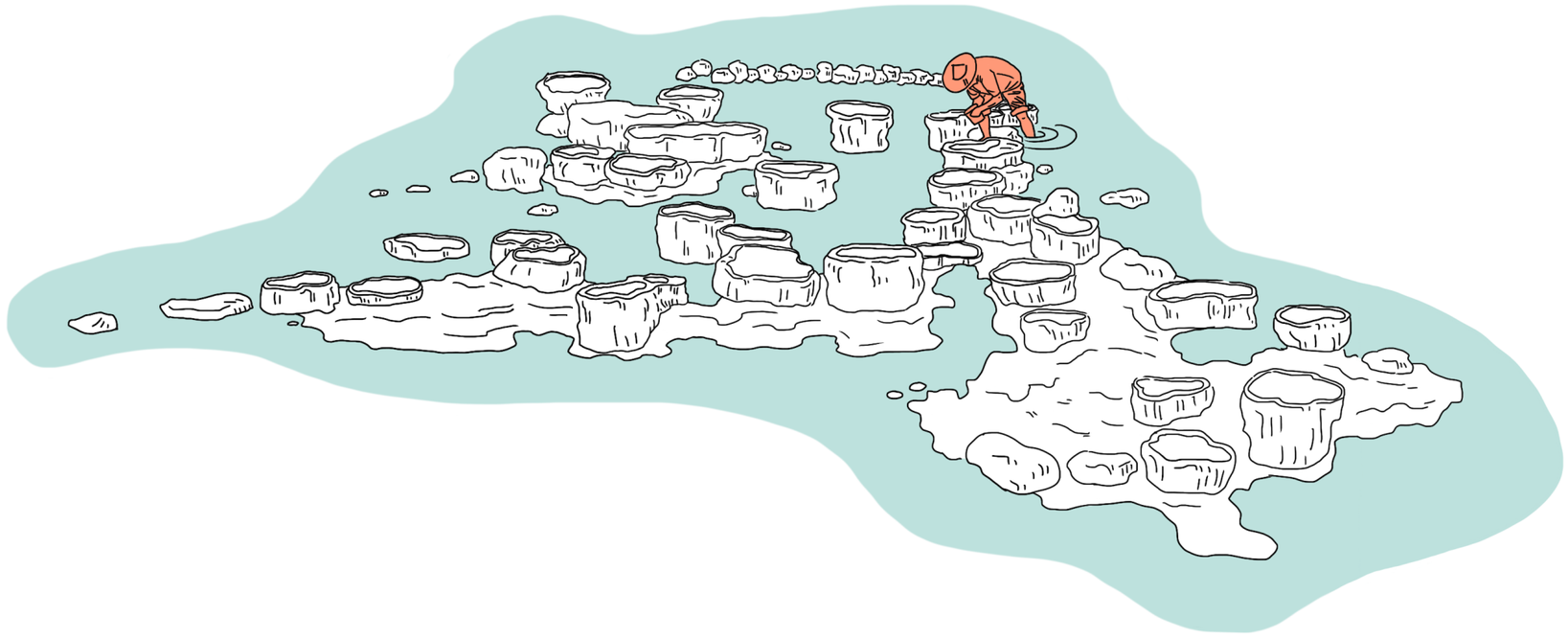
Most of all, I want to thank my family for their support. My mother always trusts me and my father tried his best to help me find more information. They are always there for me whenever I need their help. Also, I would like to thank my boyfriend for accompanying me during the lockdown. The time we spent helping each other, discussing projects and encouraging each other was a priceless treasure from my journey.

Content

Abstract

Like many traditional water systems, salt fields in the coastal region of Danzhou are now facing unprecedented challenges from social development and climate change. In an era of rapid urbanization and tourism development, the project aims to provide a landscape approach that balances historical preservation with the development of local public life and tourism. By exploring the potential of the landscape narrative, the project uses landscape elements such as heritage structure, local material, local plants, buildings and roads to make salt heritage, a valuable cultural heritage, a driving force for the development of traditional salt villages. When the historic, economic and ecological value of salt fields is revalued, these traditional water systems can be revived and provide more opportunities for a coastal area to develop into a resilient system.



0.

Introduction

Perface

Water has served and sustained societies throughout the history of humankind (Hein et al., 2020). From basic living resource to entertainment means, from military defence system to transportation platform..... People create their culture with the participation of water. The close relationship between people and water is always fascinating and enlightening for design. Water heritages are attractive because they can tell the stories of this relation ages ago. While analyzing the traditional water system of salt fields, I find out this valuable water heritage is at risk of disappearing.

What can landscape architecture do in saving these precious water structures? How to make these vulnerable water stories alive in future conditions?


Fig. 0-1


Fig. 0-2

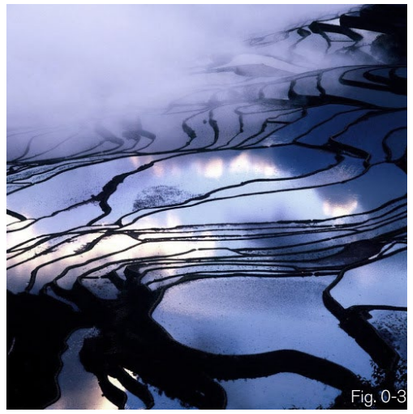


Fig. 0-3


Fig. 0-4

0.1 Background

Water has served and sustained societies throughout the history of humankind. People have actively shaped its course, form, and function for human settlement and the development of civilizations (Hein et al., 2020). . Around water, they have created socioeconomic structures, the network of infrastructures, and cultures as well as the idea and knowledge of living with the water. This intimate relationship between people and water occurs in almost all human settlements all around the world. Whether it is the lively floating market in a tropical area like Thailand, or the polder pumping system in the Netherlands on the other side of the world; the water terraces built in the mountains for farming; or the sea salt fields constructed in the intertidal zone… These water heritages show people's strong adaptability and the unique culture formed by the different landscape.

As times went by, the emergence of new techniques offered alternative ways of living. The tap water system, dams, and industrial production have broken the direct relationship between people and water that has been formed over thousands of years. Many water systems lost their initial functions and then gradually been forgotten by young people.

Since many water heritages seem to have lost their original functions, what is their current value? Water heritage can propel people to seek, to imagine, and to create, and to reverse obstructions to new possibilities throughout their history. (Bensi, 2020) These ancient water systems provide knowledge of water management as well as the idea to adapt to complex natural conditions which are beyond our modern technologies. As Boer states, "History is one side of the coin: the other side of the coin is the future progress that determines the sustainable conservation of the heritage, as well as the implementation of historic values in new interventions."(de Boer, 2020).

Meanwhile, rapid urbanization brought by increasing population also became a global phenomenon. Under its influence, more and more high-rise buildings and highways appeared in traditional settlements. Rapid development forced new urban residents to change their traditional lifestyles. It is difficult for the younger generation growing up in cities to understand the meaning behind their traditional culture and knowing who they are. The close relationship between people and water should not only become stories in the museum or documentary. In contrast, local people should be proud of the cultural identities the unique landscape created and try to adapt them to the future.

Figure 0-1 Floating Market, Thailand
Figure 0-2 Polder, Netherlands
Figure 0-3 Water Terraces, China
Figure 0-4 Sea Salt Fields, China

Fig. 0-5

Fig. 0-6

0.2 Motivation

Water heritages are valuable, but they are also vulnerable towards the future because of social development and challenges brought by climate change.

As a member of CWS studio, which focuses on the story of water systems and human activities, the author explores the working flow of the traditional water systems and the close relationship between water systems and human activities in several salt villages in Danzhou. Unfortunately, these charismatic water systems are now at risk of disappearing. So the authors wanted to make the graduation project an opportunity to explore the possibilities of protecting these traditional water systems.

The research site is situated in Danzhou City, China where the city experienced the accelerated growth in the northern coastal area in the last thirty years. Rapid urban expansion of Danzhou north has a tendency to erode traditional salt villages around. The effect of industrialization and tourism pressure challenge the traditional artisanal sea salt. Besides, sea-level rise also threatens these coastal water heritages.

Therefore, these traditional salt villages require a resilient model to protect the value of salt heritages and seek opportunities to transform into something new. The research will be focused on the value of salt heritage and exploring their possibilities as a force to further develop the villages.

Figure 0-5 Salt farmer harvesting sea salt
Figure 0-6 Traditional salt fields landscape of Danzhou, Hainan

CHINA

1.

Context

DANZHOU, HAINAN

The ancient volcanic eruption created a lot of volcanic rocks on the wide coastline and intertidal zone in the northern part of Danzhou. The suitable climate and natural condition make this place an excellent location for the harvest of sea salt. Thus, the residents have been living on sea salt since 1200 years ago. Their ancient salt fields are a very precious living heritage of Chinese sun-dried salt production.

SOUTH CHINA SEA

1.1 Hainan Province

Figure 1-1 Tourism condition of Hainan

General Condition

Hainan Province is the only tropical island province of China. The name of the island and the province--" Hainan" literally means "south of the sea", reflecting its position south of the Qiongzhou Strait, which separates it from the rest of the Chinese mainland.

Hainan has a maritime tropical monsoon climate with an annual temperature of 25 degrees Celsius. The great climate makes many elderly people from other province come to Hainan during the winter. As a less-industrialization province, Hainan has 52.3% forest coverage, beautiful beach and multi-ethnic cultures such as Li and Miao. Hainan, known for its charming coastline and folk customs, attracts millions of tourists from China and abroad every year.

In 2020, under the influence of corona-19, the total number of tourists in Hainan reached 64.55 million. It is much more than the resident population of Hainan Province (9.472 million). However, by researching the visitors' source, it is clear to find out that Hainan attracts little international tourists. This means that Hainan has to rely heavily on the domestic market and is therefore greatly affected by the vacation mode of Chinese tourists. In addition, the development of tourism in various parts of Hainan Province is unbalancing. In terms of tourism infrastructure and hotel distribution and the number of overnight tourists, the southeast part of Hainan attracts the most tourists. And for the less developed area in western and central Hainan, less than 1 million tourists are served each year.

Tourism and Tourists

In the past ten years, tourism has gradually developed into a pillar industry in Hainan Province because of its rich tourism resources. The most popular types of tourism are marine tourism and water sports along the southeast coast, experiential ethnic minority folklore tourism in the western part of the island and jungle adventures in the central mountain area. The statistic of 2019 shows that more than 50% of the tourist types are family groups, followed by honeymooners and friends' gatherings. And 80% of tourists choose to stay on the island for about a week.

The influx of tourists has brought huge economic benefits to Hainan. But at the same time, the development of tourism has also changed the lifestyle of many Hainan residents, especially in rural area. In order to attract more tourists, in the southern region where the tourism industry has developed earlier, many traditional folk customs have become daily performances that attract tourists in the attractions. However, traditional villages with these traditional lifestyles have been excluded from tourism development due to problems such as poor tourist facilities. Thus, the development of these villages and the inheritance of traditional culture will become a predicament for the development of Hainan.

1.2 Danzhou City

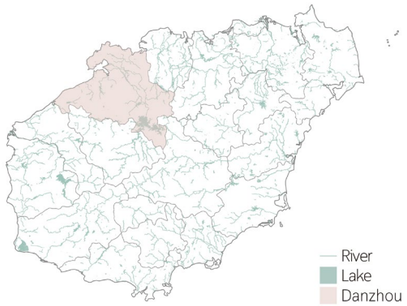


Figure 1-2

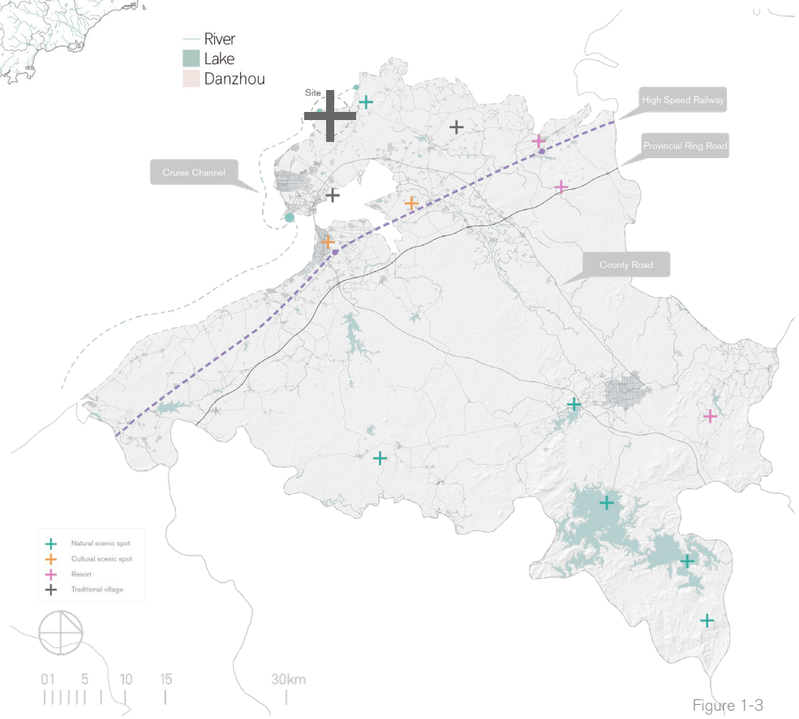


Figure 1-3

Figure 1-4

Figure 1-5

General Information

Danzhou city is located in the northwestern part of Hainan Island, which is on the boundary of the Gulf of Tonkin. This city is the economic, transportation, communication and cultural centre of the western Hainan Province. Danzhou is rich in history and culture. The famous Danzhou Duet and the ancient salt villages along the bay for instance are very precious cultural memories of Danzhou.

However, the development of tourism in Danzhou City lags behind that in the southern part of the island, because of its backward infrastructure construction. Lack of stimulation from the tourist economy, the downturn in the tourism industry has led to the improper development, utilization and even destruction of cultural heritage in Danzhou. Currently, the Danzhou government is actively seeking more sustainable development momentum for its cultural heritage. It is hoped that through the development of rural tourism, these precious cultural traditions can be preserved while revitalizing poor villages.

Weather Condition

Danzhou city is located at the southern edge of the East Asian continental monsoon climate. It has a tropical monsoon climate with an average annual temperature of 23.5-24.3°C. And the average temperature is higher than 20°C. The annual average sunshine is 2100-2300 hours. Close to the Gulf of Tonkin, Danzhou's coastal area is affected by the "Foehn effect" produced by the Wuzhi Mountains in the central part of Hainan Island, which forms a unique microclimate for the region. According to statistics, the annual rainfall in Danzhou is only 1,200 mm, but the annual evaporation is more than 1,600 mm. While gaining sufficient heat in summer, Danzhou has a much lower rainfall than neighbouring cities. Thus, it is hotter and drier than other parts of Hainan Province. Apart from the strong evaporation, the annual average wind speed on the northwestern Danzhou coast is faster than 3m/s, which is conducive to the evaporation of seawater and is very suitable for sea salt production. As the result, many villages choose to live on sun-dried salt 1200 years ago. It only takes one day to turn brine into salt, and the local area also has an idiom of "Danzhou salt fields, turn water to money in a day".

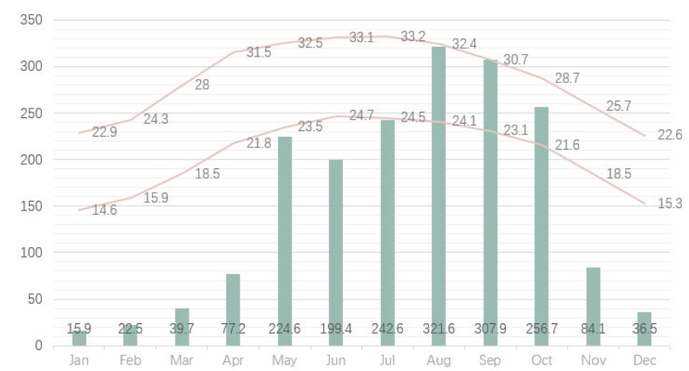


Figure 1-6

Figure 1-2 Location of Danzhou
Figure 1-2 Public transport and tourist attractions of Danzhou
Figure 1-4 Danzhou's cultural tourism-- Danzhou Diaosheng(Duets)
Figure 1-5 Danzhou's cultural tourism-- Traditional salt villages
Figure 1-6 Danzhou's climate

1.2.1 Natural Conditions

Danzhou is located in a hilly area in the northwest of Hainan Island, and its terrain descends from southeast to northwest. About 65 million years ago, the structural belt in the northern part of Hainan Island cracked. Basalt magma erupted strongly from the earth's crust, forming a large area of volcanic landforms in northern Hainan. The flowing basalt magma condenses into volcanic rock after encountering the seawater of the Gulf of Tonkin, forming Danzhou's 225 kilometres long coastline and many excellent ports. The tidal changes of the sea have shaped unique water landscape types near the coastal zone, including coastal wetlands and intertidal zones. The intertidal zone is relatively shallow, which can be frequently flooded by high tide. This unique geological feature makes the northern coastal area of Danzhou more vulnerable to the future challenges of sea-level rise.

The wide intertidal zone in the north of Danzhou has created a good living environment for mangroves. Meanwhile, the mangrove coast can dissipate the energy of the waves crashing to the coast and reduce their damage to the coastal zone. After the seawater ebbs, a large area of shallow water is left in the rock depressions of the beach, forming a coastal wetland with a unique intertidal zone ecosystem. In the intertidal zone of Yanding Port, a large number of salt-loving plants grow in the bottom mudflats.

The seawater near Yanding Port has high salinity, which creates unique conditions for the production of sea salt. In addition, due to the exposed bedrock on the surface, many volcano stones became natural materials for the ancient villagers' salt production system. This basalt has good durability, which ensures the salt tank being existed for longer periods under the perennial erosion of seawater and sea breeze and left as salt fields heritage landscape till now.

Figure 1-7 The formation of volcanic coasts
Figure 1-8, 9 Volcanic intertidal zone of Danzhou northern coast


Figure 1-7


Figure 1-8


Figure 1-9

The elevation and typical natural landscape of Danzhou

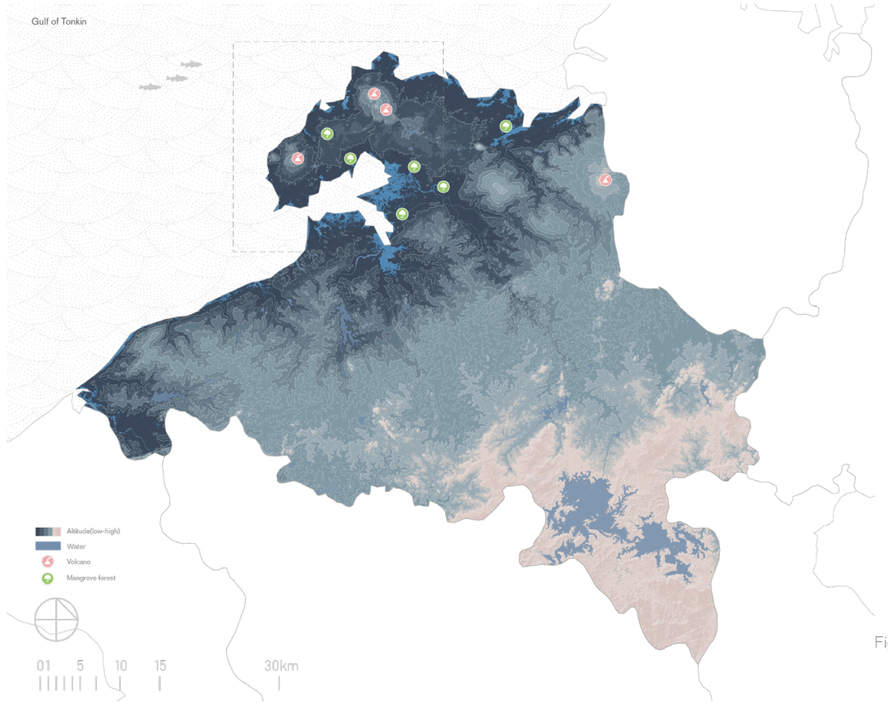


Figure 1-10

Intertidal zones of Danzhou northern coast

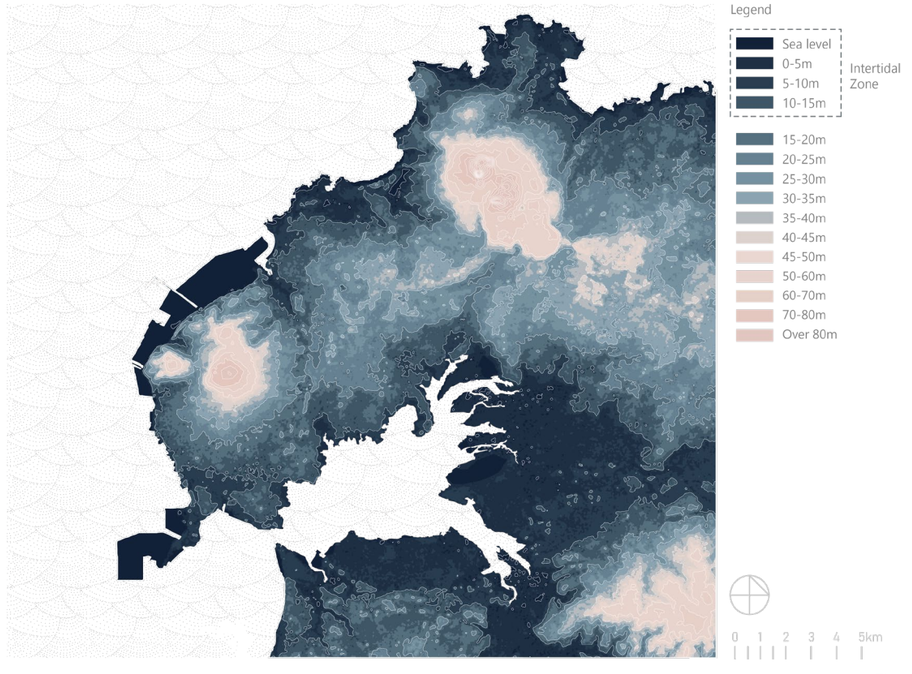


Figure 1-11

1.2.2 Social Development - Urbanization

In the past 30 years, the development of Hainan province has led to urbanization close to many ports. Located in the north of Danzhou, Yangpu port has become an important industrial export port in the northwest of the province due to its advantage of deep-water level, small waves and long usable coastline. The rise of Yangpu port has prompted the emergence of a new urban fabric in northwestern Danzhou, about 50 km from its old city. To support the freight traffic of Yangpu port, the infrastructure of this emerging area has been developed even more than the old city. There are several roads that connect directly to the ring highway of the island. In addition, the new high-speed railway also arranged two stations in the area. In addition to the development of infrastructure, the new industrial-oriented urban areas have also attracted a lot of new labour. Many young people from the surrounding villages have chosen to work here to make a living, and gradually integrating into the city and becoming new citizens.

The expansion of the city is stimulated by the development of industry in the urban area and the growth of the urban population. The rapid development of basic infrastructure and public building has also brought opportunities for rural tourism development in northern Danzhou. In recent years, Danzhou's government has also been keen to promote a cultural tour of Danzhou, citing the traditional salt village as an example. However, compared with the early developed marine tourism in Sanya, Danzhou's tourism planning is relatively backward. The lack of convenient transportation and fragmented scenic spots have become a weakness in Danzhou's tourism development. The time that the tourist chooses to stay in the scenic spot is extremely short, which cannot bring real economic benefit to the villages. At the same time, due to the lack of reasonable route planning, a large number of tourists and transport vehicles had a bad impact on the traditional villages' atmosphere. In addition to the pressure of tourism, these characteristic villages have gradually lost their characteristics due to the loss of traditional skills and the loss of the young generation. In four salt villages near the city, for example, the departure of young people has left the salt harvesting process, which has been in existence for more than 1,200 years, in limbo. The impact of urban development on traditional villages has become an important topic.

Figure 1-12

Figure 1-13

Figure 1-12 Yangpu port of northern Danzhou
Figure 1-13 New urban fabric in northwestern Danzhou

The urban development of Danzhou

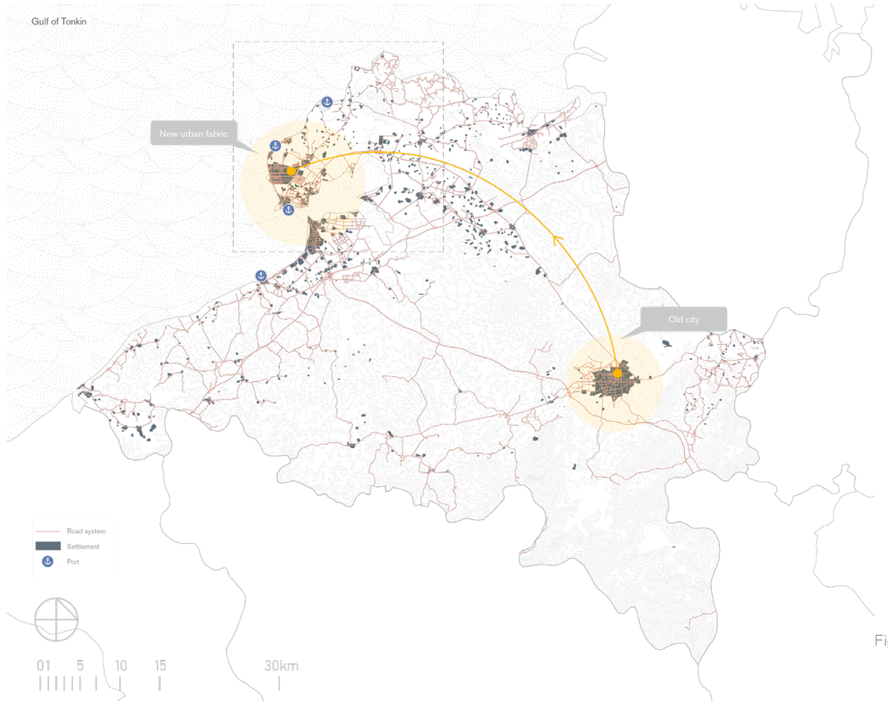


Figure 1-14

Land use of northern Danzhou

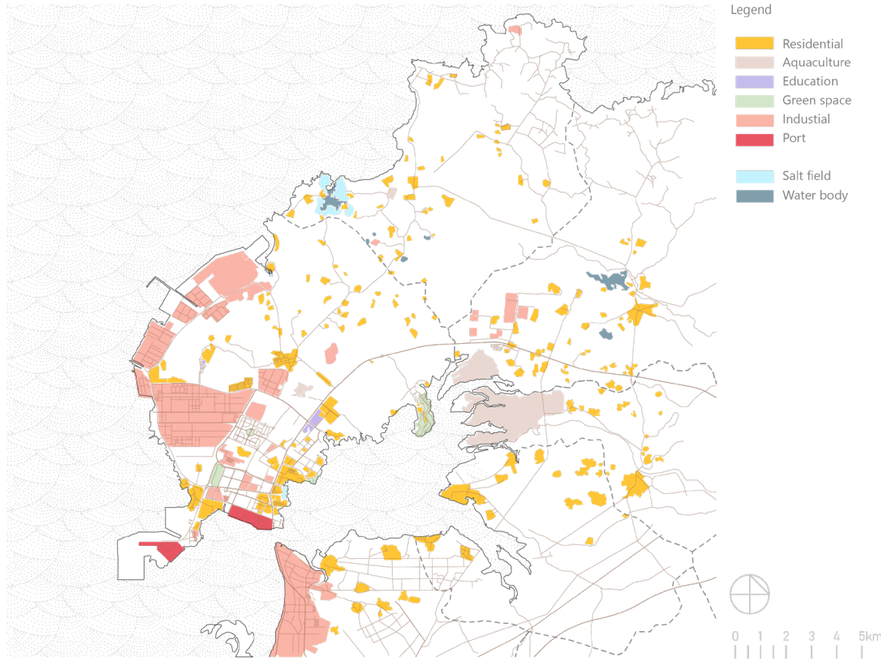


Figure 1-15

Urbanization of northern coast area in 30 years

From 1990 to 2020, northern Danzhou's urban areas grew rapidly along the coastline. New high-rise buildings gradually replaced villages as the core of the area. With urban fabric expanding and urbanization, the survival of some traditional villages has become a challenge. It can be predicted that without proper guidance, these valuable ancient villages and unique landscape will disappear in people's sight.

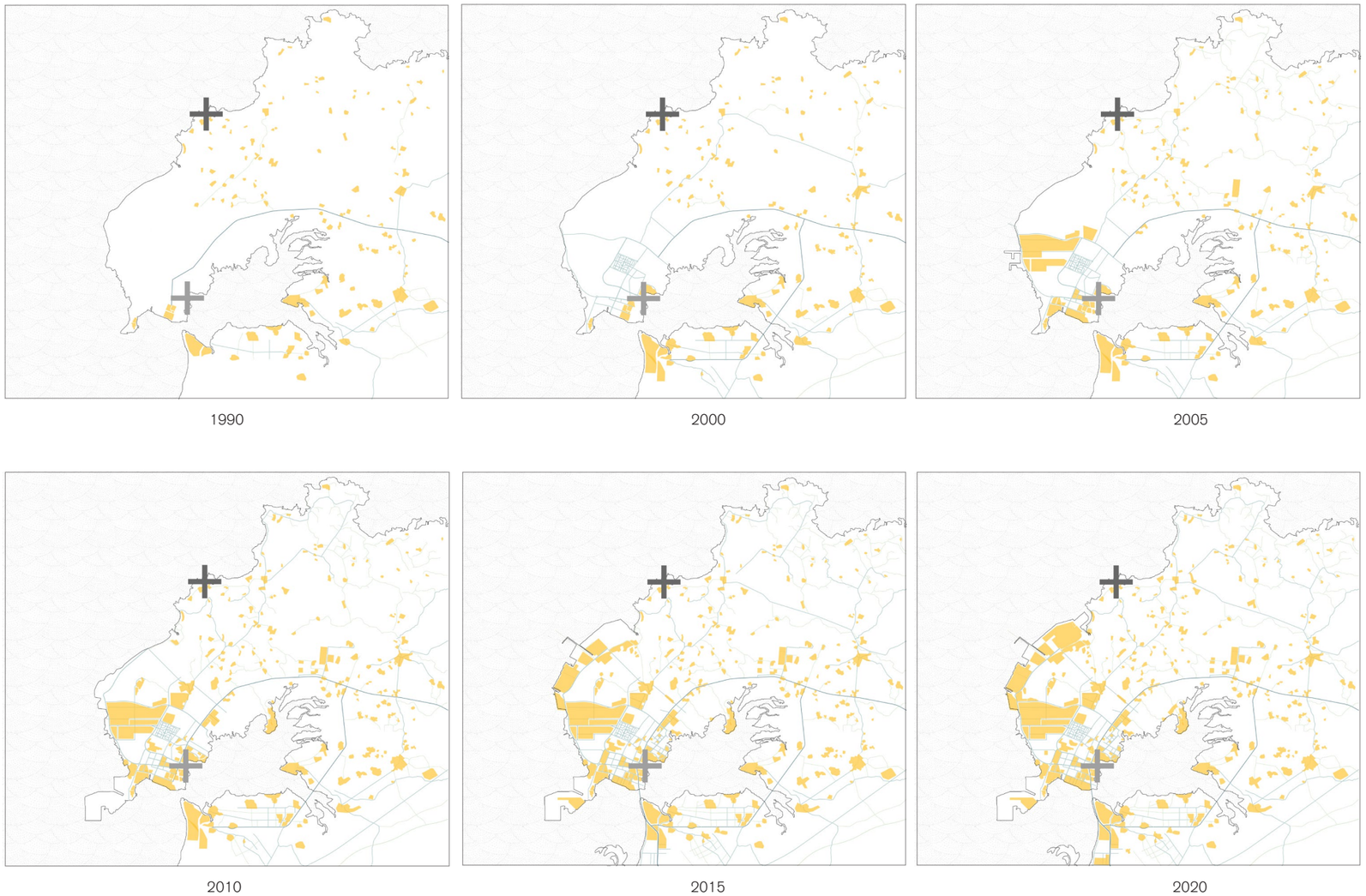


Figure 1-16 Urbanization process from 1990 to 2020


Figure 17


Figure 18


Figure 19

Figure 1-17, 18, 19
Development trend in surrounding area of northern Danzhou coast

1.2.3 Danzhou City - Social - Tourism

The new urban areas of northern Danzhou have opened up new opportunities for this volcanic mudflat. Thanks to the construction of high-speed trains and highways around the island, tourists interested in Hainan's cultural tourism start to make Danzhou part of their itinerary. For example, Ancient Salt Fields is one of the most popular tourist attractions in the region due to its long history. However, due to the lack of convenient public transportation and more in-depth experience of the tour facilities, most visitors will choose to join the tour group. The group's visit, while bringing in a flood of tourists, is too short a stay to generate real income for the local villagers who maintain the salt fields. In contrast, the sudden influx of tourists has not only destroyed the calm and charming atmosphere of the salt villages and intertidal zones but has also put tremendous pressure on the maintenance of these valuable heritages.

Thus, the development of traditional cultural attractions in northern Danzhou is asking for a more sustainable, individual-friendly, experiential approach for tourists. Through the development of public transport, all kinds of existing tourist attractions can be organized in a system, which can rich tourist routes and experiences. In addition, slowing down the pace of visits by tourists and giving them a real opportunity to break away from the familiar urban life and experience the pleasures of traditional village life may be an opportunity to develop rural cultural tourism in Northern Danzhou.

Figure 1-20

Tourist attractions in Danzhou north

Figure 1-21

Figure 1-20 Tourists in the salt fields

Figure 1-21 Distribution of tourist attractions in Danzhou north

1.3 Salt villages

In the early Northern Song dynasty (960 AD), salt farmers from Fujian province who depended on “Boiling salt water” for a living emigrated to Hainan. Benefiting from the strong evaporation climate condition and rich volcanic rock resources in the northern part of Hainan, these salt farmers choose to make sea salt with solar evaporation instead of boiling seawater and build the earliest Yangpu salt fields on the volcanic intertidal zone. With the rise of the salt industry, these salt workers established a thriving salt village in the mangroves along with the salt fields. Some of the salt farmers then moved to E‘man Bay. These salt farmers built four villages in the mangrove forest close to the volcanic coast and bay and holding on to their sea salt production industry. Nowadays, some elderlies are still using the 1200-year-old traditional way to harvest salt from these heritage salt fields. These salt villages are seen as the museum of ancient salination of China.

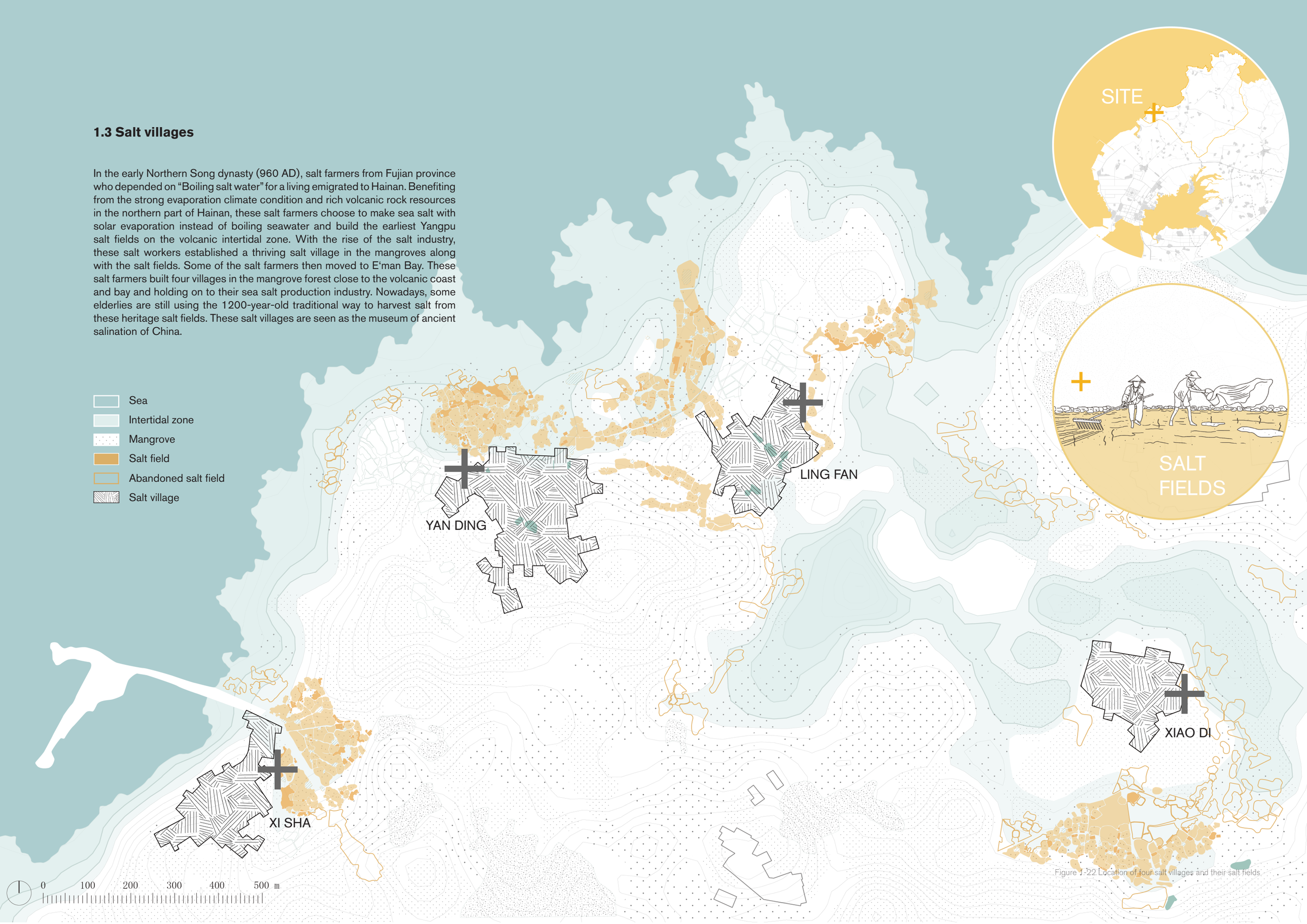


Figure 1-22 Location of four salt villages and their salt fields

1.4 Problem Fields

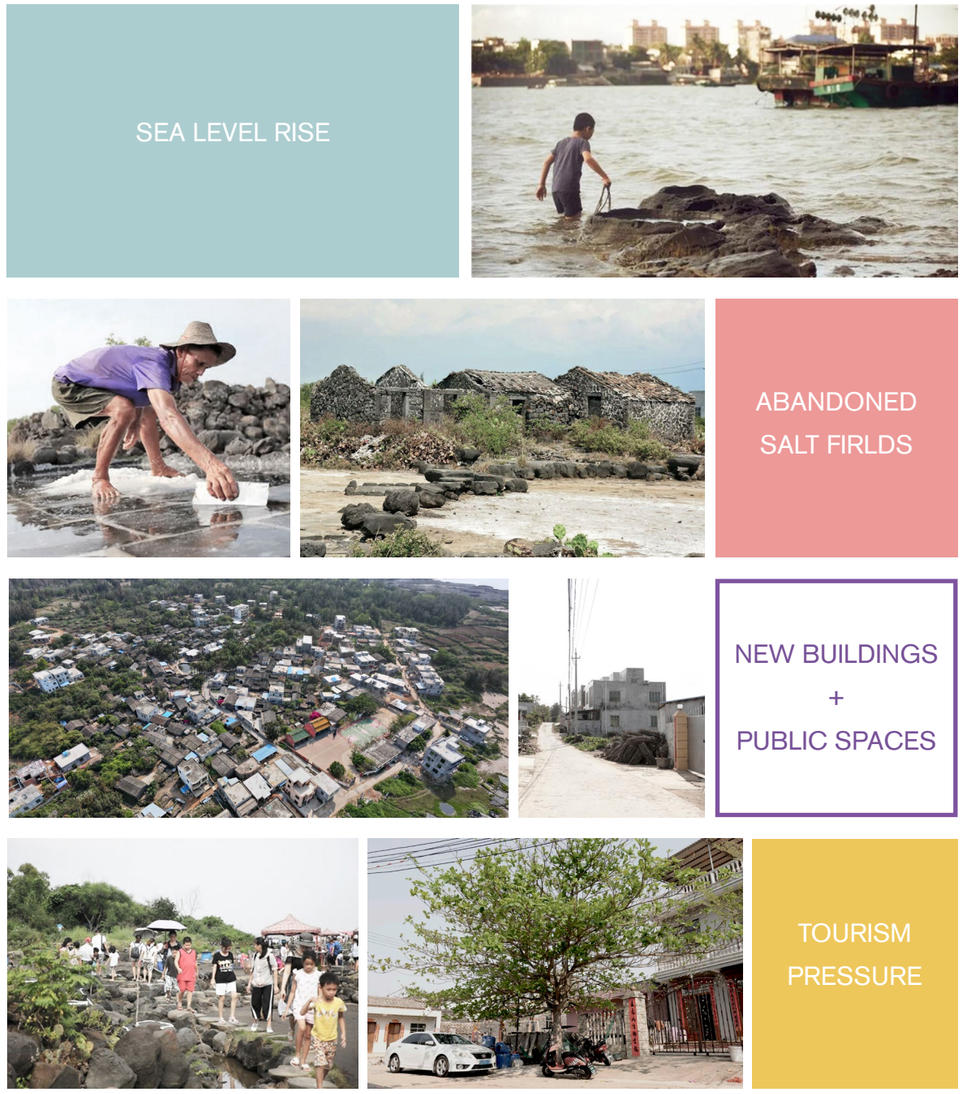


Figure 1-23 Challenges of the heritage salt villages

Although these heritage villages have unique cultural and landscape characteristics and important research value on salt history, they are now facing great challenges from natural conditions and social development.

1.4.1 Nature - Sea Level Rise

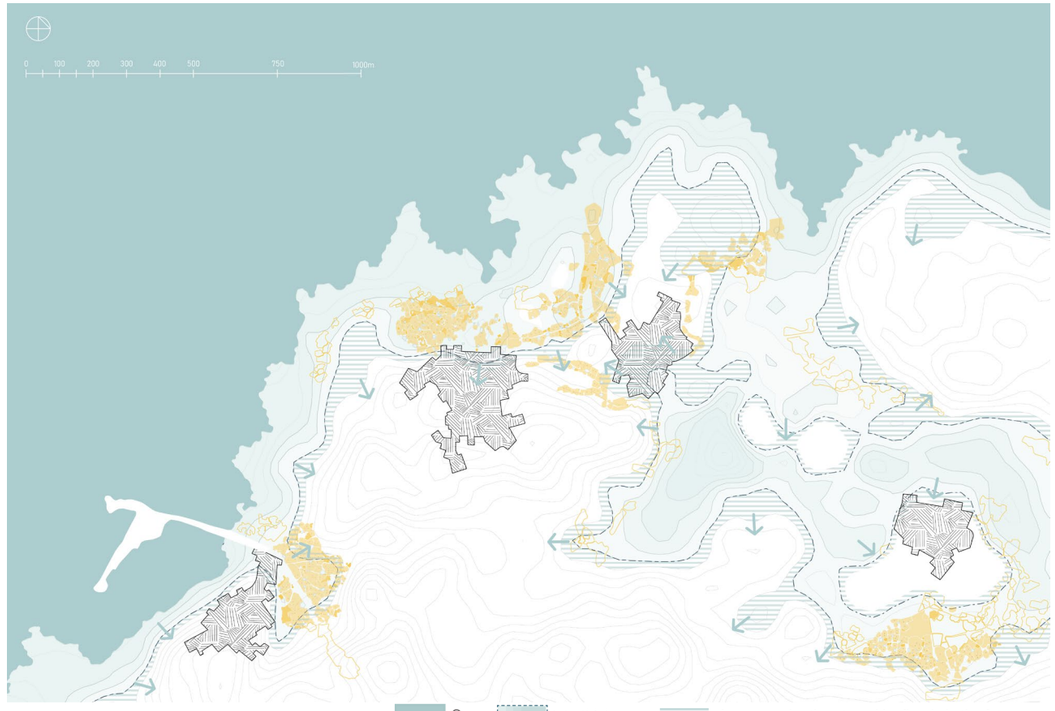


Figure 1-24 The sensitive area towards sea level rise

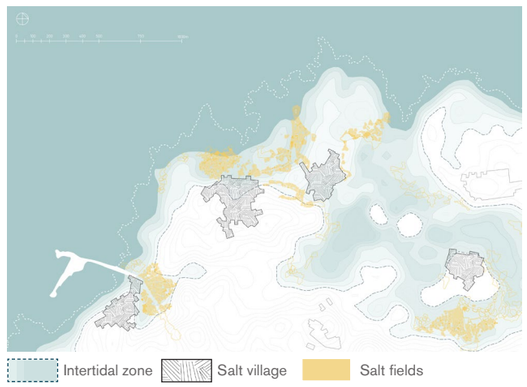


Figure 1-25 Tidal conditions in the future

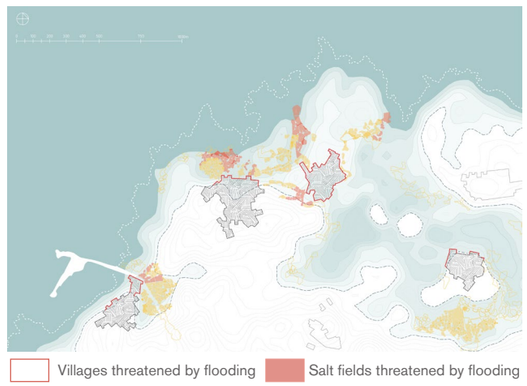


Figure 1-26 Salt fields and villages in danger of being flooded

Sea level rise caused by global warming has a big impact on the flat volcanic rock flats of northern Danzhou. It will bring higher high tide and longer periods of flooding to the intertidal zone. Therefore, the salt fields distributed in the intertidal zone will face the threat of being destroyed and submerged by stronger waves. Without the salt fields as barriers, salt villages around would also face greater tidal flooding.

1.4.2 Society - Abandoned Salt Fields

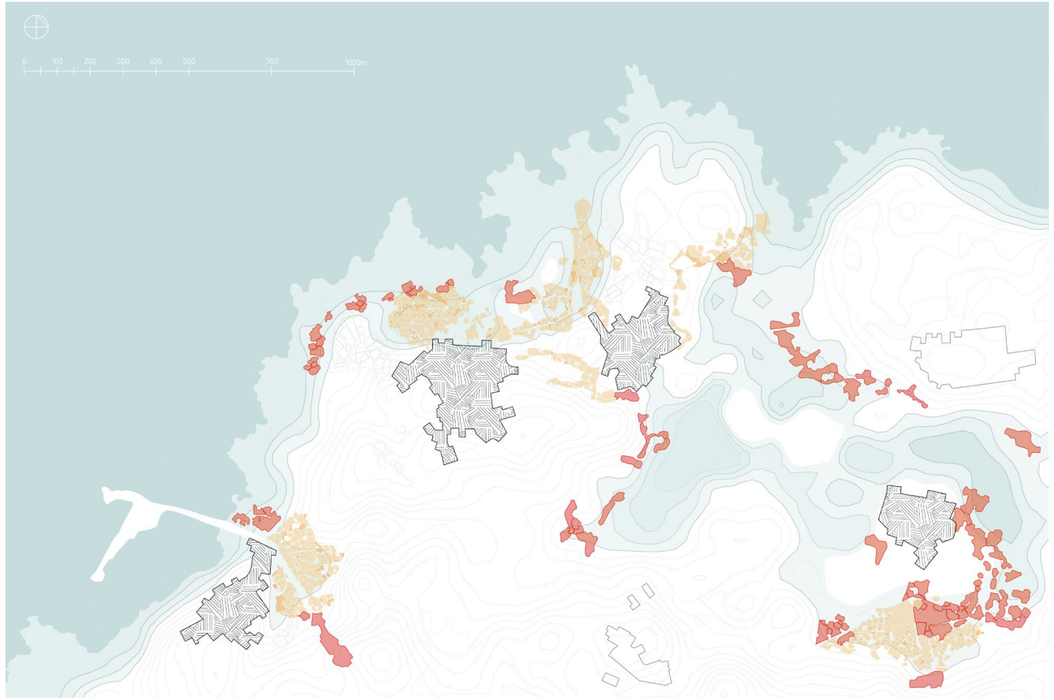


Figure 1-27 Abandonded salt fields

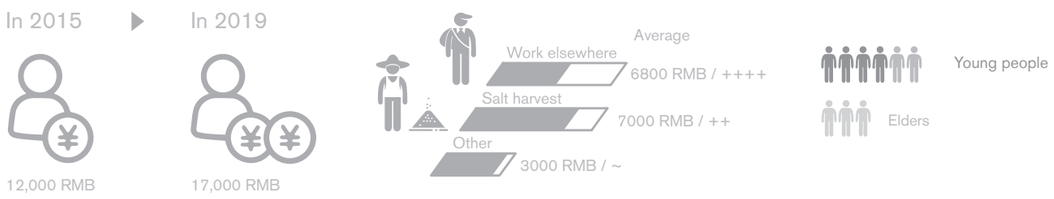


Figure 1-28 The change of per capita income and labor of salt villages

At the same time, rapid urbanization in the surrounding area also had a great influence on the development of these traditional villages. The maturity of industrial salt-making technology has impacted the income of traditional sea salt farmers. These years, the complex production processes and low economic profits have led many young villagers to abandon this ancient way of life and work elsewhere to earn money. Nowadays, most salt farmers are elderly people in the village. As time goes by, more and more salt fields around the villages are left behind. Without frequently maintenance and usage, many salt field structures are washed by the waves. And one day, these valuable heritages and salt harvesting methods may disappear.

1.4.3 Society - New Buildings and Public Spaces

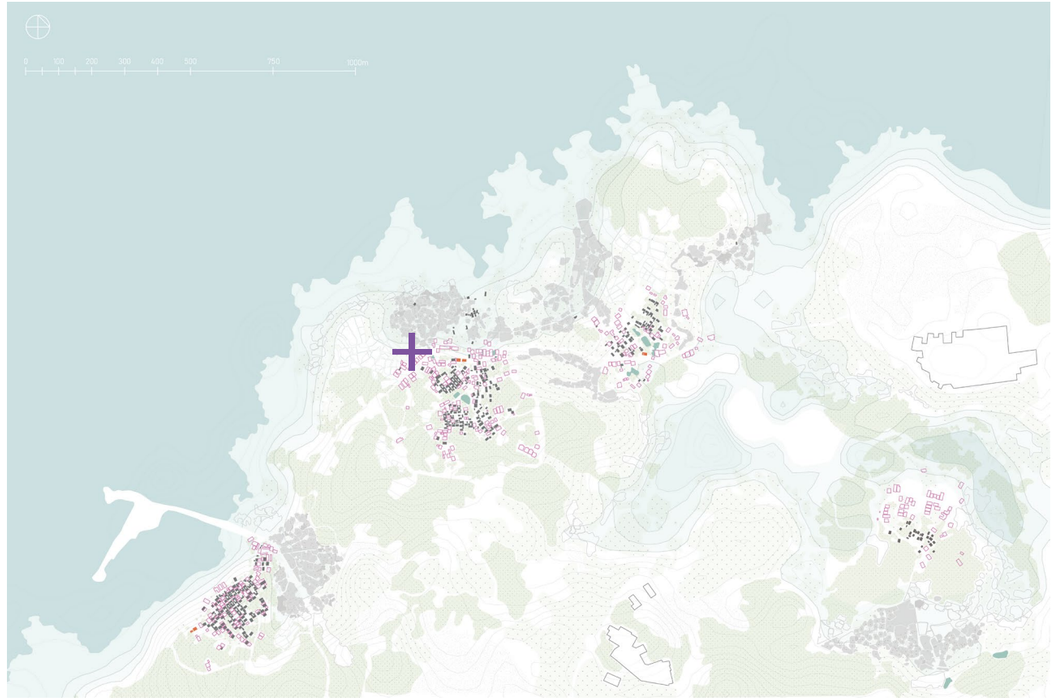


Figure 1-29 Relation between new buildings and tradition territories

Figure 1-30 Buildings and public spaces in Yanding Village

As villagers became richer, many of them moved from the traditional volcanic stone buildings and built new concrete houses in the mangrove forests surrounding the ancient villages. Most old stone buildings have been turned into warehouses or even abandoned.

Villagers build new houses to improve living conditions but ignored the harm to the heritage villages. The Ancestral hall and Central Lake, which were once the core areas of village activities, are no longer the most attractive spaces in the village. The lack of high-quality public space deprives villagers of the opportunity to communicate together and hold collective activities in their villages. Thus, it's hard for young people to understand the traditions their ancestors lived for thousands of years. As the result, young generations lost the pride of being a member of salt villages and neglect the value behind their traditions.

1.4.4 Society - Tourism Pressure

Figure 1-31 Pressure brought by current tourism

With the development of northern Danzhou, more and more tourists come to visit the ancient salt fields. Because of the backwards of the public transportation system, many tourists can only travel by private car or join a tour group to visit these villages. Tour buses and private cars have a big impact on the atmosphere of the old town. Tourist surge also has an impact on heritage protection. Villagers have to erect barriers around the edges of the salt fields in order to keep the visitors out of the active salt fields. Apart from the heritage structures, the sea salt produced by the fields can also be polluted by the crowd.

At the same time, there is a lack of tourism facilities (hotels, businesses, etc.) and space for activities in the village. And a large number of new concrete buildings also destroy the pristine atmosphere of the traditional village. As a result, these salt villages are not attractive to tourists, and the average time visitors spend in the villages is normally less than 2 hours. As a tourist attraction, tourism nowadays cannot bring enough profits for the villagers.

Therefore, the existing tourism industry is putting more pressure on the heritage villages than the benefits.

2.

Methodology

As pointed out in the previous chapters, traditional salt villages in northern Danzhou need new approaches to face the challenges of nature and society. Therefore, the design concept should be based on the understanding of ancient salination and to explore the possibilities of rural revitalization, as well as the development of the intertidal zone.

As the knowledge platform of the research question, this chapter is based on four theories and two case studies. The theory provides framework guidelines, design principles and evaluation tools. On the other hand, successful design cases involving community development and industrial heritage transformation provide guidance for community participatory design and utilization of Nature-based Solutions. The combination of these two methods is expected to provide a clear methodology framework for the project.

2.1 Problem Statement

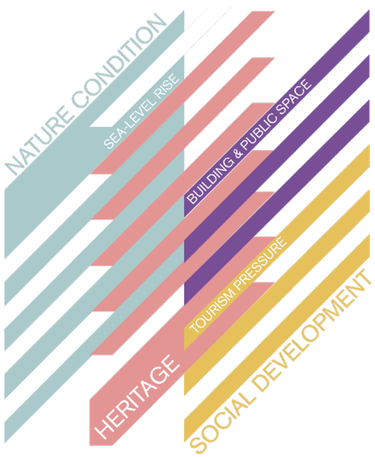


Figure 2-1 Challenges from natural and social aspects

The salt villages and their salt fields, which have been around for 1200, has tangible and intangible value. Nevertheless, due to the impact of climate change and social issues as mentioned in the last chapter, these unique landscapes and the story of salt villagers and water may fade out like many other traditional water heritages.

Sea level rise caused by climate change threatens the intertidal condition surround these villages. Higher levels of inundation with a longer duration will damage the existing salt fields, cause pressure on the intertidal ecosystem and even threaten these coastal villages in the future.

Meanwhile, the development of society has also affected these traditional villages in three aspects. A) Due to the low economic benefits that don't match the tough process of this traditional salt harvesting, young people choose to make a living in the surrounding cities. Many salt fields near the sea have been abandoned for lack of routine maintenance. B) New concrete buildings built by villagers to improve their quality of life have destroyed the atmosphere of traditional villages and what was once the most important public space. C) The huge influx of tourists put enormous pressure on the salt field structures, but the current model of fast tourism cannot bring enough profits for salt villagers.

Natural and social pressures have made the change of the heritage inevitable. For the salt heritage, the biggest challenge is not just preserving the old functions and landscape structure, but also thinking about how to express the site's historical value and collective memory in a transition that is more suited to future challenges.

2.2 Research Aim

As mentioned in the problem statement, the biggest challenge is not so much about preserving the old salt fields, as about conserving the values and collective memories in a continuous transition from the past, the present, to the future. This project aims at providing a landscape approach in balancing historical conservation, local public life and tourism development under climate change and social development background. By employing the potential of heritage structures, local materiality, native plants, local crafts on building and road, a new landscape design is expected to articulate the neglected identity of the traditional salt villages while seeking the potential for this heritage to live with more extreme tidal and social conditions in the future.

2.3 Research Questions

Is it possible to **keep the stories of the salt harvest cultural heritage alive** in **making the coastal zone more resilient to sea-level rise** while providing a landscape approach in **balancing the historical conservation, local public life and tourism development**?

Sub Question1

Stories of the Salt Heritage

-What are the stories of salt heritage?

-What are the most important landscape elements that created these salt stories? Who are the authors of the landscape? What layers have influenced the formation of the landscape?

- What is the historical, economic and ecological value of these stories?

Sub Question2

New Authors and New Interventions

-What are the impacts of natural and social challenges on these salt villages? Which author would play the dominant role in the process of heritage transforming?

-What strategies can be applied in the dominant layers in order to keep the stories of the ancient salination alive under natural and social pressures?

Sub Question3

New Narrative

-What is the new salination narrative created by landscape approach?

-How does the landscape narrative balance the new elements and historical value of ancient heritages?

2.4 Theoretical Framework

Based on the problem statement and research questions, the theoretical framework aims to provide a knowledge platform for relative concepts and theories. Facing the climate stress, disruption of salt fields, community renewal and tourism pressure, traditional salt villages in Danzhou need to find more resilient landscape approaches that create a narrative for the salt harvesting heritage and make the villages more resilient to natural and social development challenges.

The landscape narrative should consider the historical value of salt cultural heritage, which provides a powerful foundation for tourism, thus can be seen as a great engine for rural economic growth and the key in strengthening rural community characteristic. At the same time, the ancient salt fields provide good habitat for intertidal flora and fauna, which may be an opportunity for coastal areas to cope with rising sea levels. Therefore, the research will apply the key concepts for four major themes:

(1) Representation of Landscape

(2) Value of Heritage

(3) Rural Community Regeneration

(4) Nature-based Solution

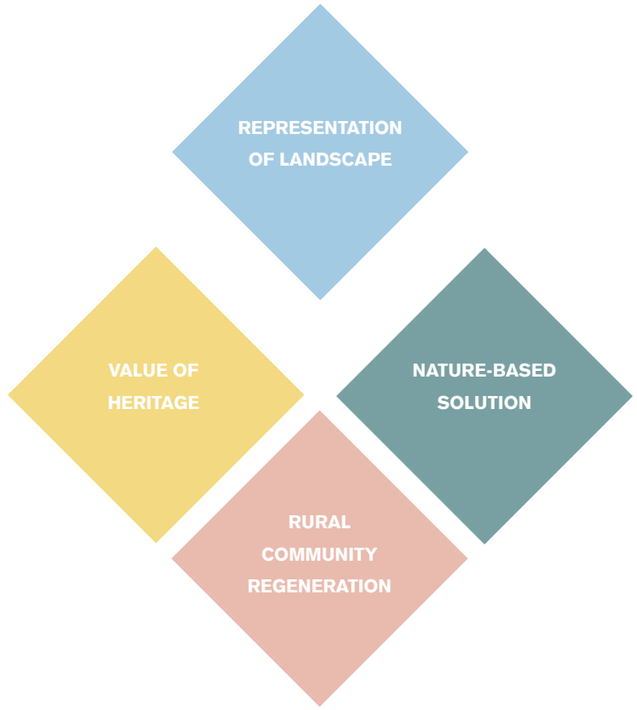


Figure 2-2 Theoretical framework

2.4.1 Representation of Landscape

Landscape narrative

The term “landscape narrative” as Potteiger and Purinton mentioned, designates the interplay and mutual relationship between story and place (1998). Different from highly scripted and controlled storytelling, landscape narratives are implicit inscribed by natural process and cultural practices (Rakatansky, 1992) and often develop from multiple or even competing group of authors. Thus, the narrative of the landscape is more open and requires the participation of its readers. As participants in the landscape narrative, the readers must put together sequences, fill in the gaps and decipher the meaning of the landscape (Chatman, 1981).

Perception & Process

In the landscape narrative, the sense of time is a crucial topic, which is often related to perception and process. The perception of the landscape involves the shape and proportion of the space, as well as its surface, volume, and even its appearance in terms of color, texture and light (Bobbink & de Wit, 2020). By dealing with spatial relationships and organizing structures, readers can better engage with the landscape and understand the stories behind. In the meantime, landscape is understood as an expression of the dynamic interaction between ecological, social and economic processes. Landscape is changing all the time. Therefore, the landscape narrative needs to consider the impact of the time dimension on the site, and try different design methods to enhance or mitigate these changes according to the story that needs to be expressed.

Palimpsest

Apart from that, the contextual realm of landscape narrative emphasized the role of community or memory in storytelling (Potteiger & Purinton, 1998). Readers can experience thousands of years of natural succession and human interventions within a short walk on site. The memories of a place are written as a biography which shows reveals all activities as well as political, cultural and economic changes of the past as a layered entity. The palimpsest of landscape can be seen as stories written in different layers of the same page by multiple authors. The remnant of previous author was always left, overwritten but still visible (Bobbink & de Wit, 2020). Therefore, the layers contains valuable memory can be stressed through landscape design approach, so as to better preserve and express to the readers.

2.4.2 Value of Heritage

To discuss the value of heritage, firstly it is important to define heritage. Heritage is a term broadly to encompass both World Heritage Sites, the historic built environment that people choose to preserve as well as local knowledge, skills and regional traditions in engineering (Hein et al., 2020). Both tangible and intangible heritage can form the identity of culture. Moreover, as International Council on Monuments and Sites (ICOMOS, 2013) argues, cultural heritage is increasingly recognized as a driver of resilience that can support efforts to reduce disaster risks more broadly. Telling the stories of history can be one aspect of heritage’s value. The adaptive strategies that enable the sustainable conservation of the heritage, as well as the implementation of historical values in new interventions are also precious dimension that deserve to cherish.

2.4.3 Rural Community Regeneration

Rural areas are integral and ever-changing part of modern society that facing complex demographic, environmental and social challenges (Lončar & Vellinga, 2020). Considering the complexity of rural revitalization, regional planning, community identities, and rural tourism could be a driving force of rural development.

Regional Planning

Limited by transportation and economic difficulties, rural regeneration is often not possible through the renewal of a single community. Therefore, an overall plan for the larger region that cooperated with related projects is required.

Community Identity

According to Afzal (2008), the constant interaction of different political, economic and cultural attributes over time allows each community to have its own unique traditions, values and norms. And these characteristics enable communities to play an important role in shaping the identity of their members.

Collective memories are conducive to the establishment of the community identity of rural residents, and the necessary conditions for the regeneration of rural communities. And as Barthel argued in 1996, historic preservation plays a vital role in shaping collective memories. Different from keeping the history intact, selection, contextualization and interpretation facilitate the connection between collective memory and the site. Thus, the social process plays an important role in preserving the identity of the community.

Rural Community-based Tourism

Out of a need for health and escape from daily routines, more and more urban residents prefer to seek relaxation and leisure in rural areas (Ayazlar, G. & Ayazlar, R., 2016). The rapid development of rural tourism has become an important economic source for many village communities around the world. As Tourism is an important vehicle of widening socio-economic and cultural contacts throughout human history (Ardahaey, 2011), this trend could be an opportunity for rural communities to participate directly in tourism development and to revitalize their culture and economy.

2.4.4 Nature-based Solution

Nature-based Solutions (NBS) are increasingly applied to guide the design of resilient landscapes and cities to enable them to reach economic development goals with beneficial outcomes for the environment and society (Lafortezza et al., 2018). Different from projects focused on artificial, man-made and costively high-maintenance strategies, Nature-based Solutions are inspired and supported by nature and applied through locally adapted, resource-efficient and systemic interventions (Keesstra et al., 2018; Nature-based solutions, 2020).

Building with Nature

Nature-based Solutions can be developed for water-related infrastructure such as flood defenses and for the restoration of ecosystems through the design approach of building with Nature (What is Building with Nature, 2021). A set of solutions were developed by EcoShape as guidance concepts depending on different landscape conditions and the natural processes involved.

Through the guidance concept like “Growing salt marsh (Fig. 2-3)”, “Rehabilitating mangrove belts (Fig. 2-4)”, “Creating rich revetments (Fig. 2-5)”, …, the more site-specific implement can be applied to different water-related resilient design.

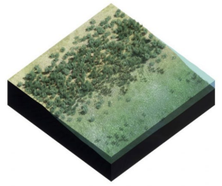


Figure 2-3

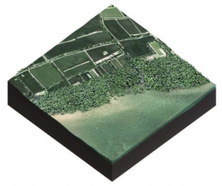


Figure 2-4

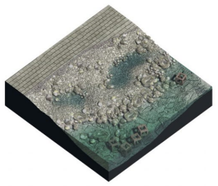


Figure 2-5

Ecosystem Service

The outcome of NBS will benefit human activities as well as restore the vitality of the ecosystem. According to Wikipedia (2021, May 10), the Millennium Ecosystem Assessment (MA) in the early 2000s categorized the ecosystem service in four main groups: (1) provisioning, (2) regulating, (3) supporting, (4) cultural.

For the cultural heritage villages of the coastal areas, mitigating the impact of climate change and providing spiritual and cultural entertainment are more critical. At the same time, stable intertidal ecosystems also provide opportunities for economic activities such as marine aquaculture. As the result of Nature-based solutions, coastal traditional villages can create more economic and cultural benefits in an eco-friendly way.

Figure 2-3 Concept of “Growing salt marsh” (EcoShape concepts, 2021)
Figure 2-4 Concept of “Rehabilitating mangrove belts” (EcoShape concepts, 2021)
Figure 2-5 Concept of “Creating rich revetments” (EcoShape concepts, 2021)

2.5 Case study

2.5.1 Community Development - Slow Food Community

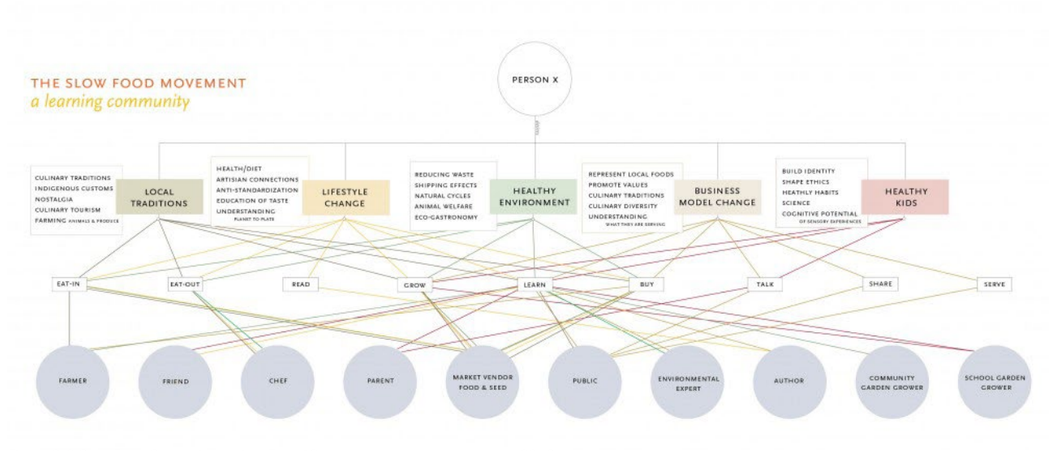


Figure 2-6 Slow Food Concept Mapping. From "*Speculate and make*," by M. Lane, 2013

Figure 2-7 Zerradoun Salt. (Slow food foundation for biodiversity, 2021)

Figure 2-8 The communities and the new model. (Slow food communities, 2021)

The concept of Slow food is to create a close relationship between high-quality food, the community and the local environment. With Slow Food's guidance, the slow food community can build networks of producers, consumers, organizations and local authorities around high-quality foods produced in traditional ways. By emphasizing community involvement, slow food can better protect the food and the history of the community, and the members of the community can develop closer link and emotions with the landscape in which they grow up. In addition, slow food communities are encouraged to give consumers the opportunity to learn and participate in food production as co-producers and thus better understand the value of slow food and its community.

The village of Zerradoun is a slow salt community in Morocco. Slow Food groups helped the poor community to improve salt production by purchasing equipment, providing storage and commercialization assistance for the different types of salt. Meanwhile, with the reputation of the network, Zerradoun has the opportunity to learn skills and knowledge from high-quality French GU érande salt to improve the quality and distribution of Zerradoun salt.

2.5.2 Redefine Heritage - Landschaftspark Duisburg-Nord

Figure 2-9 Industrial Heritage and nature in Landschaftspark Duisburg-Nord. (Photoed by author, 2019)

After the factory closed in 1987, Duisburg chose to keep this industrial heritage, which had coexisted with the city for more than half a century, and gave it new functions. As a representative work of the Post-Industrial Landscape Park, the Landschaftspark Duisburg-Nord emphasizes the value of industrial culture in the protection and utilization of abandoned industrial facilities. Its concept and strategies can be summarized into three aspects: (1) Preserve the facilities (buildings, structures, equipment, etc.) of the abandoned industrial heritage with special historical and aesthetic value as the main landscape elements; (2) Protect the core space nodes and elements after understanding the framework of the original industrial site layout (functional zoning structure, spatial organization structure, transportation structure, etc.); 3. Make full use of the industrial facilities of the site and endow it with new functions.

2.6 Method & Time planning

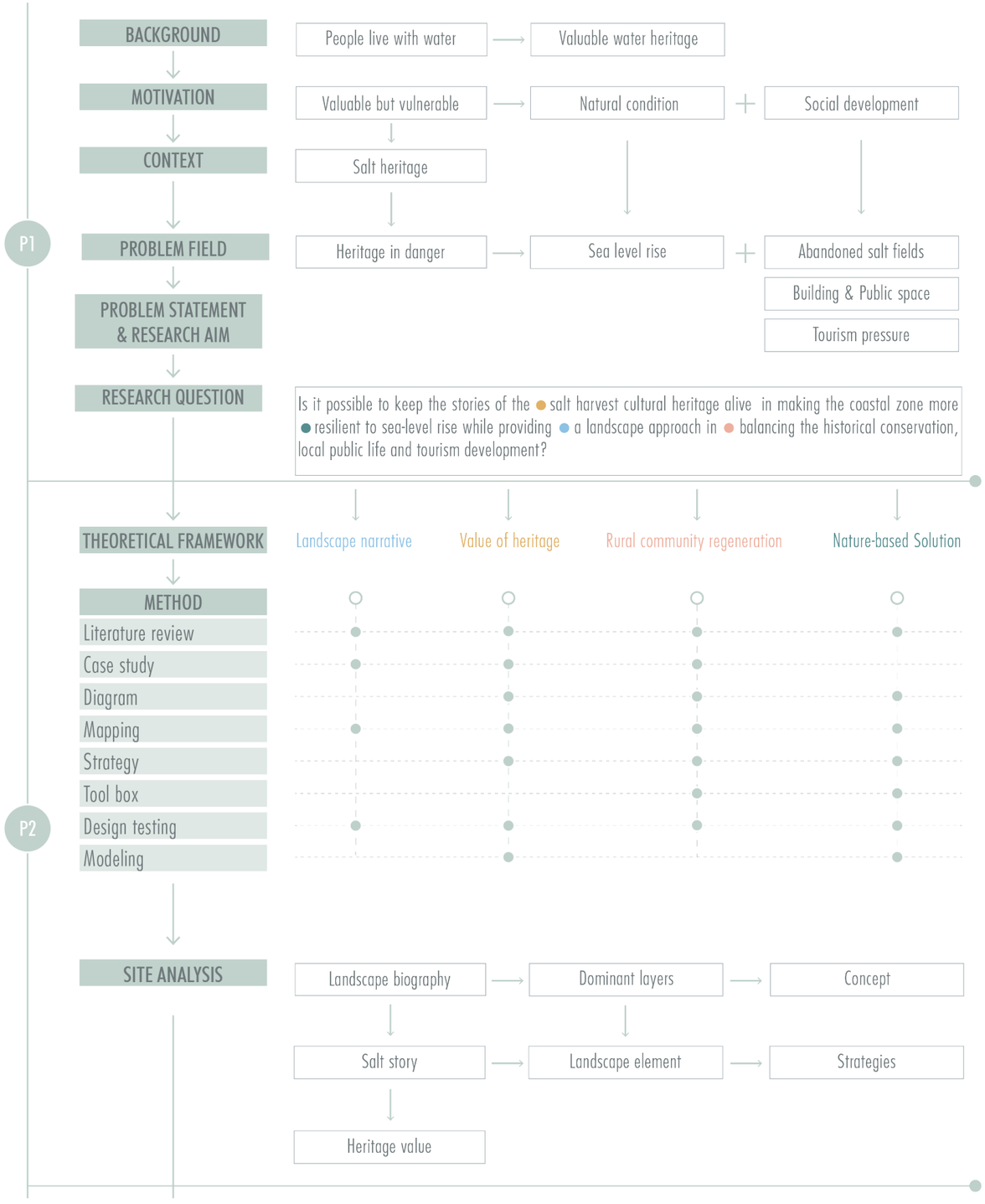
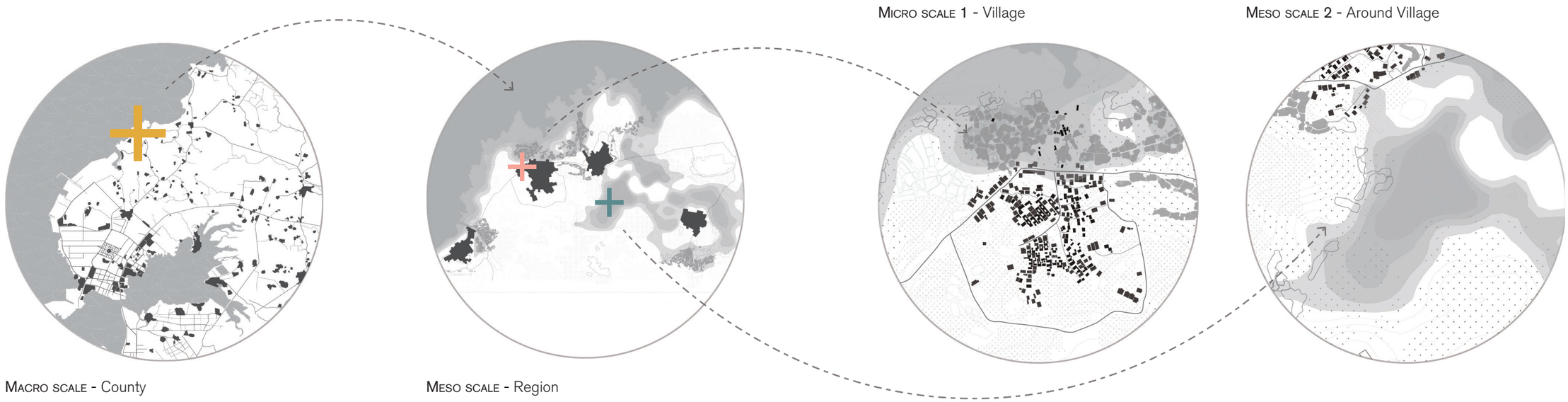


Figure 2-10 Methodology and time planning

2.7 Scale



Macro scale - County

- Public transportation
- Tourism cooperation in the county

Meso scale - Region

- Cooperation between different villages
- Infrastructure
- Development guidance

- Public space
- Salt harvest activities
- Rural lifestyle
- Tourism

- Tidal flooding threats
- Heritage structure
- Intertidal ecosystem
- Tourism

Figure 2-11 Scale definition

3.

Analysis

3.1 Landscape biography

The development of Salt village could be viewed as a landscape biography. It chronicles the story of how nature or human activities have shaped and transformed the landscape through time by dividing it into four main chapters.

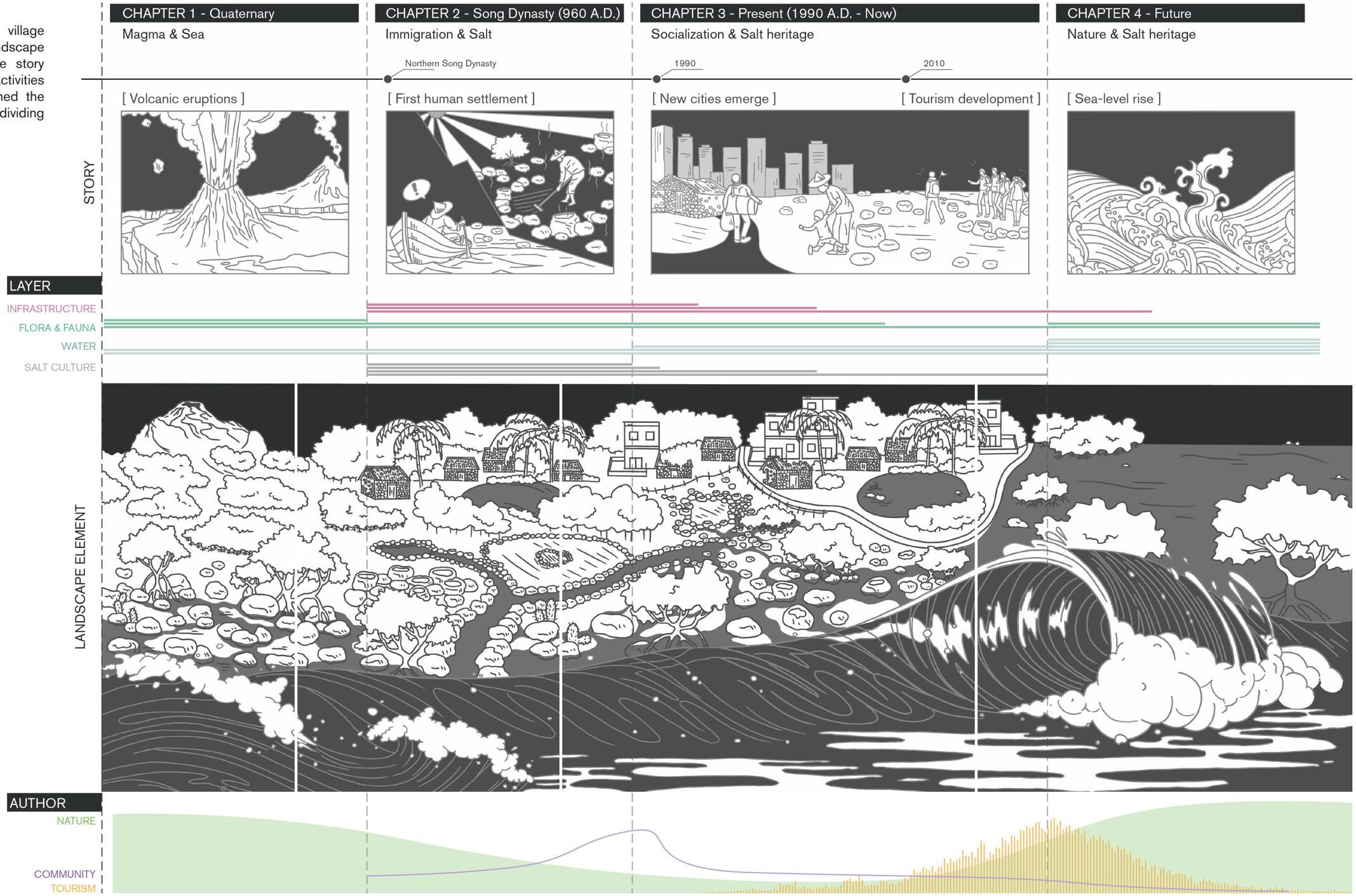


Figure 3-1 Landscape biography of the salt villages

3.2 Salt story

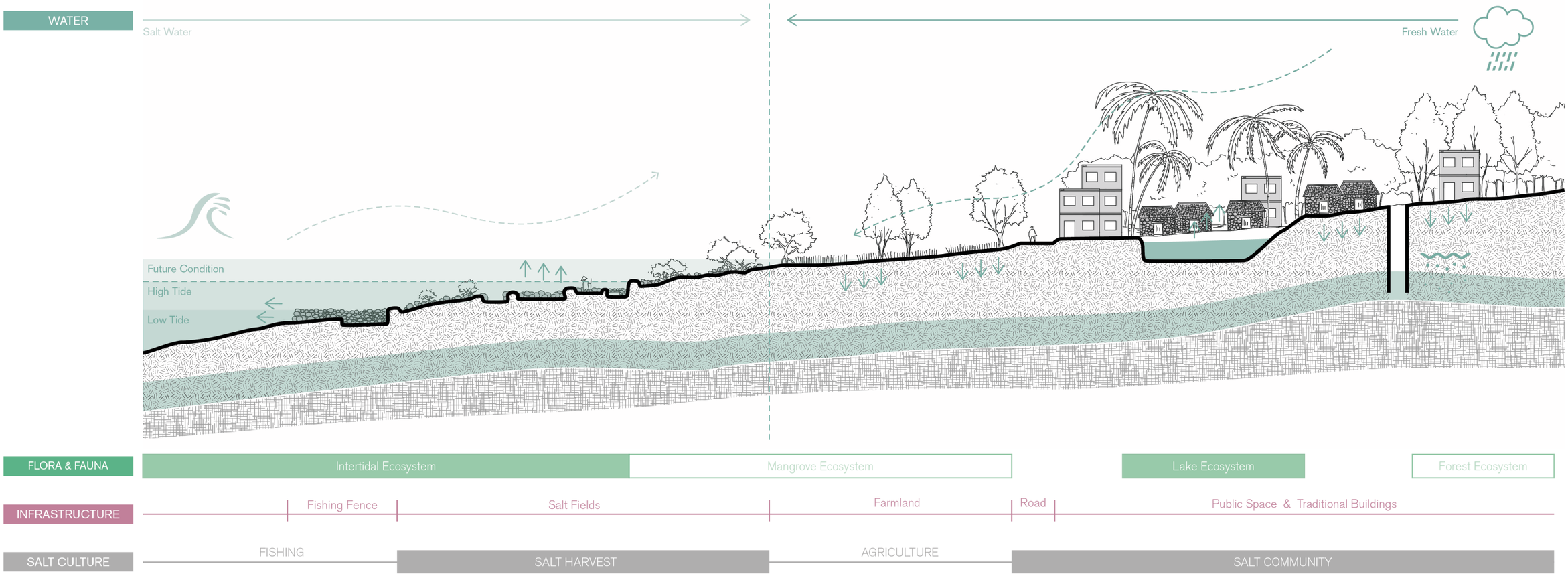


Figure 3-2 Section of salt villages

The section shows the relationship between the salt village, salt field, seawater and the salt story that occured in this area. Based on the situation of inundation after high tide, it divides into five different parts, including the bay, the fishing area, the salt fields, the farmland and the village. Among these five parts, the fishing area close to shoreline, the salt field and the farming land formulate a slight rising topography in front of the village in order to mitigate the threat of high tide. In addition, the section also indicates the layers of water, flora and fauna, infrastructure and salt culture to provide a comprehensive impression of the area.

Water layer

Saltwater and freshwater are the two water sources of the salt story. The higher village areas are divided by farmland and depend mainly on rainwater from the central lake and groundwater from deep wells, while rising and falling seawater is the dominant water source for the salt fields and fishing areas.

Flora and fauna layer

Affected by the water level and water source, the village nearby ecosystem is broadly classified into intertidal ecosystem, mangrove ecosystem, lake ecosystem and forest ecosystem. Among them, the presence of salt fields provides a suitable living space for the mangrove ecosystem.

Infrastructure layer

There are some supporting living facilities, amenities existing in the bay, fishing area, and salt field area. The road separates the productive landscape from the residential area. Moreover, the interior of the village consists of traditional stoney buildings and newly constructed concrete buildings with green courtyard and public spaces.

Salt culture layer

Overlaying the previous layers, the villagers are engaged in fishing, salt harvesting, agriculture and other types of activities in the vicinity of the traditional territory and have formed a salt community with a collective memory.

3.2.1 Historical value

As an important economic source for local residents, the ancient salt field of Danzhou developed gradually through the continuous adjustment of the natural and social environment. It played an active role in sustaining the livelihood of the salt people and maintaining the development of the ancient salt villages. As the earliest preserved example of sea salt solarization in China, this salt harvesting technique, which has been inherited for more than 1200 years, has special value for the history of traditional villages and the archaeology of the development of the salt industry in ancient China.

①② Collect sea water

The tidal power will flood the sea water into the salt fields and fill the sea water pools and sand ponds along the canal. The process soaks the salt mud of the sand ponds, so that it fully absorbs the salt in the sea water.

③ Rake sand

After the tide receded, the salt mud(sand) was saturated with salt, and the salt farmers would use wooden harrows to rake the sand in the salt fields. When the water in the salt mud is evaporated, the salinity of the sand will increase.

④ Filter out the sand

After being exposed to the sun, salt farmers use wooden rakes to gather together the saltier mud and stack it in a filter. They then poured seawater over the salt mud that had accumulated in the filter, and dissolved the salt in the mud with seawater. Through a thatch filter, the salt will follow the seawater into the brine pond.

⑤ Detect salinity

The salt farmers use a shrub (Asima sarmentosa) to test the concentration of the brine. If the stems of this plant float up quickly in the brine, then, the brine has reached a sufficient concentration for the salt to be dried.

⑥⑦ Harvest salt

The salt farmers transfer saturated brine onto the salt stone with buckets. After half a day of exposure, the salt water will crystallize into pure sea salt.

Figure 3-3 Circular story of salt harvesting process

3.2.2 Social value

The social value of the salt heritage could be discussed from two perspectives: within the salt village and interaction with outsides.

First, the salt field was not only an important element in sustaining the village but also a productive function. As an important economic source for the salt villages, villagers could use the salt fields to produce sea salt, but could not occupy them indefinitely or operate them in perpetuity. Therefore, these historic structures are inherited from generation to generation as a gift for villagers. And since there is no fixed labor division for procedures, each of the family members is involved in the processes of rake sand, filtration, and harvest salt. The maintenance of the salt fields and the production of sea salt have brought together different generations of family members and the community as a whole, thus keeping these fundamental structures alive for thousands of years.

Secondly, due to the rapid growth of tourism and its enormous benefits, the salt heritage attracts numerous tourists and organizations as the unique cultural landscape. The stone complexes, the salt field structure and the sea salt produced by the local villagers are all important tourism resources. In addition to visiting the salt landscape, traditional villages can provide food, lodging and activity space for visiting guests because the sea salt itself, produced in the salt villages, can be used as a seasoning, bath salt and medicinal herbs depending on its quality. By implementing a series of measures and organization, this series of social values generated around salt can transfer the current situation of low economic benefits of massive tourism. Due to that, there will be better platforms and opportunities for the development of salt archaeology, traditional village social research, and traditional foods made with sea salt.

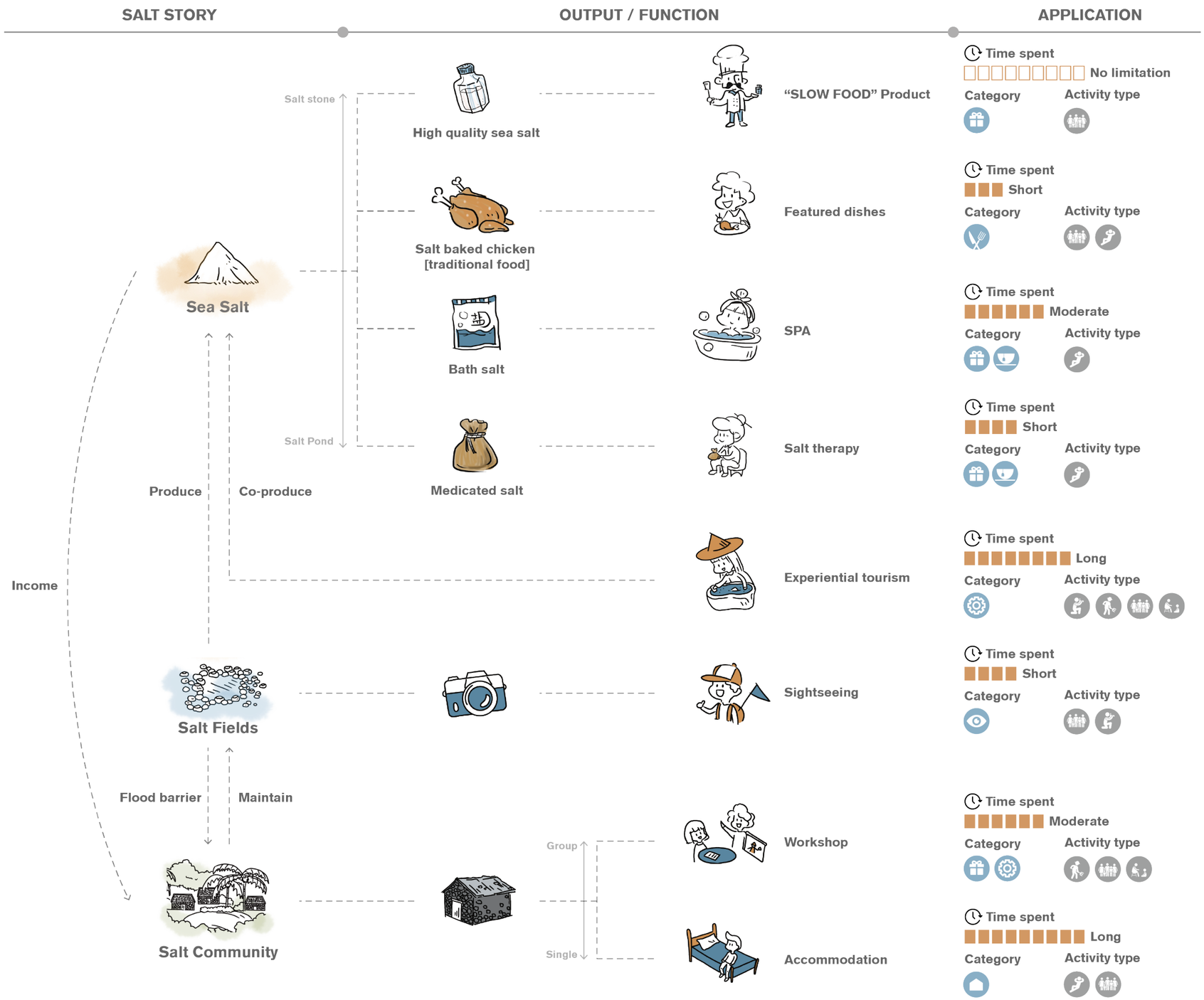


Figure 3-4 Social value of the salt story

3.2.3 Ecological value

Salt fields plan in different tidal conditions

Figure 3-5 Salt villages in high tide condition

Figure 3-6 Salt villages in middle tide condition

Figure 3-7 Salt villages in low tide condition

The formation and harvest process of salt fields are closely related to the intertidal zone. Salt fields are mainly distributed in the intertidal zone, and their components play different roles with the rise and fall of sea water. At high tide, the water level is higher. The water canals that connect the salt fields to the coast will be filled with seawater, which will flood the higher water ponds and sand ponds. After low tide, seawater left in the aqueducts and ponds will continue to replenish the salt in the mud. The villagers then filter the evaporated salt mud and pour the brine onto the rock and let the sun evaporated till the sea salt appears. In addition, to being a source of income for the locals, the salt fields are also a barrier against the sea. From the spatial perspective, the salt fields create more elevation variations on the flat lava flats. This rich surface provides living and reproduction condition for mangrove and other flora and fauna communities.

The presence of mangroves weakens the impact of waves on the stone structures, thus protecting the coastline near the salt villages. The buffer zone, made up of salt fields and mangroves, ensures the safety of village buildings in the higher elevations.

The salt fields which are located in the intertidal zones have very significant ecological values. As the place where the land and sea meet, the intertidal zone provides a variety of water conditions. Thanks to this unique feature, it creates a rich habitat for a variety of plants and animals with different habitats. The presence of salt flats weakens the impact of waves on the intertidal area, allowing more mangroves to root and grow. Moreover, the complicated spatial structure of the salt fields enhances the impact of high and low tides on the intertidal zone. Some of the seawater brought by the high tide stays within the structure of the volcanic rocks and creates small puddles on the volcanic rock mudflats. The puddles provide more space for marine organisms to survive and spawn at low tide.

In the supratidal region, as the influence of seawater gradually decreases, semi-mangrove communities, as well as more freshwater-dependent plant communities, begin to develop. It is thus clear that in order to achieve ecological diversity, the design can create different types of habitats by controlling the dominant water source.

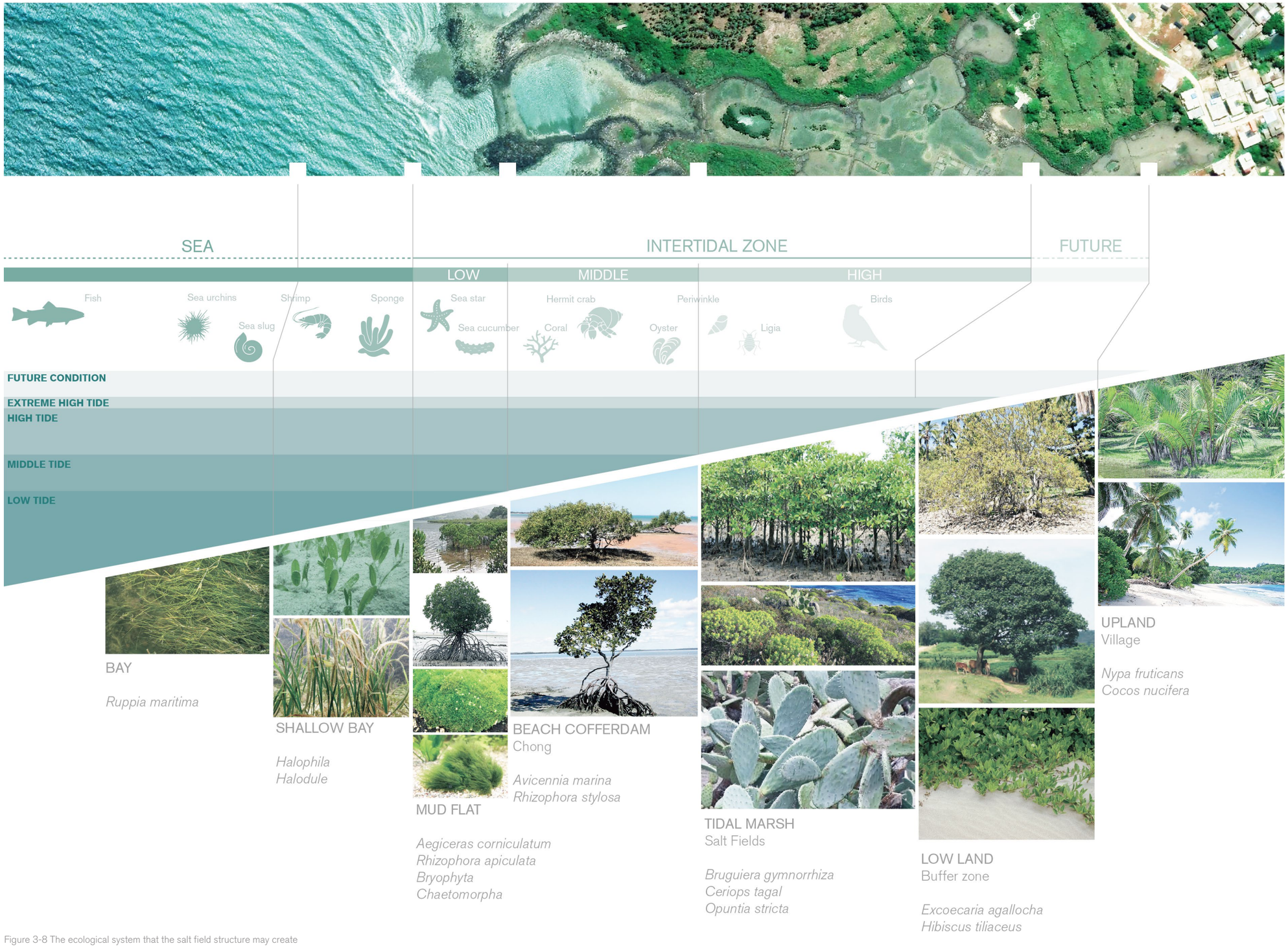
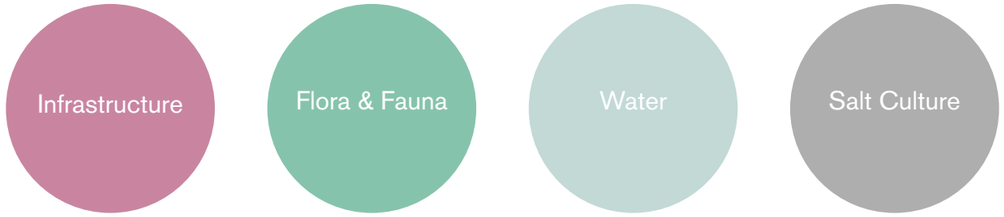


Figure 3-8 The ecological system that the salt field structure may create

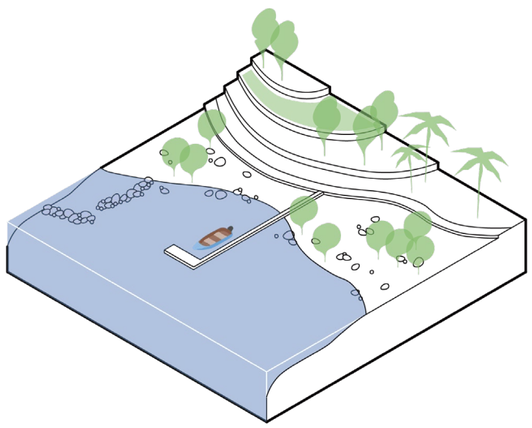
3.3 Landscape elements

Figure 3-9 Important landscape elements of the salt fields

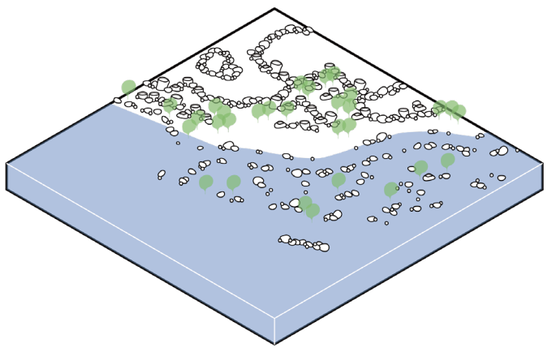
3.4 Dominant Layers



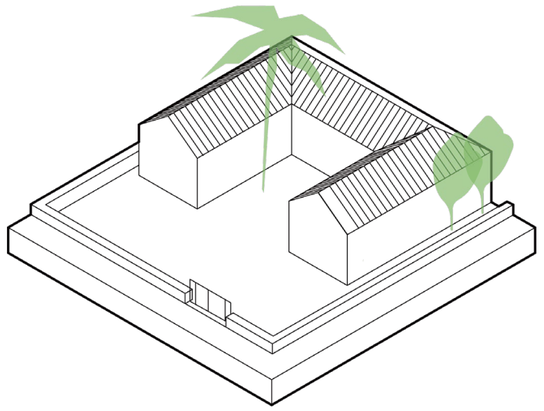
1. Coast Line



2. Salt Fields



3. Traditional Buildings & Public Space



4. Bay

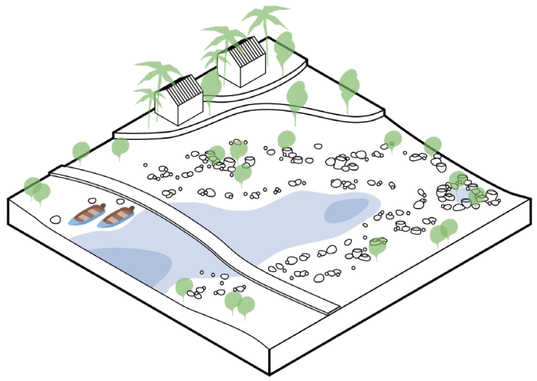


Figure 3-10 Diagram of important landscape elements of the salt fields

The salt story influences the landscape around salt villages, thus some of the landscape elements become an essential part of the salt narrative. The coastline affecting the intertidal area, the large intertidal salt fields, the salt village on higher ground, and the volcanic rock bay surrounding the village are some of the important elements. Through the diagrams of four elements, it notes that infrastructure, flora and fauna, water and salt culture are the most dominant layers in the palimpsest of this biography.

3.4.1 Water layer

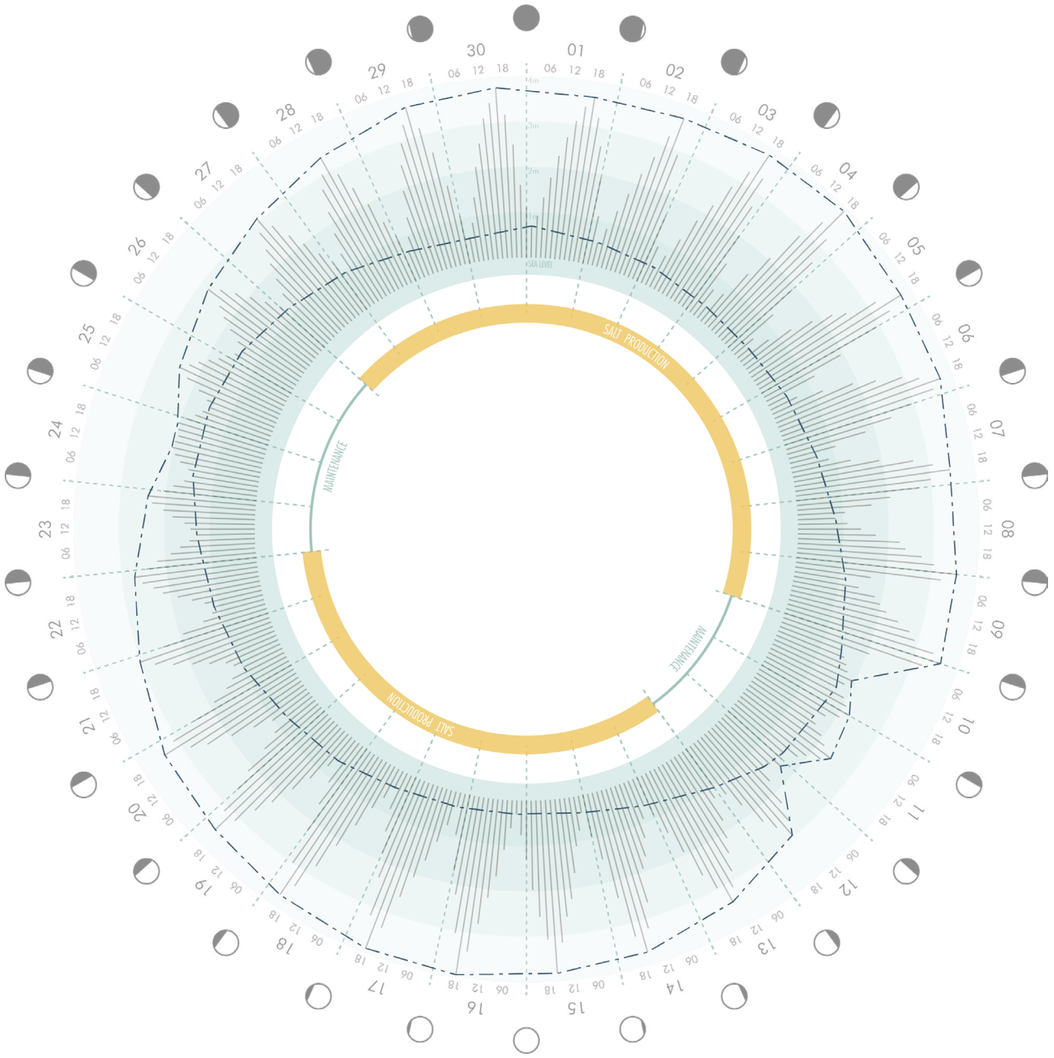


Figure 3-11 Tidal condition of the salt villages

This diagram records the tidal conditions in a lune month near the salt village. On a day basis, the salt villages are located in the full day tide zone, where high tide appears once a day. On a month basis, the largest range of spring tide appears around the Full Moon and New Moon periods. And in the Quarter moon periods, the water levels of the high and low tide are too close, which is unsuitable for the harvest of sea salt.

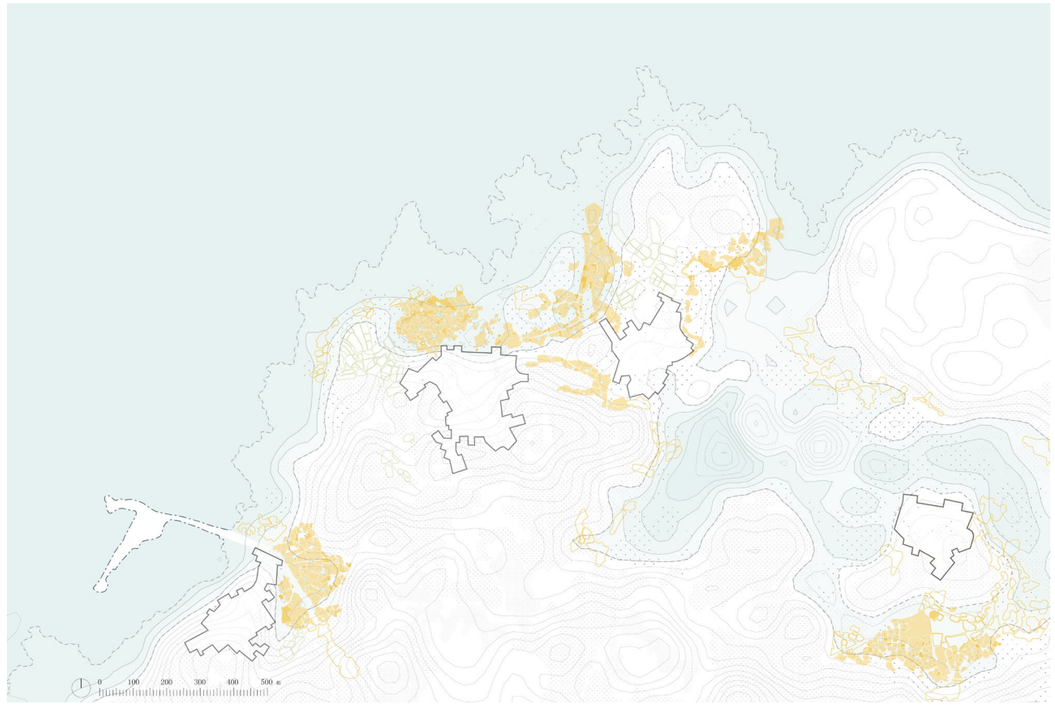


Figure 3-12 Tidal condition map

The distribution of contours shows that the mudflat area near the shoreline is very flat. There is sufficient area in front of the salt flats for the establishment of a buffer zone of mangroves. By installing a short-term wooden fence, the mangroves can grow in the intertidal zone where the water level is slightly higher and mitigate the impact of waves on the salt flat structure, thus reducing the threat of sea-level rise to the village.

Besides, considering the impact of the rising water level in the bay area to the right of the site on the two villages, a dike and necessary roads are needed in the lower terrain area near the villages to meet the daily needs of the villagers.

3.4.2 Flora & Fauna layer

Figure 3-13 Vegetation map Sea Intertidal zone Salt field Salt village Fresh water forest Mangrove forest

Affected by the water source, the plants of the site could be roughly divided into the mangrove forest, which grows in saltwater, and freshwater forest, which depends more on rainwater and groundwater. However, the water source mainly depends on the elevation. Therefore, in the subsequent design, it could consider creating alternating mangrove and freshwater forest ecosystems by using the topographic elevation difference, which could increase the ecological diversity and make it more resilient.

It is worth mentioning that many nascent mangrove forests have emerged in the abandoned salt flat areas. These mangrove forests grow in the low lying sand ponds of the salt field and in the areas where the salt stone is densely distributed. The salt pond structure brings more possibilities to the intertidal ecosystem.

3.4.3 Infrastructure layer

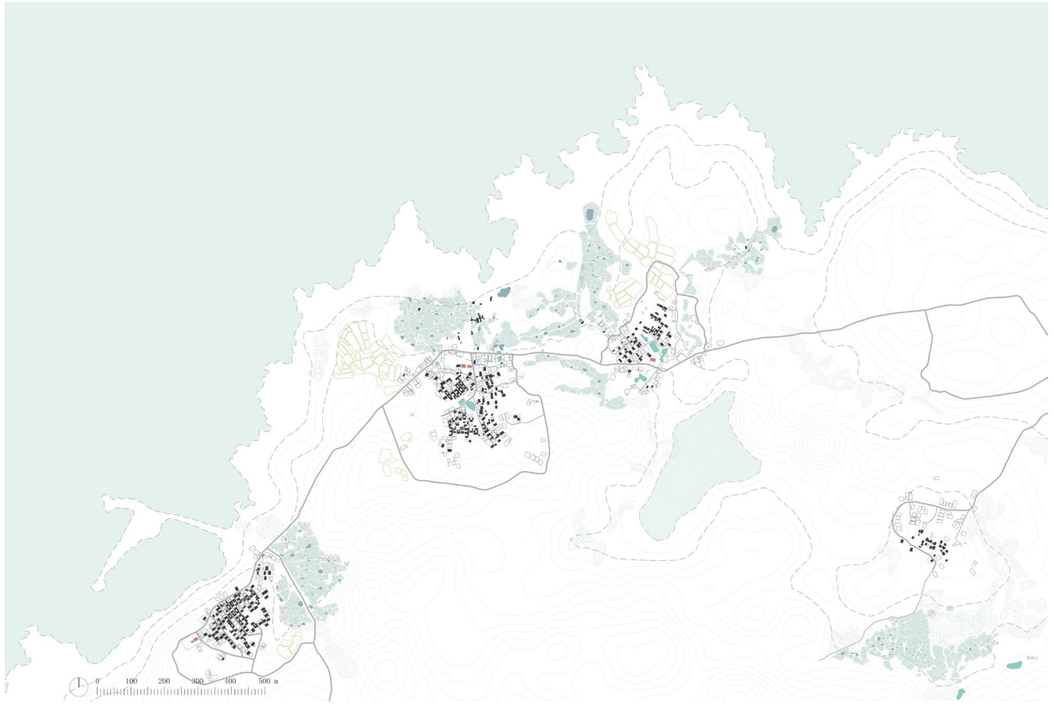


Figure 3-14 Infrastructure map Sea Intertidal zone Salt field Farmland New building Old building Road

Currently, the existing infrastructure of the village is the road created by the local government, salt fields built up by villagers and new buildings owned by villagers. Because of the remote location, the road system is not well developed. There are no direct roads between Xiaodi village and the other three salt villages. And the lack of road system hierarchy and unmanaged salt fields aggravate the pressure brought by tourism to the salt fields. Therefore, reasonable road and path design are urgent.

In addition, traditional stone buildings that have fallen into disuse with the emergence of new architecture can be used as opportunities for future tourism development. The old stone houses can become characteristic B&Bs, museums or even studios. After giving new functions to the traditional buildings, these valuable sites can be better adapted to the social development of Salt Village and gain the attention and maintenance of the villagers again.

3.4.4 Salt culture layer

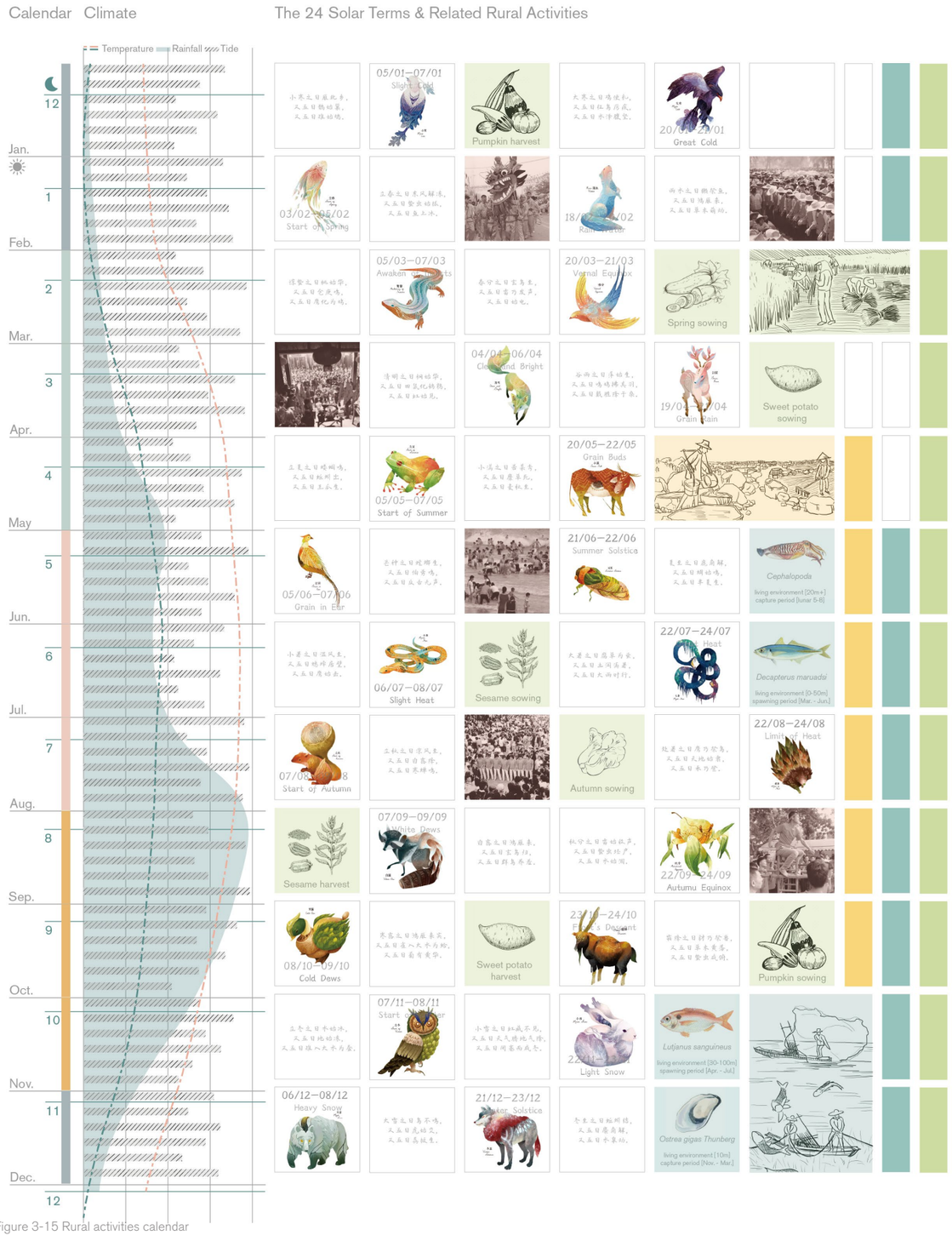


Figure 3-15 Rural activities calendar

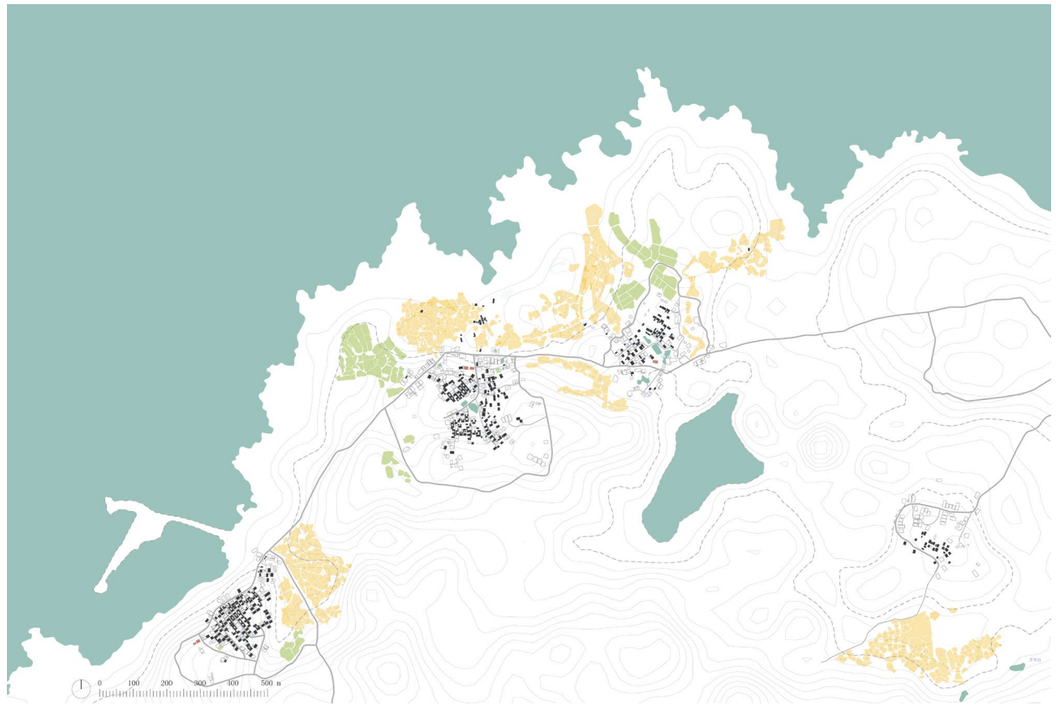


Figure 3-16 Rural activities map

Salt villagers have a rich rural life. Except for a variety of folklore activities throughout the year, they also have an attractive lifestyle of salt production and fishing. Referring to the case of a slow food community, salt villages can also hold attractive agricultural activities, such as “salt making experience”, “family farm” and “fish touching experience”. These unique experiences can be used as an incentive to preserve the salt field site and promote the development of the village.

The rural activities map shows that the majority of the activities take place around the Yanding and Lingfan village. In that case, these two villages can be developed as the core areas for tourism in the salt villages.

4.

Conceptual Design

4.1 Design Concept

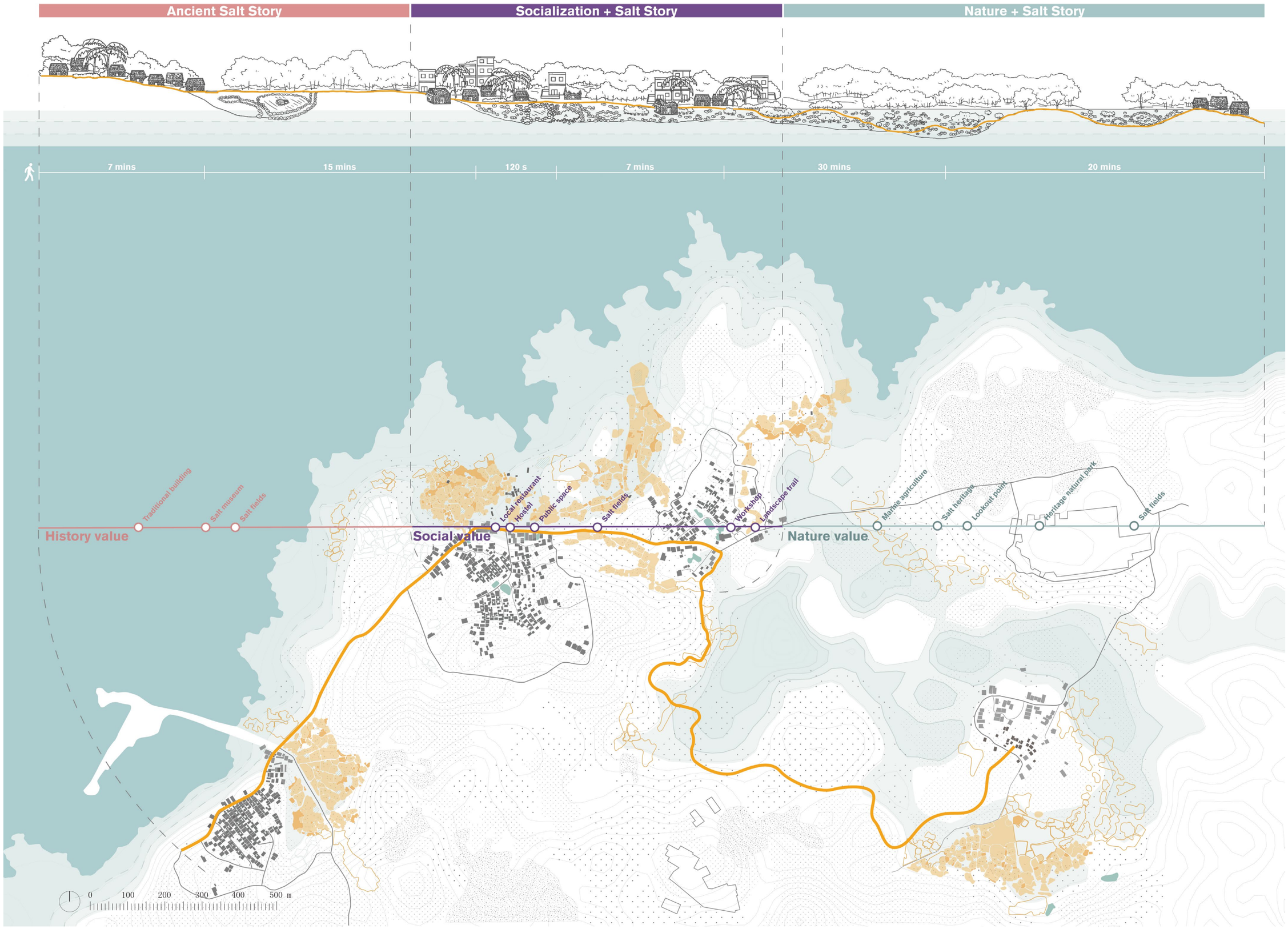
As the landscape biography shows, the dominant author of the site is changing as time passes. The growth and ebb between human activities and natural force is an interesting part of the salt narrative. If the landscape narrative is created based on these changes, then the chronological appearance of “salt production methods from the Song Dynasty to the present”, “adaptation of salt territory to modern society” and “salt heritage that have returned to nature” could be the three most important paragraphs.

Based on that, the existing road structure and landscape qualities of the village are used as the elements to delineate the landscape narrative. As it is shown in the figure, Xisha village which is located at the intersection of harbour and traffic artery is suitable as the beginning of the narrative due to the traffic advantages and the well-protected traditional building complex. The traditional stone building and salt field show the long history and culture of salt making in the salt community.

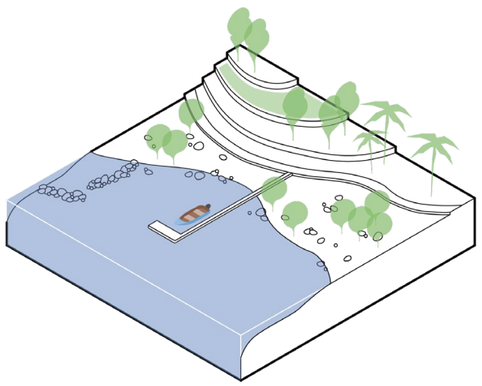
With the emergence of more modern buildings, the landscape of Yan Ding and Ling Hui villages show the balance between social development and traditional village preservation along the road to the west. The collective memory of the traditional salt community could be reinforced by establishing a sequence of public spaces from the salt paddy to the ancestral village then to the central lake. The ancient buildings, public spaces, salt paddy and other spaces gave new functions that can create a new socialized salt narrative with the villagers.

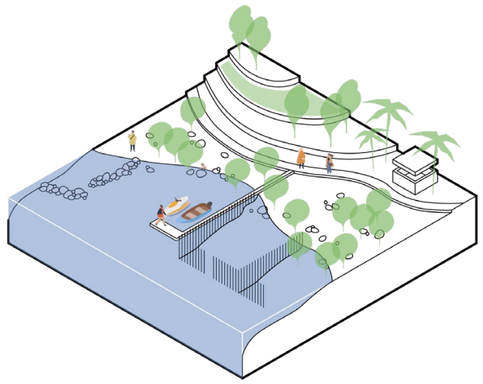
The bay between the middle of the village of Ling Hui and Xiaodi is more suitable for telling the story of the return of the salt landscape to nature. Mangroves and intertidal animals have established habitats on the heavily neglected salt fields. People will recall the memory of ancestors who used to work here when they passed by the abandoned salt fields. The flora that grows on the salt heritage will continue the salt narratives.

As a product of the interaction between humans and nature, the salt heritage has its unique historical, social and ecological significance. This project aims to provide a landscape approach using the concept of landscape narrative to balance historic preservation, local public life and tourism development.

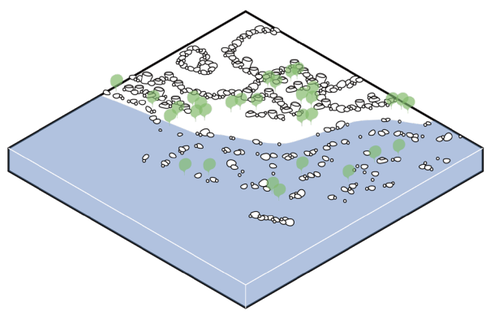

Ancient Salt Story
Socialization + Salt Story
Nature + Salt Story
7 mins
15 mins
120 s
7 mins
30 mins
20 mins
History value
Traditional building
Salt museum
Salt fields
Social value
Local restaurant
Hostel
Public space
Salt fields
Workshop
Landscape trail
Nature value
Marine agriculture
Salt heritage
Lookout point
Heritage natural park
Salt fields
0
100
200
300
400
500 m

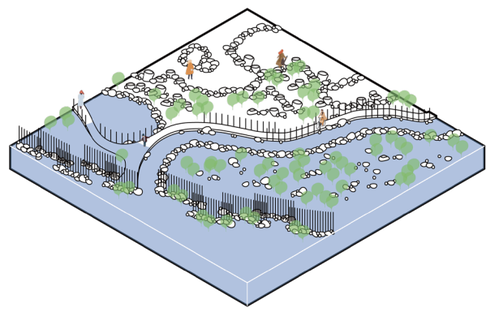
4.2 Design Strategies



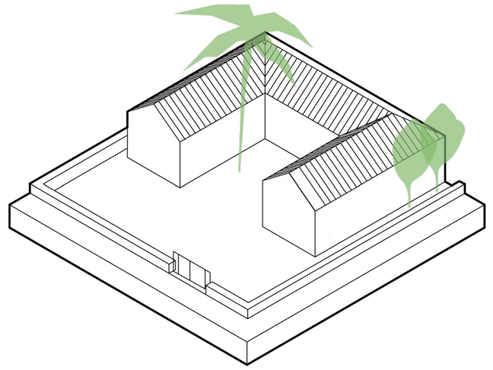


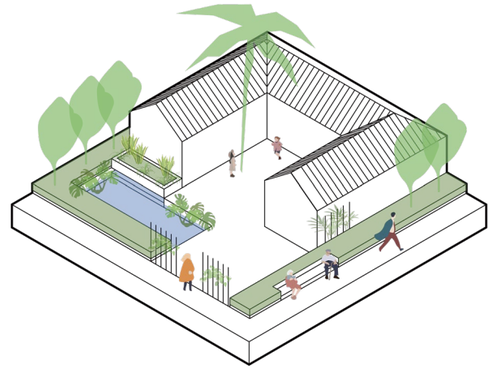
1. Coast Line



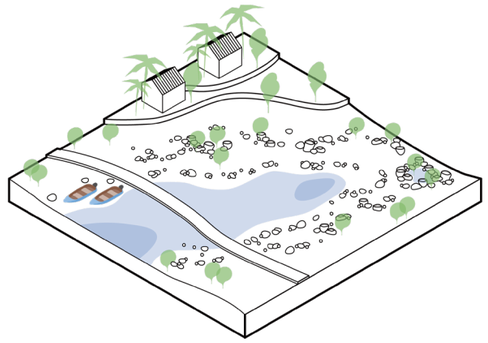


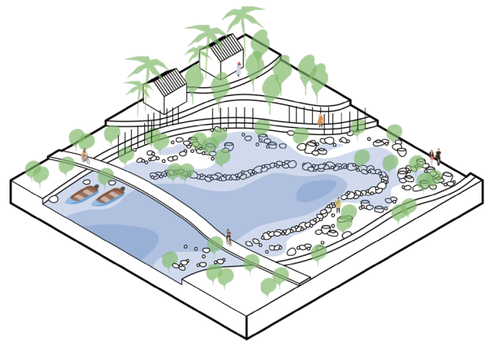
2. Salt Fields





3. Traditional Buildings & Public Space





4. Bay

The design strategy of this project focuses on the four important elements of the landscape that have been analyzed in the previous section. Based on the characteristics of each element, it will propose design strategies for four layers: water, flora & fauna, infrastructure and salt culture, so that the core of the design concept “salt narrative” will be realized.

Coastal line

For the coastline area, it is critical to mitigating the threat of sea-level rise to Salt Village. The design strategy is to mitigate the impact of waves on the coast by building permeable structures parallel to the shore, thus providing more opportunities for mangrove reproduction.

Salt fields

The two most threatening factors to salt fields are spring tide and tourism pressure caused by sea-level rise. The permeable dam built with wooden sticks and stone bases aims to resist the impact of spring tides while preventing the salt field sediment from being carried away by sea. In addition, the new wooden landscape walkway can better guide the visitors to reduce the damage to the structure of the salt flat while they enjoy the view of the salt flat.

Traditional Buildings & Public Space

The emergence of concrete buildings has led to the abandonment of some of the traditional volcanic stone buildings within the village, and thus vitality of the public space gradually lost in the vicinity of the building complex. The design strategy is to break the completely closed courtyard wall of these buildings, and then to make these spaces more attractive by giving them new functions (such as folklore, dining, workshops, etc.) with the construction of water storage, landscape pools and resting areas.

Bay

Utilizing the existing abandoned salt flat structures in the bay area to create a more resilient intertidal ecosystem is the focus of the design strategy for this area. The construction of a landscape pontoon will catch more sediments in the inner bay area, facilitating connections between villages and creating opportunities for more diverse habitats. With sediments and existing salt structures, freshwater-dependent plants and mangroves can flourish in this area and provide food and shelter for different species of animals.

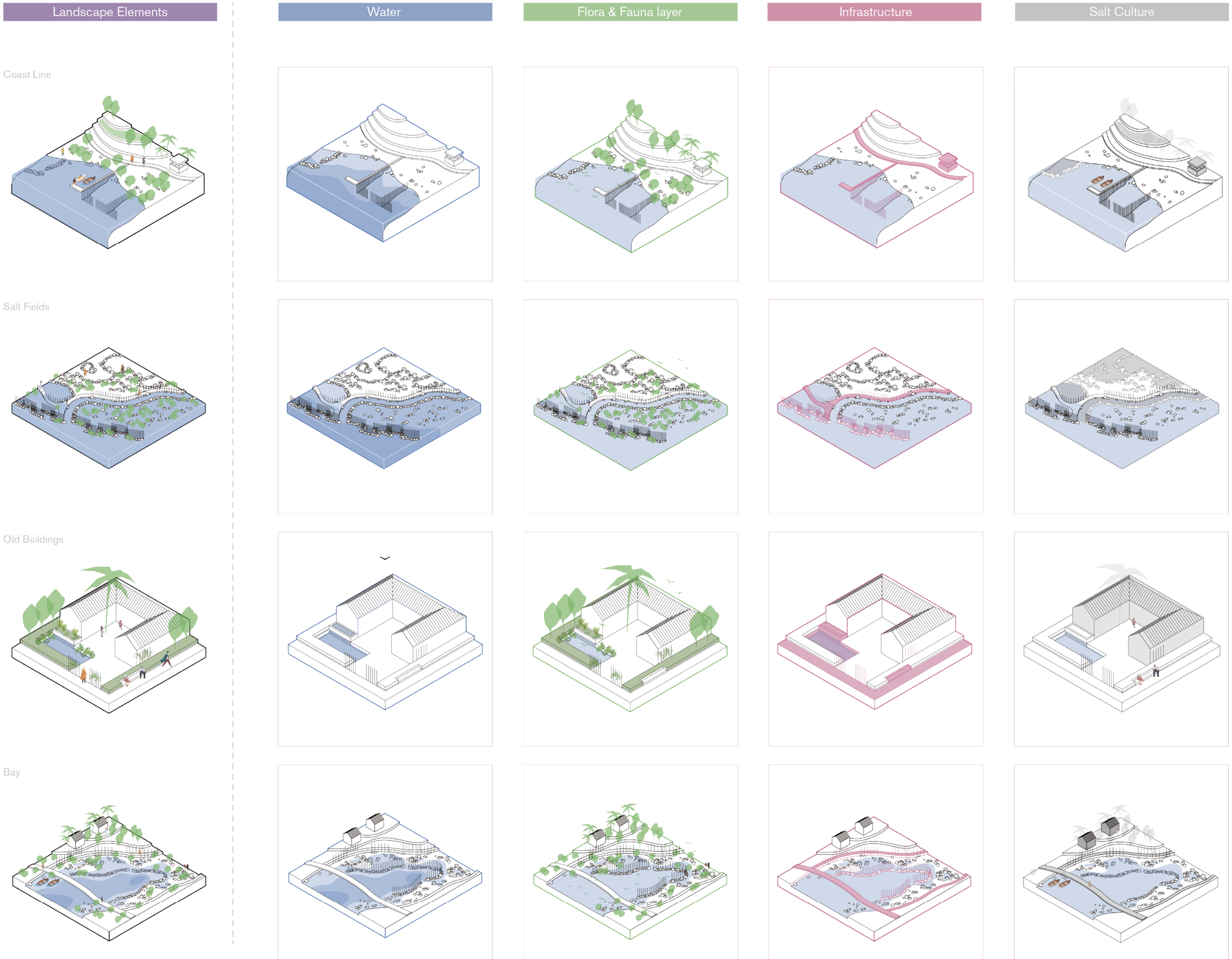
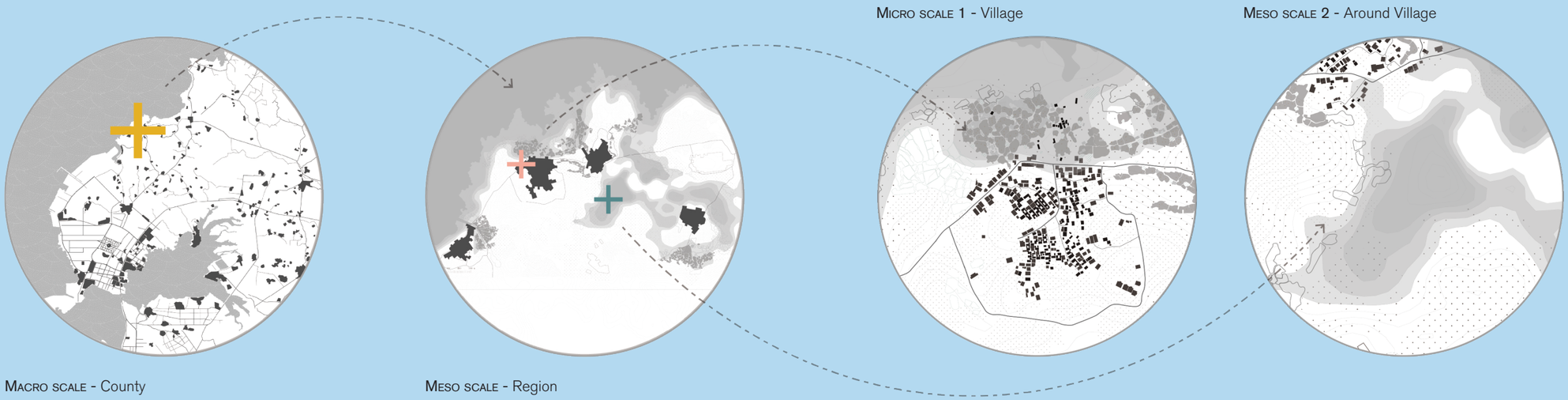


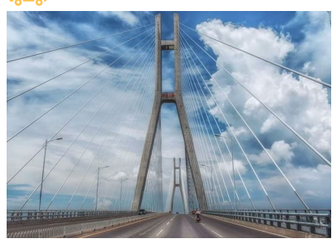
Figure 4-3 Design strategies

5.

Design


Micro scale 1 - Village
Meso scale 2 - Around Village
Macro scale - County
Meso scale - Region

5.1 Tourist route planning



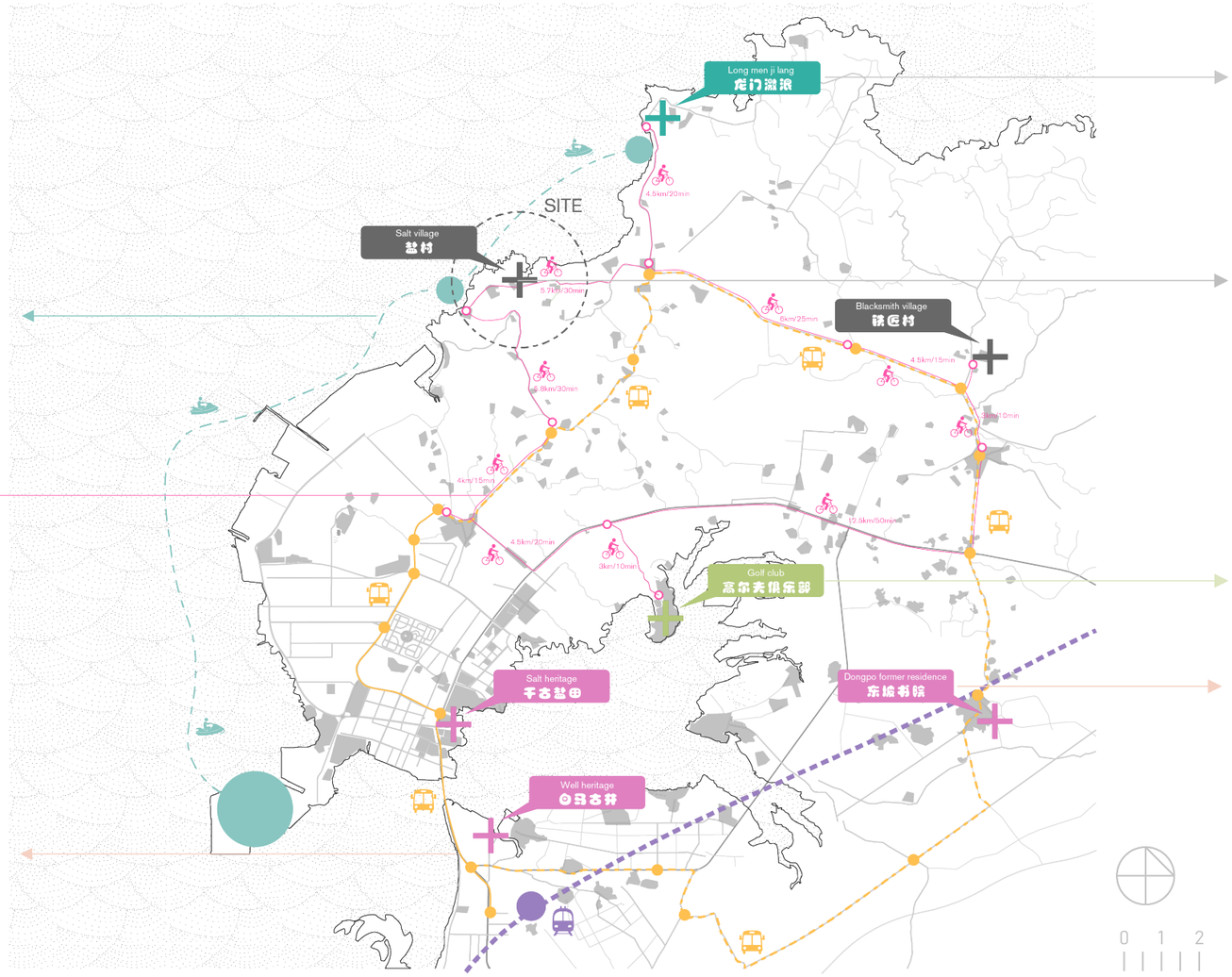


Figure 5-1 Tourist route in county scale

The design at the county level mainly reflects on the planning of tourist routes. As it mentioned in the problem field in chapter 2, the reasons for the rapid tourism include the lack of convenient public transportation and the lack of connection between the surrounding tourist spots. Therefore, in the planning of the tourist route, the two points that need to be considered are the accessibility of the public transportation system and the interaction between Yan Village and the surrounding tourist hot spots.

A better bus system brings forth more opportunities for interaction between scenic spots. Tourists will be able to freely mix and match their travel routes via public transport and visit historical, cultural, natural or leisure attractions according to their preferences.

5.2 Master planning

The meso scale planning takes into careful consideration the four villages and their surroundings. The concept of “building a landscape narrative of salt” guides the design of the landscape layers of the site such as water system, vegetation layer, road system, and public space. By creating “History-Socialization-Nature” story line, salt heritage will flourish again, history and nature will speak to visitors through fascinating key spots, and the power of salt story will prompt a higher quality of life for its residents and tourists.

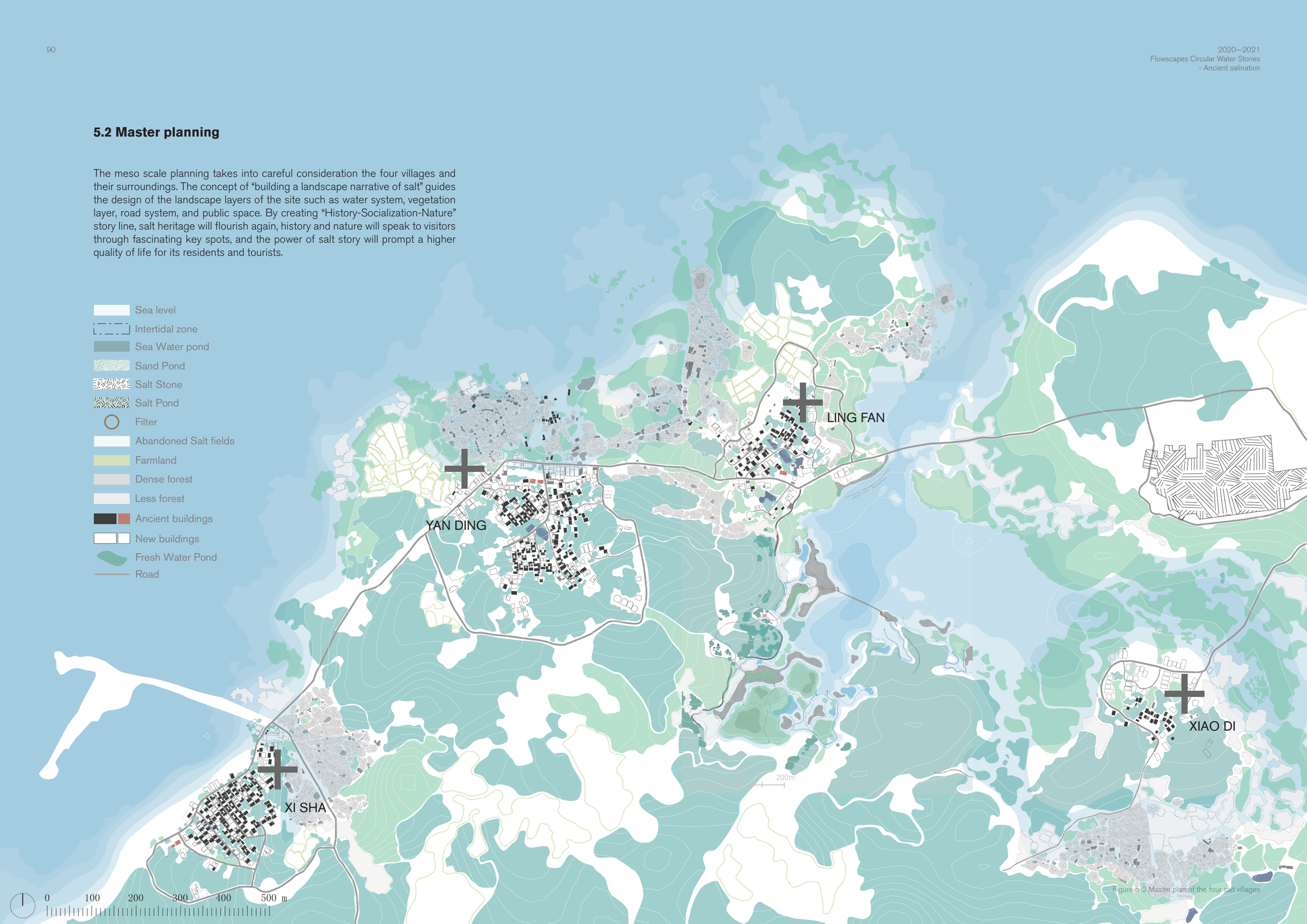


Figure 5-2 Master plan of the four salt villages

5.2.1 Water Layer

For Yanding village, the wooden dykes placed at 0-1m isobath to allow seawater seepage will slow down the impact of seawater on the salt field structure. For the lower areas in the bay, wide stone dykes will block future higher water levels at high tide. In addition, the design creates rain gardens along the shores of the bay, using the abandoned salt field structure. Through the design of areas where fresh and saltwater co-exist, the bay will have the opportunity to provide habitat for more flora and fauna and enhance its own resilience.

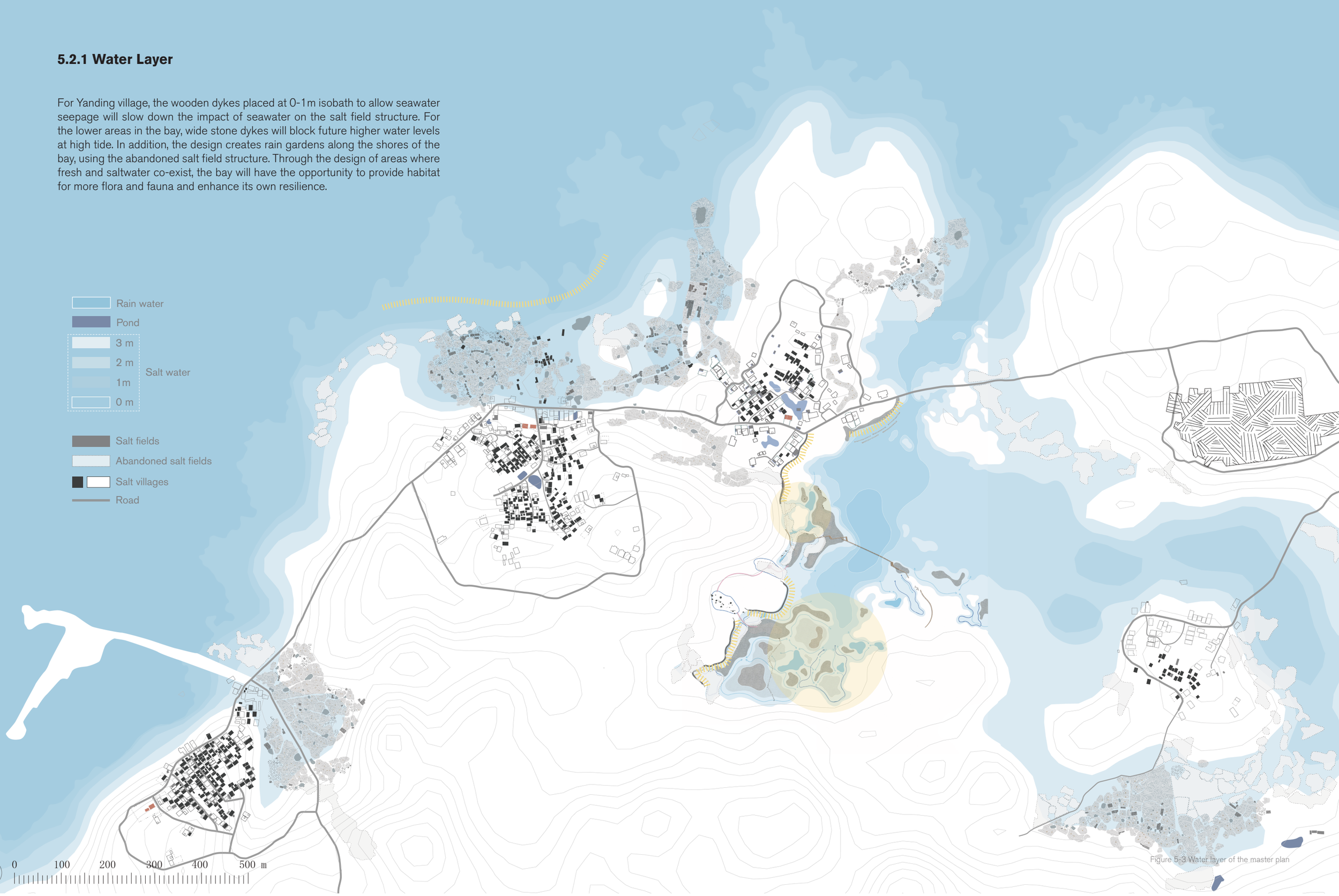


Figure 5-3 Water layer of the master plan

5.2.2 Flora & Fauna layer

The float of the bay area is the core of the design. Thanks to the sediment intercepted by the newly developed pontoons and the control of the salinity of water, the biodiversity of the area shown in Area I has been significantly enhanced. In addition, the wooden dykes constructed in the coastal area to mitigate the tidal impact provide a good environment for mangrove reproduction, so that a new mangrove community will be formed in Coastal Area II.

The greenery of the main public spaces within the village will be improved as well. For instance, the part of the pavement in the ancestor hall and centre lake area will be replaced by green space. More aquatic plants will also be used to purify the residents' domestic sewage.

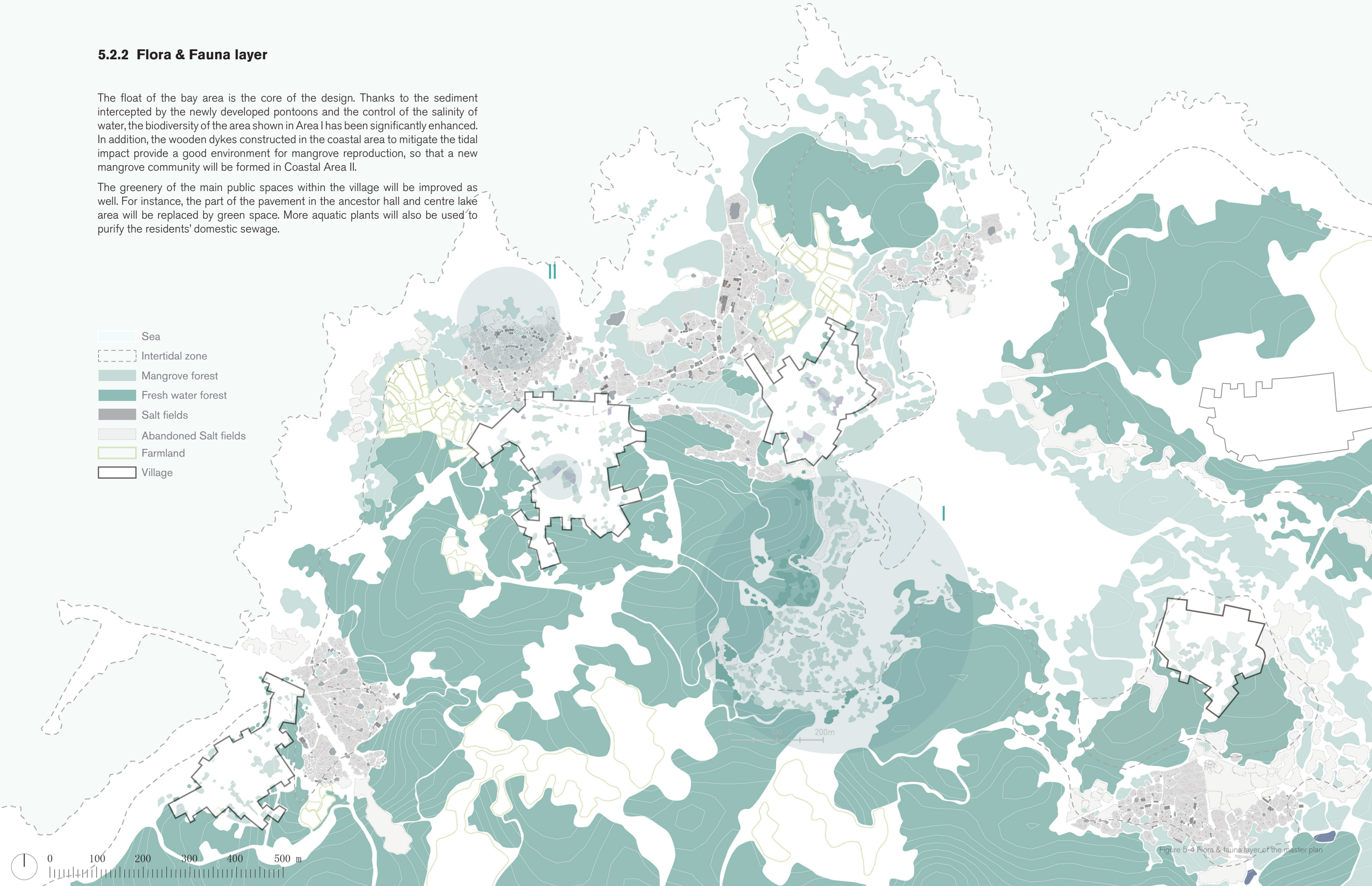


Figure 5-4 Flora & fauna layer of the master plan

5.2.3 Infrastructure layer

In order to establish a more efficient transportation system, the project has graded the roads on the regional scale and supplemented the essential pedestrian paths. The road hierarchy of car, bicycle and pedestrian path and parking lot construction could mitigate the damage of traffic to the atmosphere of the ancient village. And the newly constructed bike paths and trails on the outskirts of the salt pans can reduce the damage they cause to the structure of the salt pans while visitors fully appreciate the ruined areas. The trails linking the four villages will also make travel easier for Salt Village residents and visitors.

In addition to the renovation of the road system, the abandoned old buildings in the villages have been given a new function. Buildings close to public spaces and roads have been transformed into restaurants and workshops, while clusters of buildings with inner courtyards hidden in quaint streets have been transformed into special folklore.

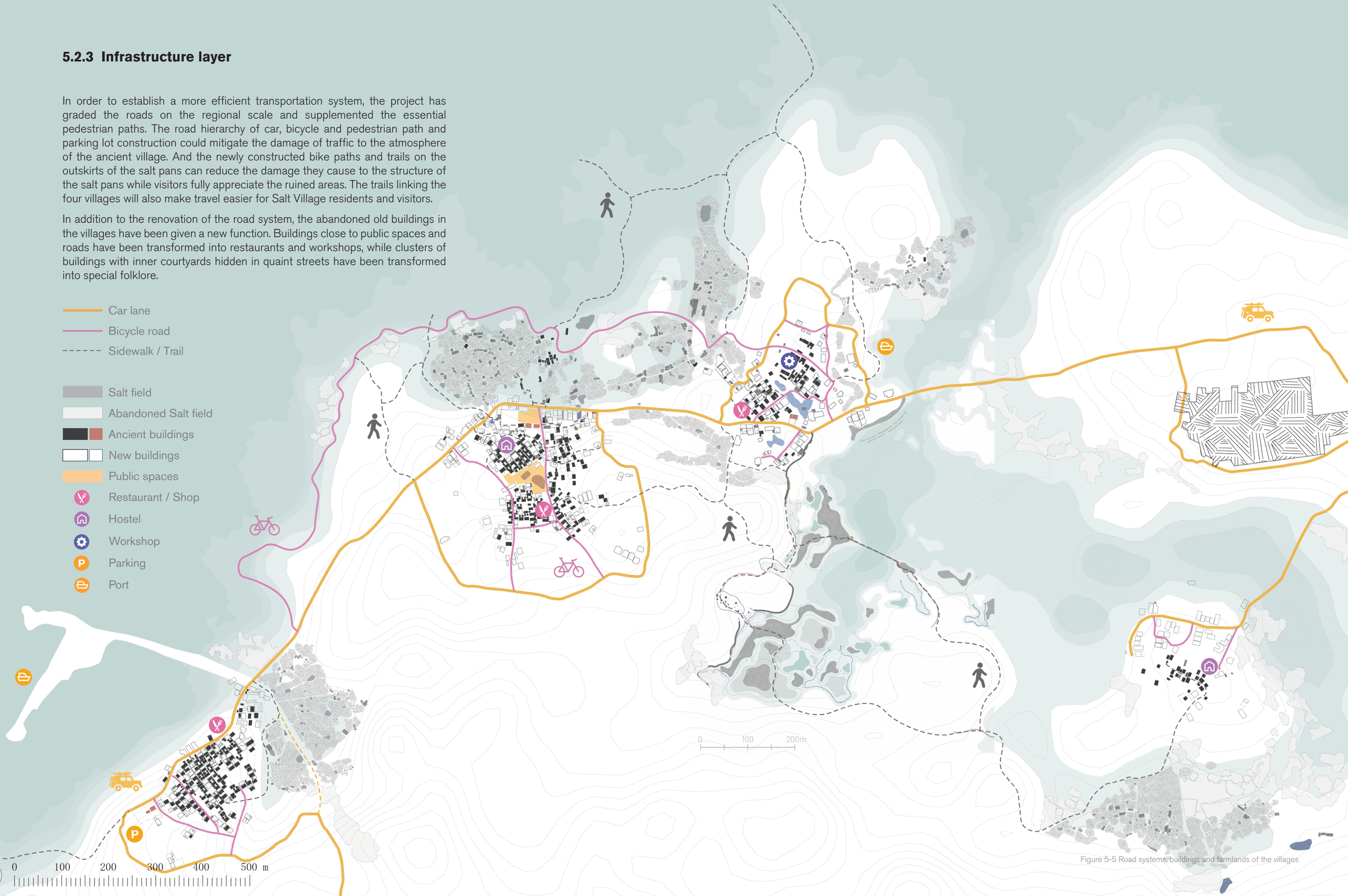


Figure 5-5 Road systems, buildings and farmlands of the villages

5.2.4 Salt culture layer

Based on the newly planned road system, zoning and landscape features, the design divides the activities and attractions related to salt culture into three broad categories: historical, natural tourism and experiential. The history of salt production in the village, the daily life of the villagers, tourists, the volcanic rocky coast, mangroves and local animals are all important participants in this layer.

1 Stone tower
2 Salt museum
3 Salt field
4 Ancestral hall plaza
5 Central lake park
6 Salt field

1 Mangrove tidal flat
2 Seaside trail
3 Lookout point
4 Lookout point
5 Salt heritage
6 Bird watching tower
7 Rain water garden
8 Heritage natural park
9 Floating bridge

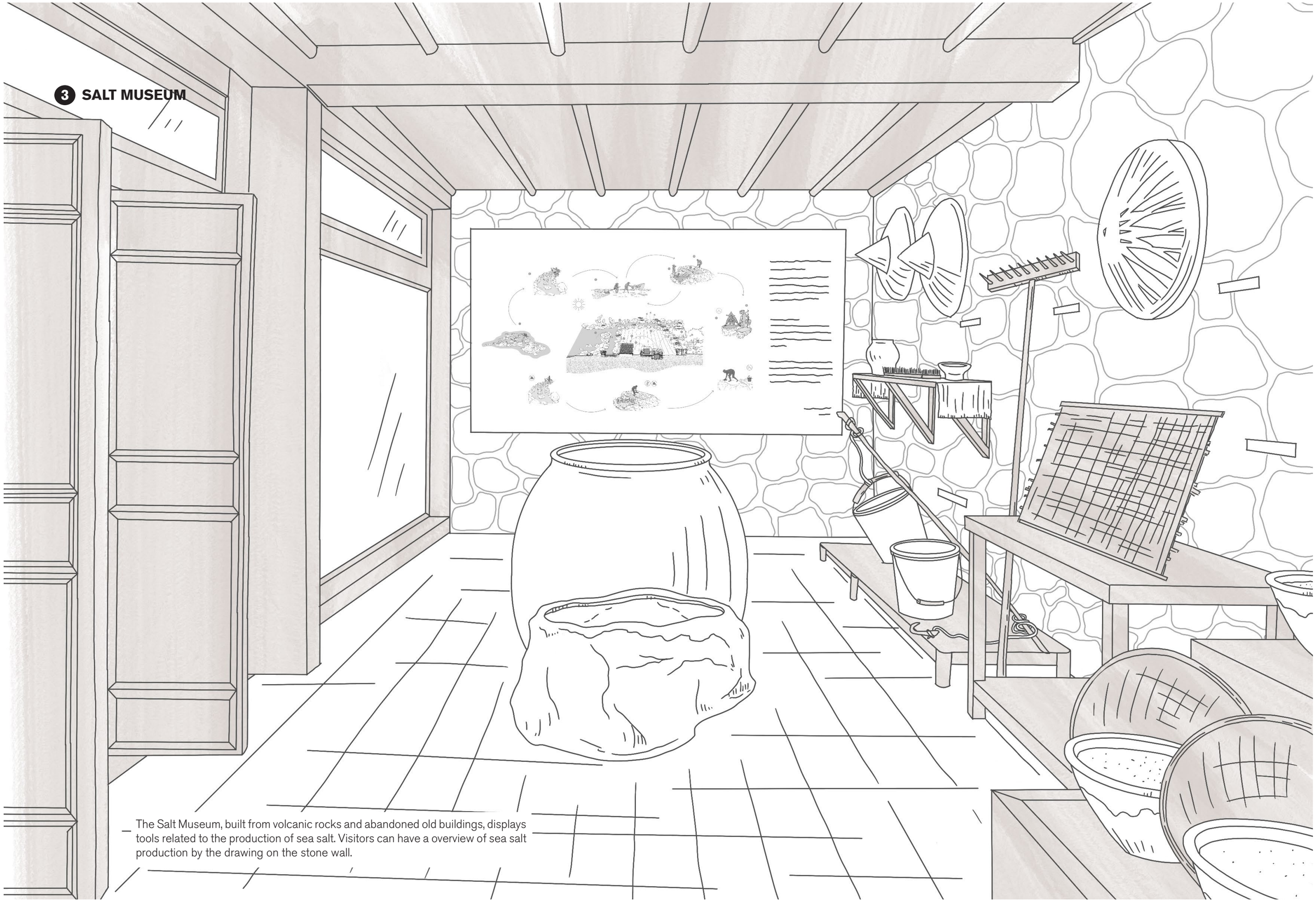
1 Slow food farmland
2 Slow food salt field
3 Workshop
4 Slow food oyster farm

Design Example

0 100 200 300 400 500 m

Figure 5-6 Map of activities related to salt culture

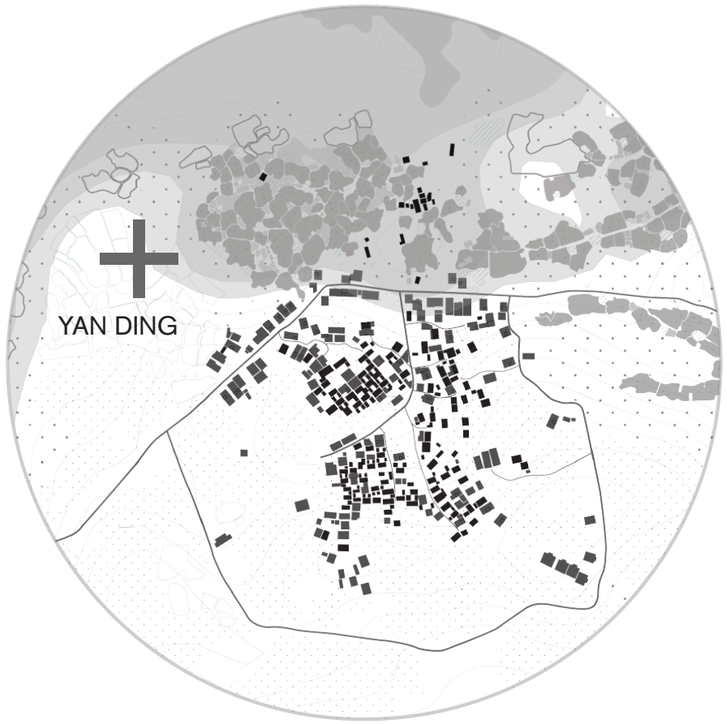
3 SALT MUSEUM



— The Salt Museum, built from volcanic rocks and abandoned old buildings, displays tools related to the production of sea salt. Visitors can have a overview of sea salt production by the drawing on the stone wall.

Figure 5-7 Perspective of the Salt Mesuem

5.3 Design Sample 1 - Village



Salt Fields Trail, ancestral hall and center park are the main focus of Yandin village's design. This village represents the socialized salt narrative in the tourist route. It takes the advantages of salt fields, traditional buildings, and traditional food to restore the atmosphere of the traditional territory, making visitors truly part of the salt community.

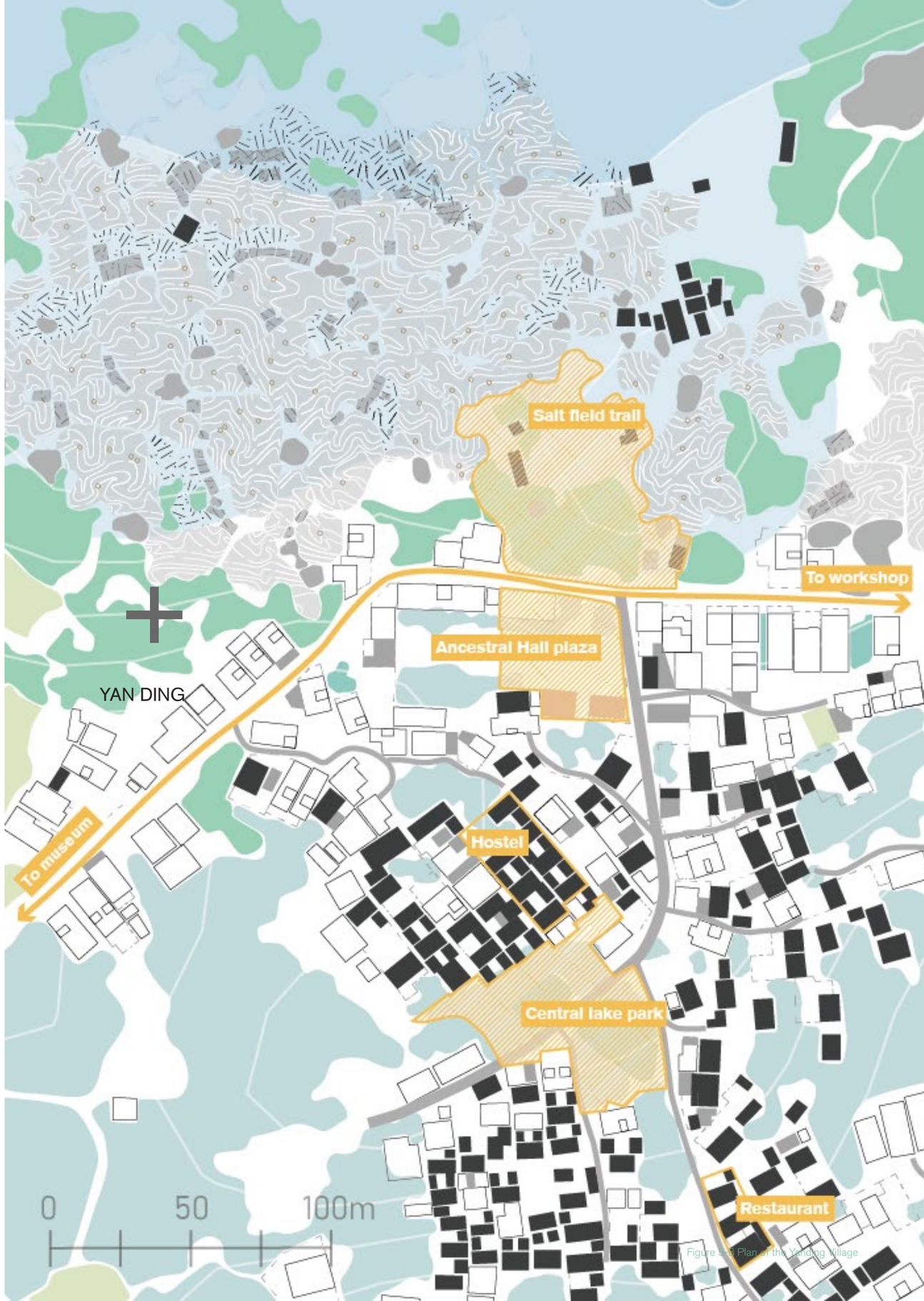


Figure 5.3 Plan of the Yanding Village

5.3.1 Implementation plan of the Yanding village

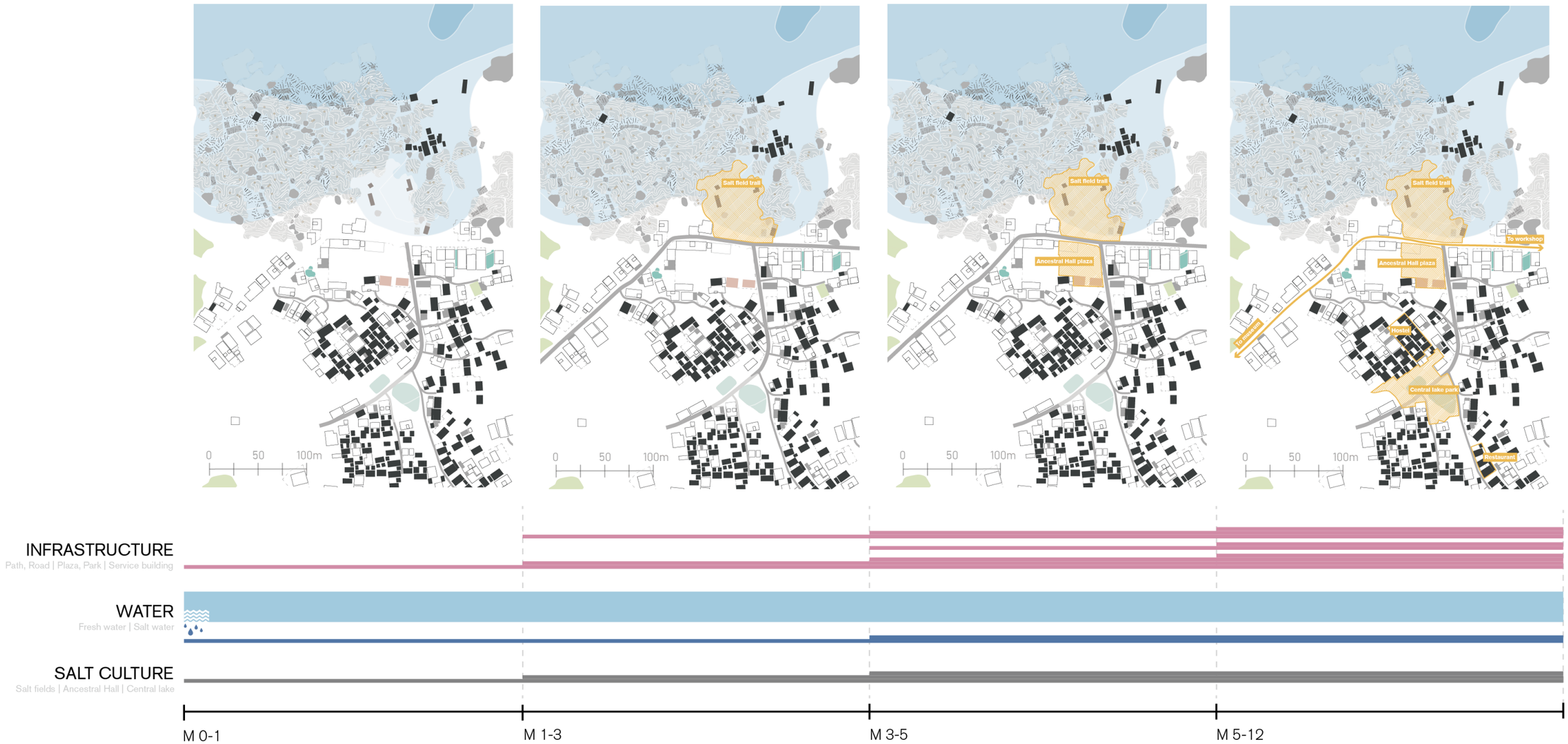


Figure 5-9 Implementation plan of Yanding village

Considering the fact that Salt Village is located in a relatively backward region in an economic aspect, the construction of the village cannot be done in a very short time. Therefore, this project divides the design into three phases to carry out.

1. The protection of the salt field area is the priority for the village. Thus, the first step is to build a walkway for tourists to visit the salt field area near the main road of the village. The trail with a glass observation deck will serve as a landmark for this area while restraining visitors from trampling the salt flats.

2. The core of the salt community is the ancestral hall plaza at the entrance of the village, a space that is valued by the older villagers as a place where most folklore activities take place. The second step of the design was to renovate this dilapidated plaza by adding festive installations and elaborate resting spaces that are commonly used by the villagers to bring the heart of the village back to the attention of young people.

3. The third step of the design was to build a “living-services circle” centred on the central lake. The unnecessary pavement around the lake was transformed into a green space, making the area once divided by roads more complete. The abandoned traditional buildings around the lake will also be gradually transformed into folklore and restaurants with plant purification pools.

All in all, the area’s infrastructures will be enriched with the construction process and will better serve the revival of salt culture and the use of freshwater.

5.3.2 Salt Fields Trail

Figure 5-10 Site Status of the Salt fields

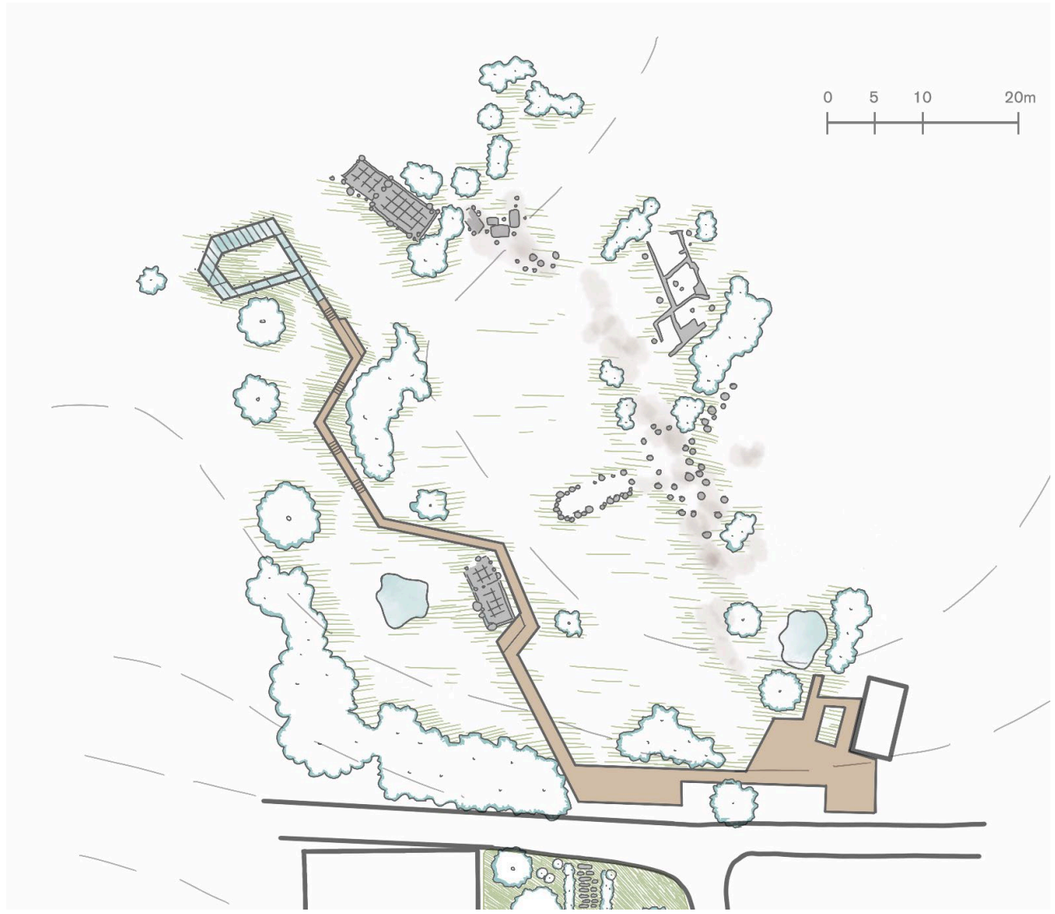
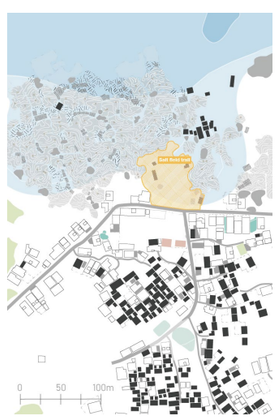


Figure 5-11 Design plan of the Salt fields



Mangrove forest

Heritage building

Volcanic rock and salt fields

Figure 5-12 Characteristic landscape around the Salt fields Trail

The Salt field area itself is of great ornamental value. The walkway built with wood and abandoned stone structures can better guide visitors to explore the area and effectively reduce the damage to the salt field structures by stepping on them. Along the trail, visitors will pass salt ponds, seawater ponds, stone houses, and other salt pond structures. After passing through the traditional stone houses, visitors can walk up to a circular glass viewing platform at the end of the trail that slowly rises to 6m, overlooking the beautiful salt ponds from above. The use of glass and steel frames avoids the effect of evaporation from the projection of the viewing platform structure and provides visitors with a new perspective on the salt flats.

For those who want to enter the salt fields, there is also a salt field experience area on the right side of the trail. Moving beyond the sand pond, cactus and mangroves, visitors can also find the ruins of many stone houses and have fun exploring them.

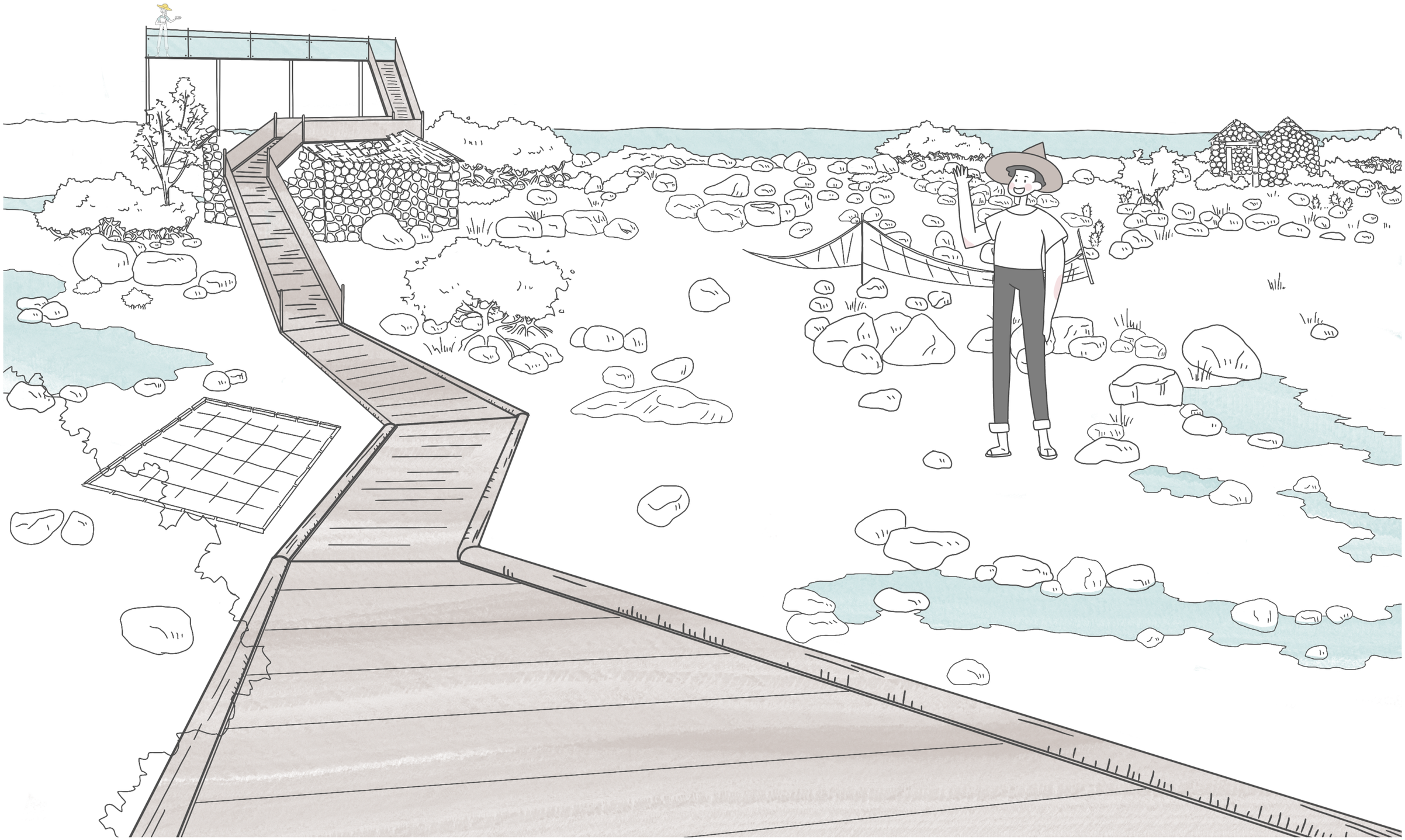


Figure 5-13 Perspective of the Salt fields trail

5.3.3 Ancestral Hall Plaza

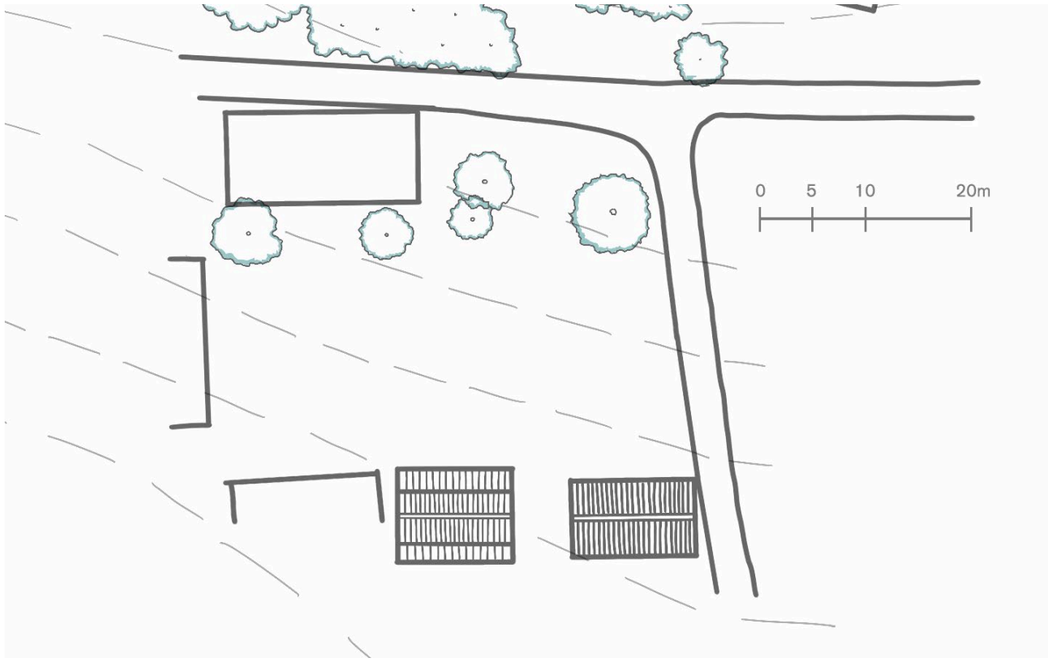


Figure 5-14 Site Status of the Ancestral hall plaza

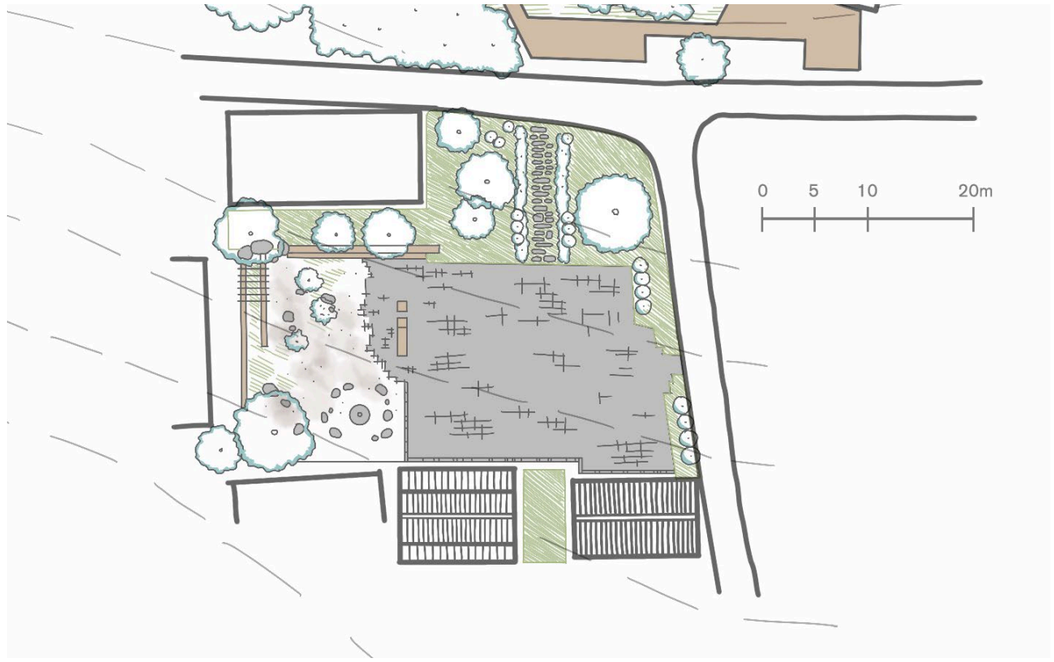
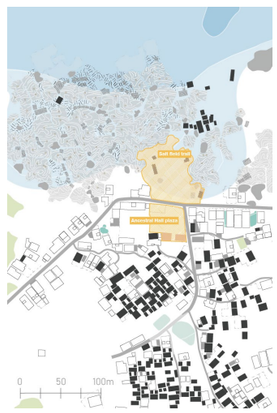


Figure 5-15 Design plan of the Ancestral hall plaza



Dragon/Lion dance

Call and response

Ancestor worship

Figure 5-16 Activities in the Ancestral Hall Plaza

As the core area of Yangding village, the design of the ancestral hall plaza pays extra attention to the preservation of common memory. By carefully maintaining the stone pagoda that has been passed down for thousands of years, bringing volcanic rocks from the sea to pave the road together, and transplanting and planting large banyan trees together...the young villagers, while building the plaza together with their families, will develop a deeper attachment to this place that has been passed down from their ancestors.

Compared to the previous closed and blank square, the entrance, guided by two rows of shrubs, looks more ritualistic. The tall and short metal stakes used by the villagers for lion dances during festivals are also considered in the design and separate the static and dynamic areas of the square. Considering the climate of Salt Village characterized by high temperature and strong evaporation all year round, the corridor with climbing plants can bring shade to the villagers and visitors taking a rest.

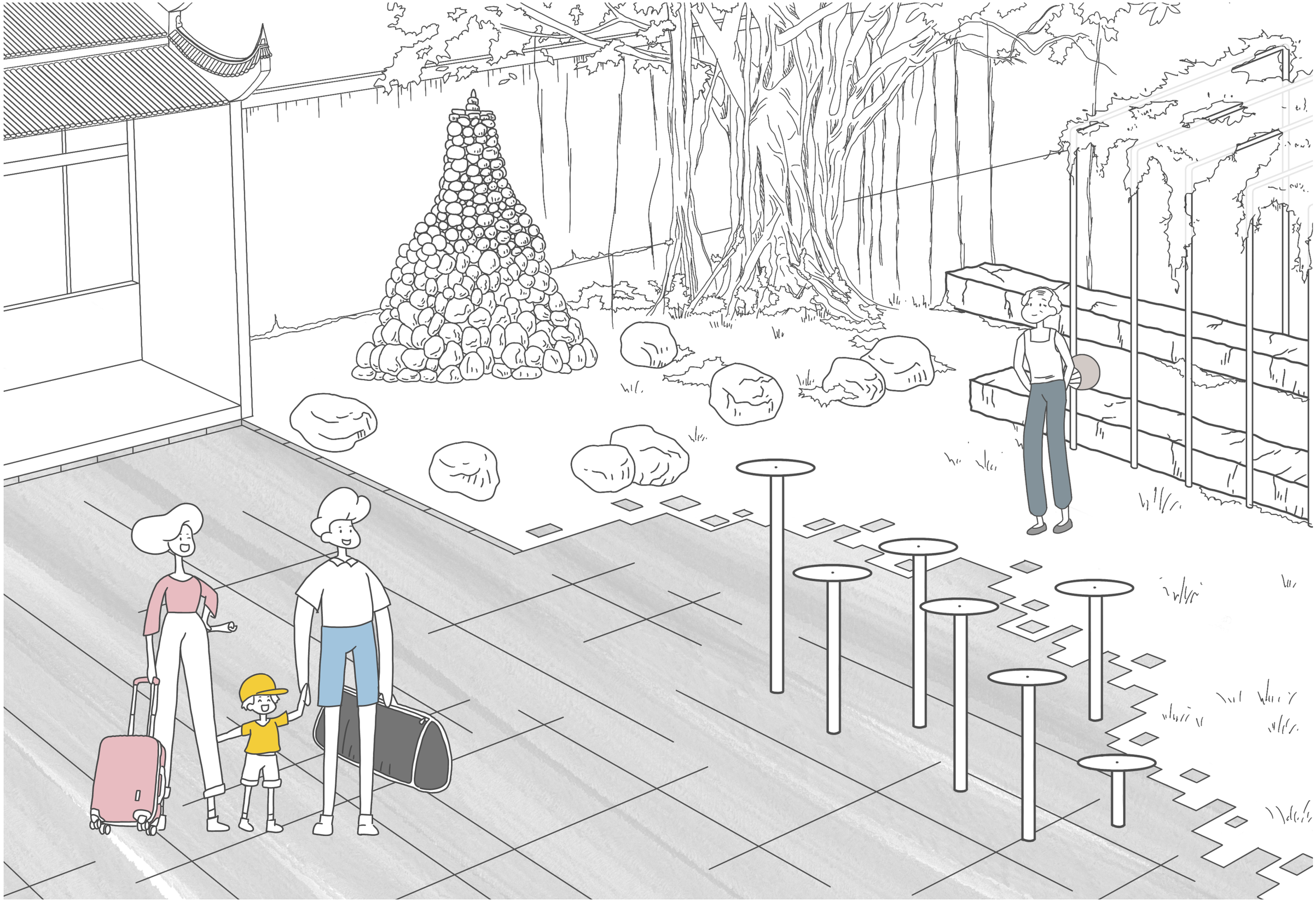
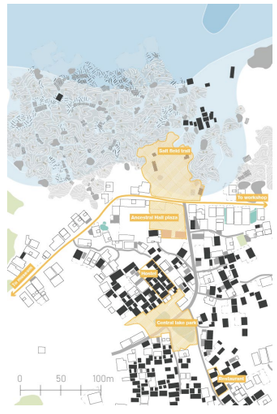


Figure 5-17 Perspective of the Salt Mesuem

5.3.4 Central Lake

Figure 5-18 Site Status of the Central lake

Figure 5-19 Design plan of the Central lake



Cocos nucifera

Sesuvium portulacastrum

Phragmites sp.

Figure 5-20 Local vegetations around the Central Lake

The central lake used to be a place for villagers to rest and chat in their daily lives. However, this important public space has slowly lost its vitality due to the construction of a road that crossed the site in recent years, damaging the overall environment of the lakeshore. After the lack of maintenance by the villagers, garbage and pollutants appeared in the originally clear lake, and the water quality gradually deteriorated.

To solve this problem, the design transformed the hard embankment of the lake into a gentle slope more suitable for plant growth. Aquatic plants such as reeds are used to consume the excess nutrients in the lake, thus purifying the water.

In addition, the design retains only the necessary space for passage and uses gravel blocks as paving instead of concrete pavement, thus making the public space formed by the two lakes whole again. To meet the needs of villagers as well as visitors, wooden benches are placed on both sides of the lakeshore. After tea and dinner, people from the salt community can sit by the lake and chat or cool off.

The optimization of the environment of the central lake will also lead to the development of tourism-related facilities such as restaurants and B&Bs in the surrounding area, resulting in a more interesting and richer in-depth experience tour of Salt Village.

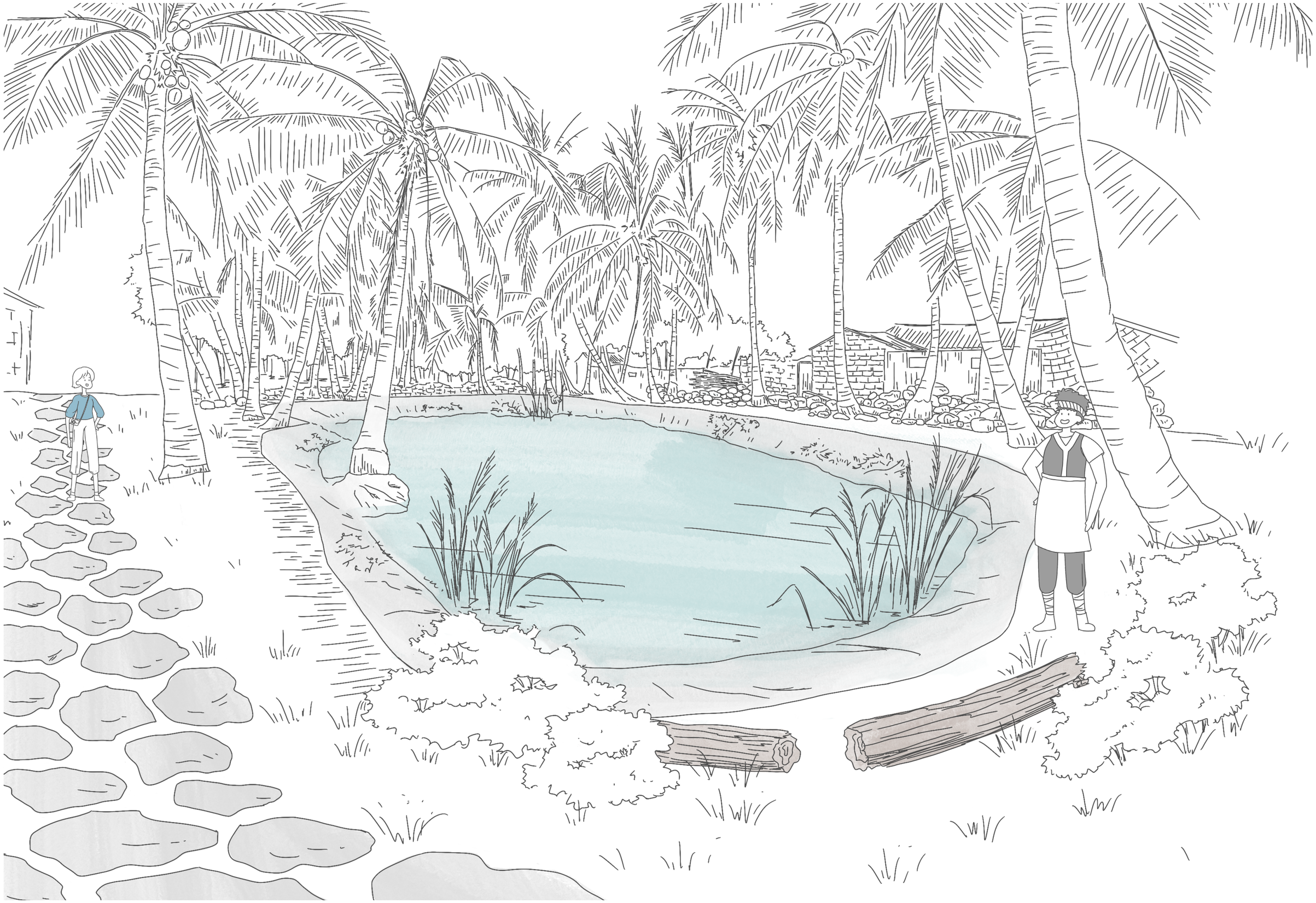
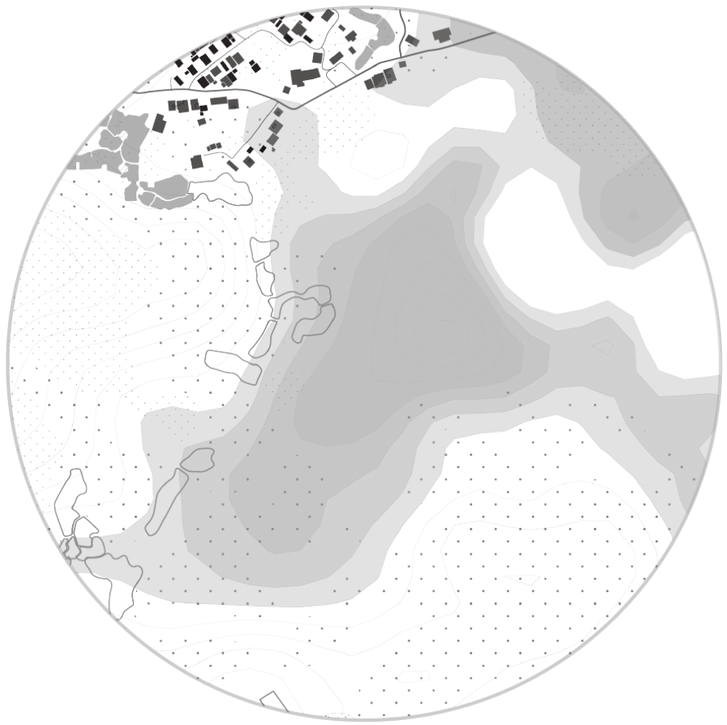


Figure 5-21 Perspective of the Central lake

5.4 Design Sample 2 - Around Village



There are many abandoned salt fields in the Bay area close to the Lingfui village. Because of the ecological value of these structures for the intertidal zone, the design theme for this area is “back to nature”. Through a series of minor interventions such as the construction of the bridge and volcanic revetments, the design will utilize the natural process to create two nature parks based on salt heritage. Through different interventions, the two parks will show people the salt narrative of nature’s succession on salt heritage.

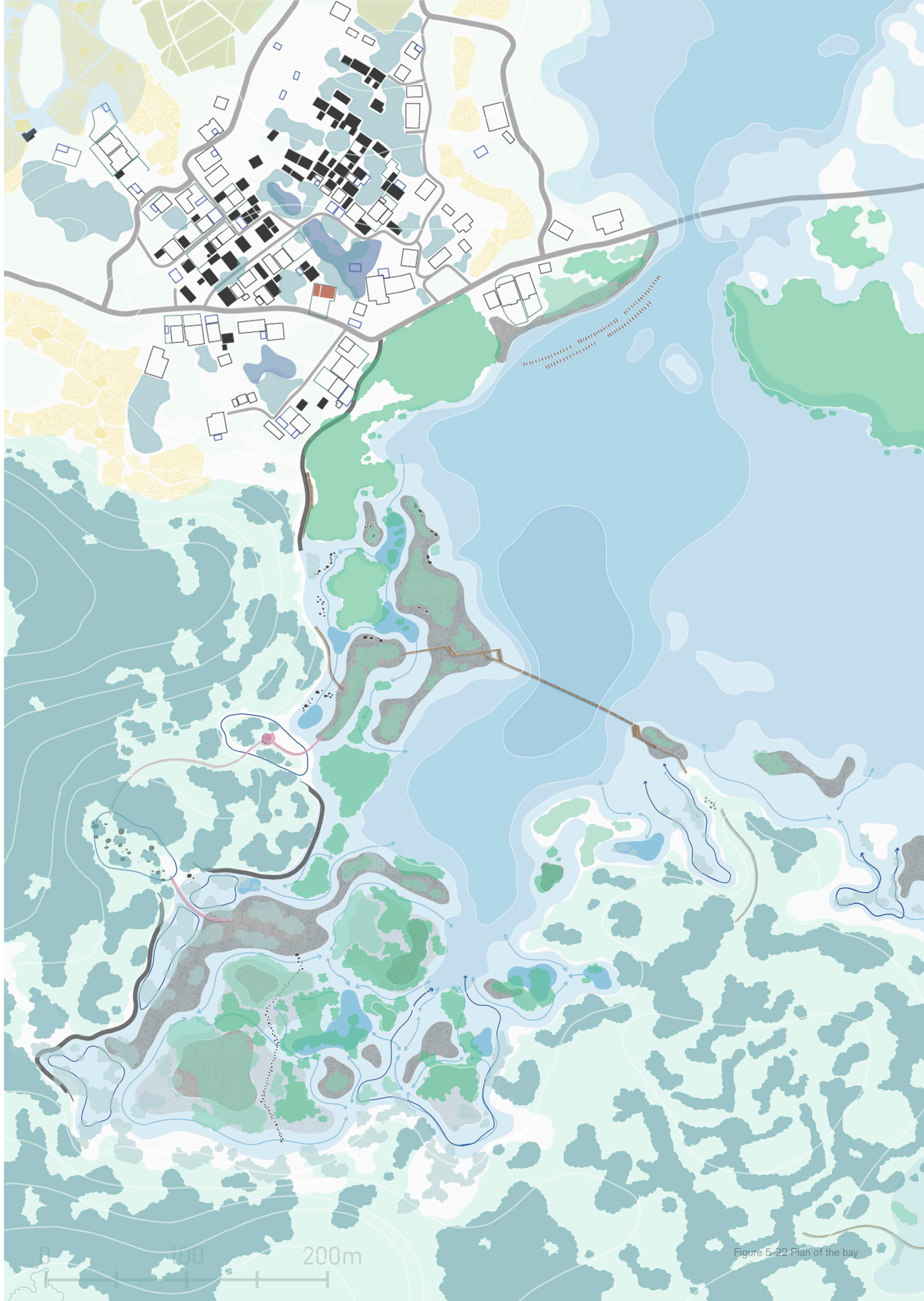


Figure 5-22 Plan of the bay

5.4.1 Back to nature story

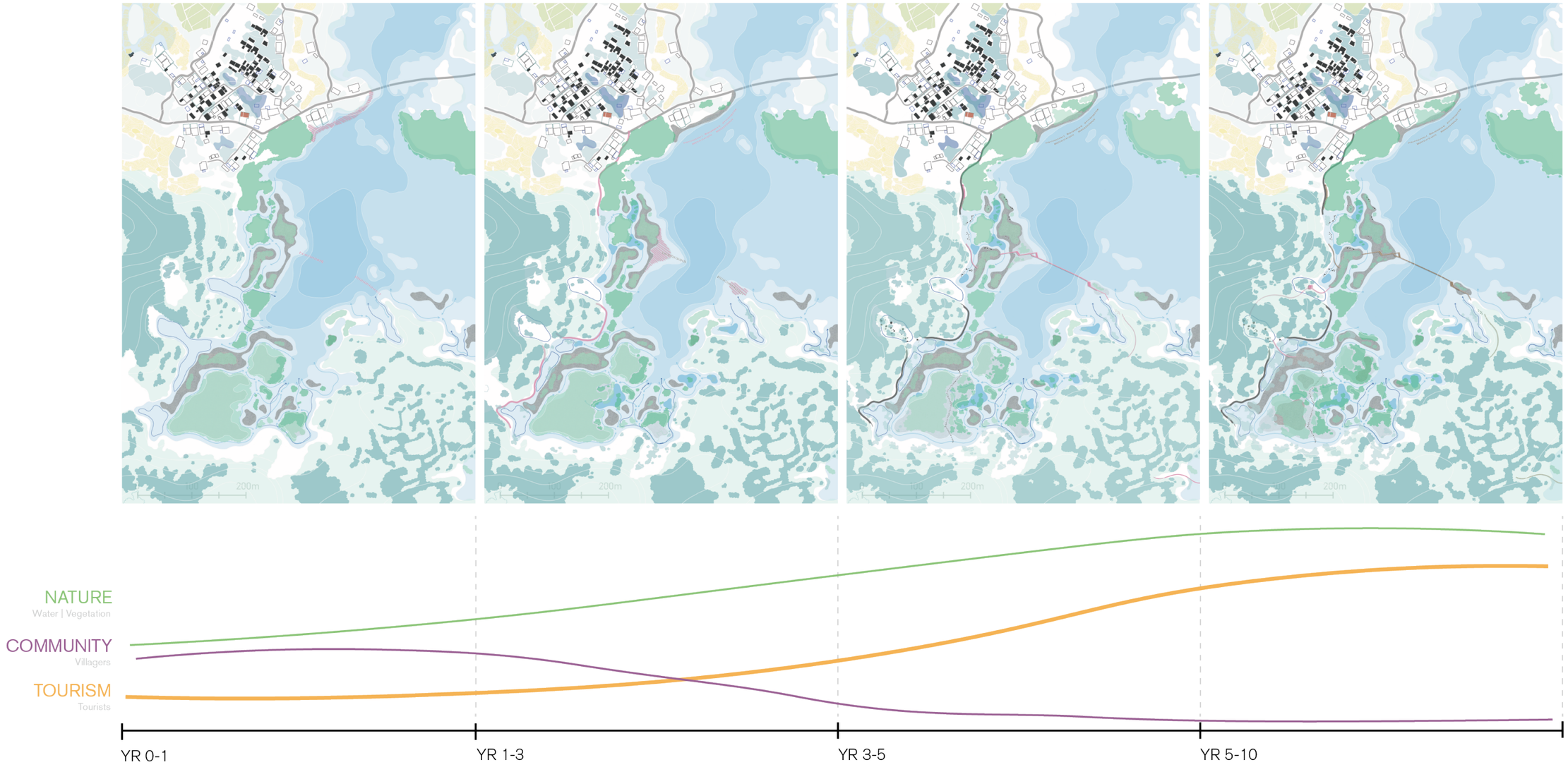


Figure 5-23 Changes of the bay in 10 years

As shown in the four-stage plan, the plant communities and plant diversity in the south bay will increase significantly during the next decade, as villagers rarely engage in agricultural activities in the area. With the abundance of intertidal landscapes and the construction of landscape trails, tourists will also become important authors of the salt narrative in the future.

5.4.2 Implementation plan of the bay

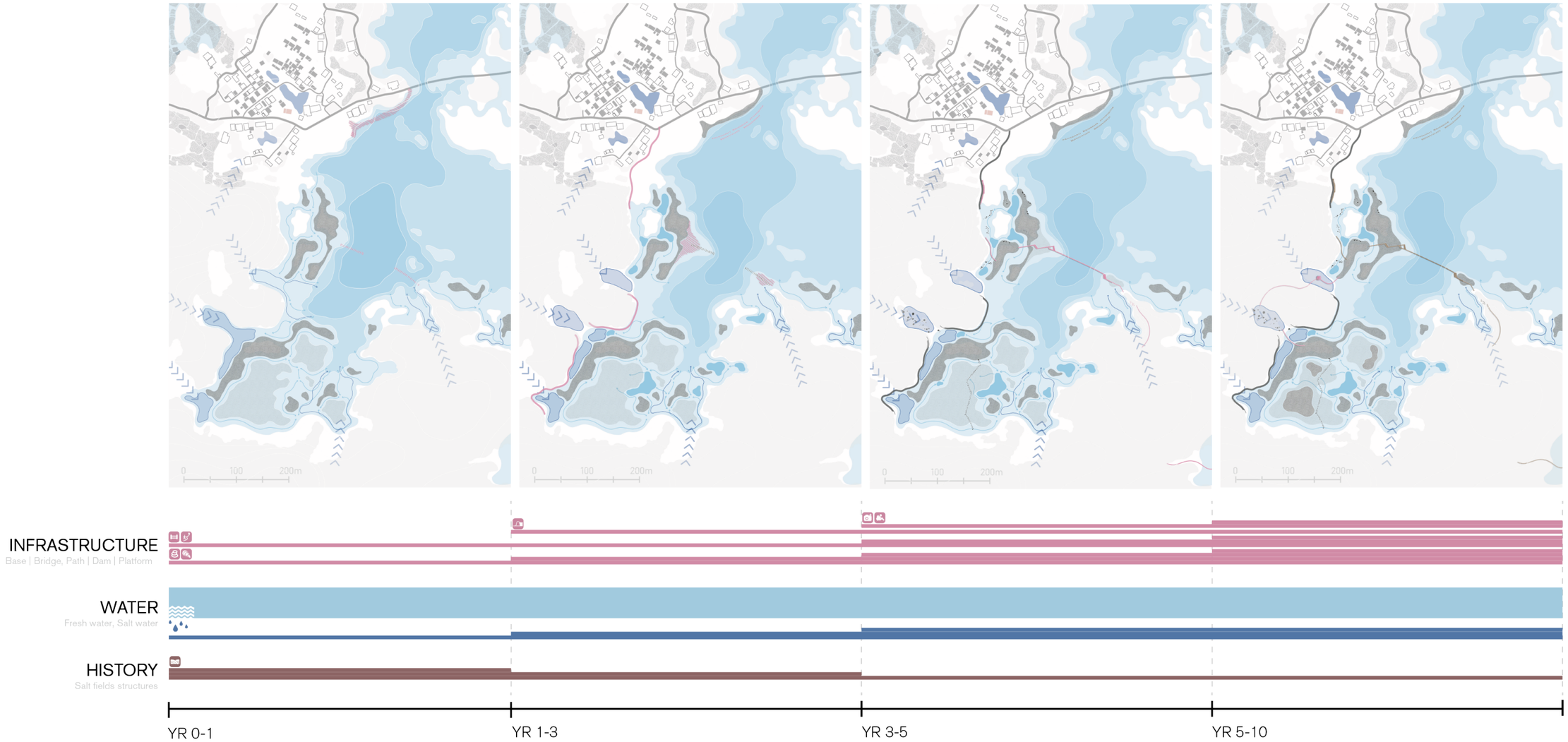


Figure 5-24 Implementation plan of the bay

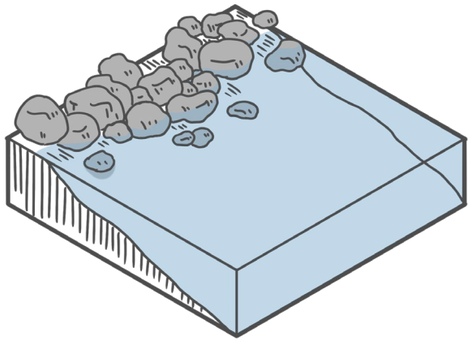
Considering the lack of funds and labour in Salt Village, the construction cycle of the Bay area will be longer than the interior of the village. Therefore, the project split the design into four phases and used the natural process to participate in the construction.

In the early stages, the project will focus on building a better tidal dike, rainwater collection system and sediment catchment using permeable dikes, while a better landscape path system will be built within 3-5 years as the landscape bridge is built and the plant community flourishes. In addition to connecting the four villages, the landscape bridge across the bay creates a more diverse water system with different salinity for the subsequent heritage natural park to meet the habitat needs of more plants and animals.

5.4.2.1 Phase 1 (YR 0-1)

A. Volcanic rock revetment

Figure 5-25



NATURE
Water | Vegetation

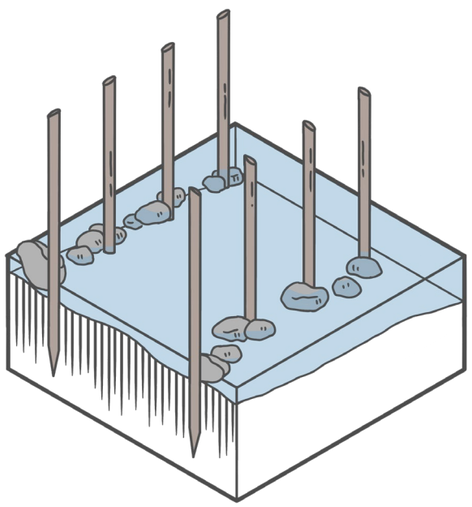
The volcanic rock revetment can provide conditions for the reproduction of mangrove and some shellfish.

COMMUNITY
Villagers

The construction of the volcanic rock revetment was a low-cost intervention to protect the village from the threat of sea-level rise. Because of the low technical requirements, the design can be completed by the villagers under the guidance of professionals.

B1. Wooden bridge foundation

Figure 5-26



NATURE
Water | Vegetation

These permeable infrastructures can catch the sediment.

COMMUNITY
Villagers

The foundation of a bridge is the first step in building a landscape bridge. The main body of the bridge is made of local corrosion-resistant timber and volcanic stone, and the construction technique is simple and can be done by villagers.

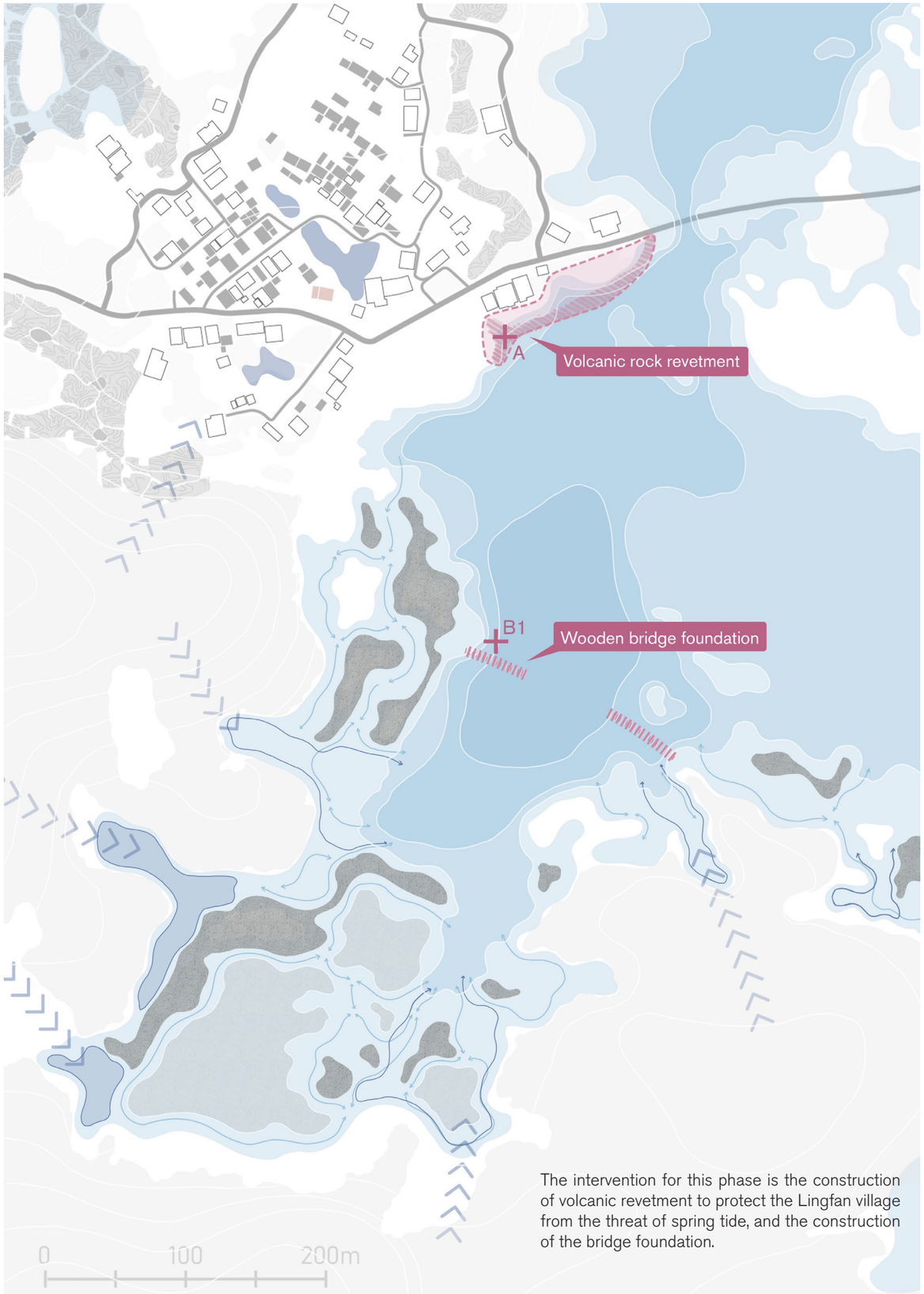
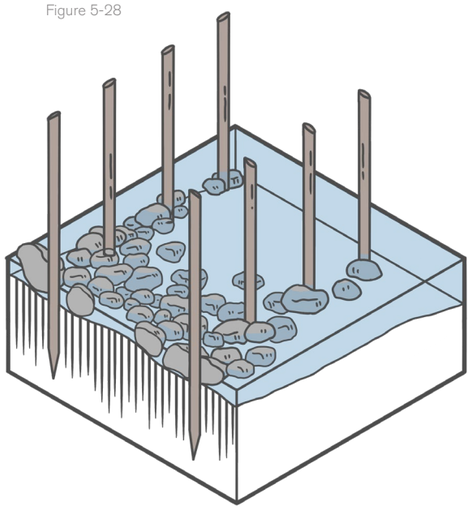


Figure 5-27 Phase 1 of the Implementation plan of the bay

5.4.2.2 Phase 2 (YR 1-3)

B2. Volcanic rock revetment

Figure 5-28

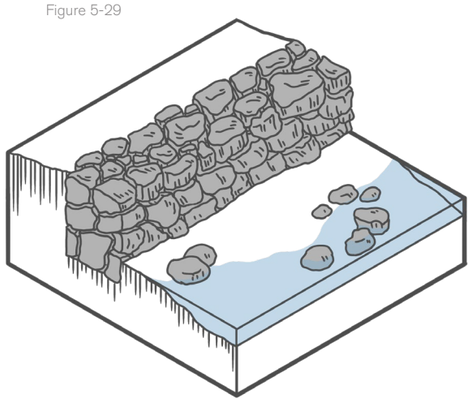


NATURE
Water | Vegetation

The sediment from the sea will grow into a natural revetment, which provides an opportunity for small plants and animals to reproduce.

C. Volcanic rock dam

Figure 5-29



COMMUNITY
Villagers

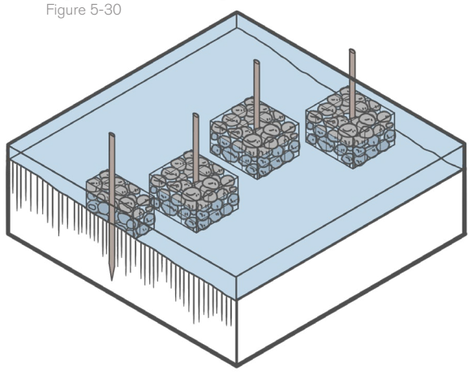
The second intervention to prevent high tide flooding is a dam made of regular-shaped volcanic rock. The facility will be built mainly by villagers and volunteers, with financial support from the government and help from experts.

TOURISM
Tourists

Dams built in low-lying areas can also be used as a path for tourists during high tide periods.

D. Oyster farming

Figure 5-30



NATURE
Water | Vegetation

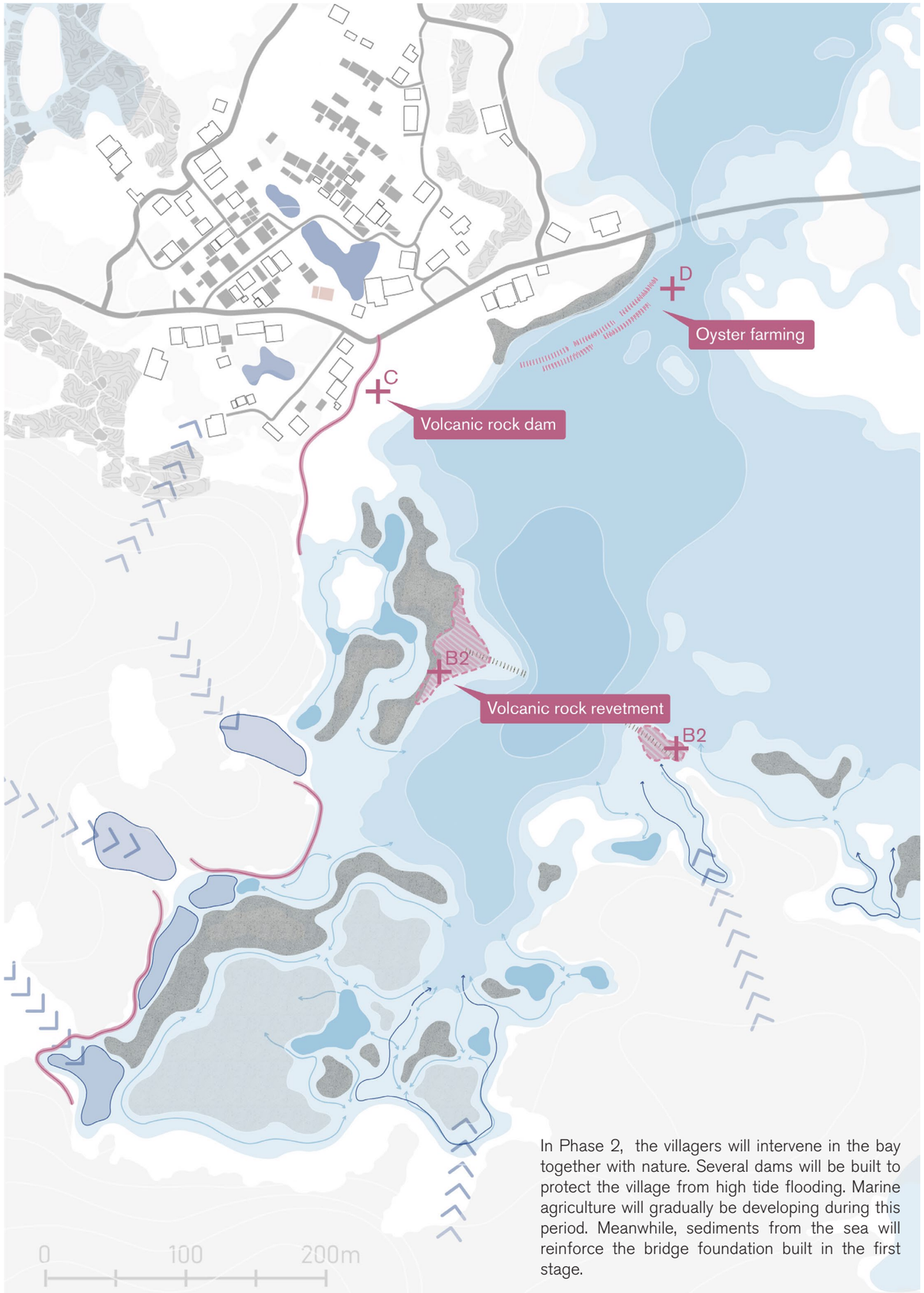
The marine farm in the shallows of the bay provides excellent conditions for the growth of oysters.

COMMUNITY
Villagers

Consisting of iron cages and volcanic rocks, the Oyster Farms will bring extra agriculture income to the villagers in addition to salt harvesting and fishing.

TOURISM
Tourists

Marine agriculture can be part of experiential tourism.



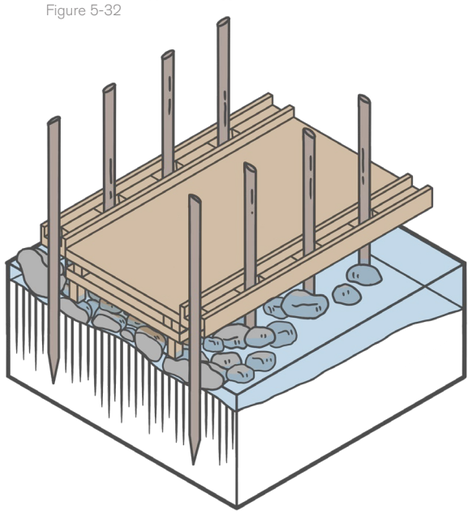
In Phase 2, the villagers will intervene in the bay together with nature. Several dams will be built to protect the village from high tide flooding. Marine agriculture will gradually be developing during this period. Meanwhile, sediments from the sea will reinforce the bridge foundation built in the first stage.

Figure 5-31 Phase 2 of the Implementation plan of the bay

5.4.2.3 Phase 3 (YR 3-5)

B3. Floating bridge

Figure 5-32



NATURE
Water | Vegetation

The construction of the bridge deck turned the bridge into a small dike through which the seawater could penetrate. The dike will create a more stable living environment for the plant communities of the south bay area.

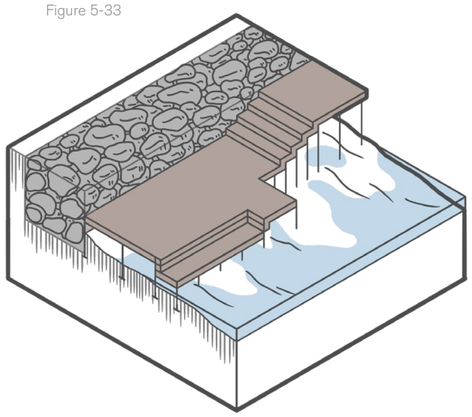
COMMUNITY
Villagers

TOURISM
Tourists

The bridge deck will be built by villagers and some volunteers from the workshop. The wooden bridge, which can float up and down with the sea, saves a lot of investment and makes the journey more interesting. The wooden bridge will connect Xiaodi village together with the other villages, which greatly facilitate the villagers and tourists.

E. Landscape trail

Figure 5-33



COMMUNITY
Villagers

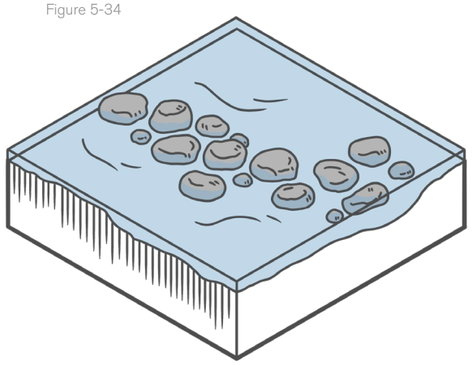
The wooden landscape trail along the volcanic rock dam was built by villagers with funding and assistance from the government and related tourism organizations.

TOURISM
Tourists

The Landscape trails allow visitors to enter the intertidal zone from higher elevations. There are plenty of reserved rest areas along the trail for short stays.

G1. Volcanic rock trail

Figure 5-34

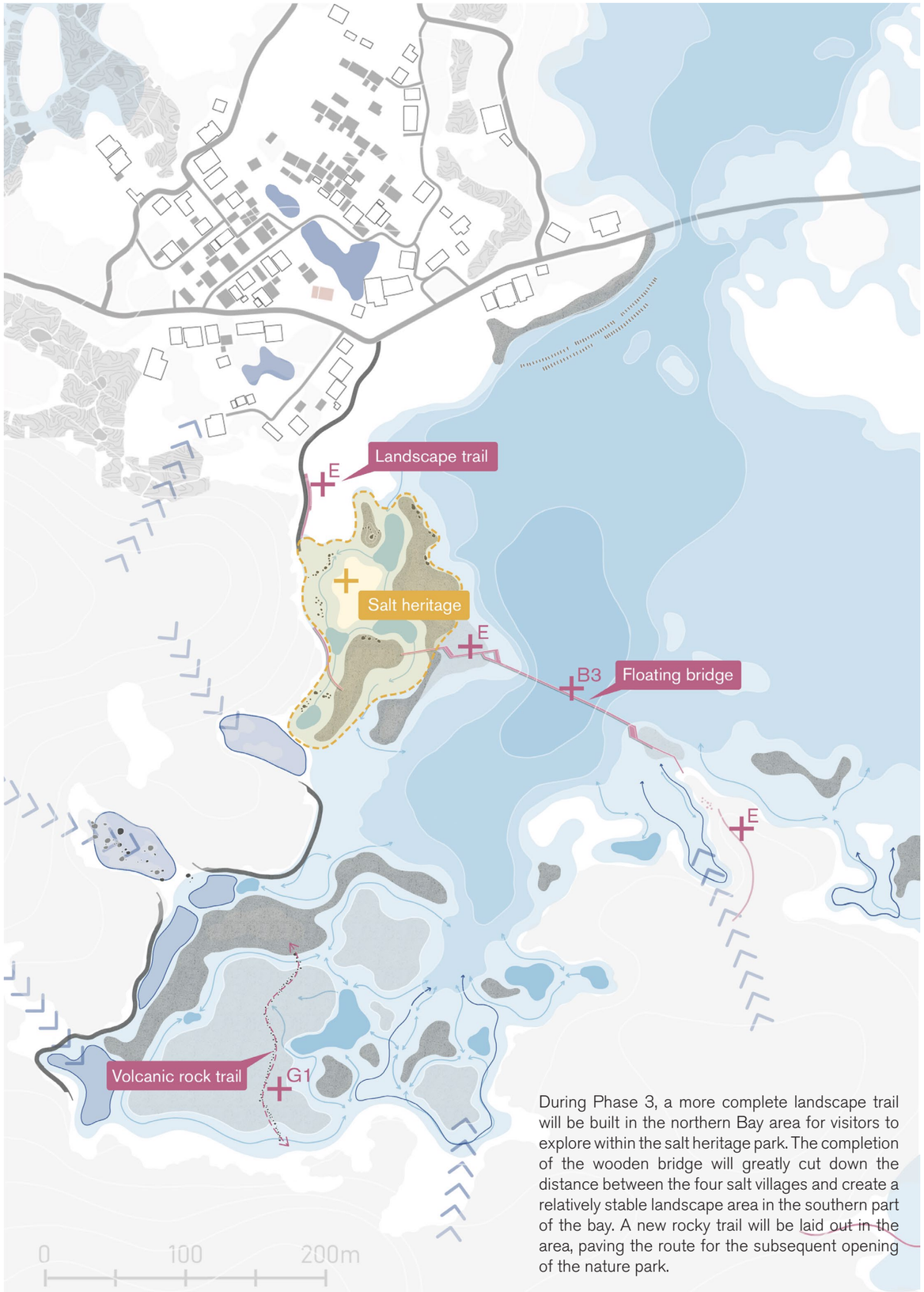


NATURE
Water | Vegetation

The volcanic rock trail can provide conditions for the reproduction of mangrove. Also, large rocks in the intertidal zone will intercept some of the sediments and alter the terrain of the area.

COMMUNITY
Villagers

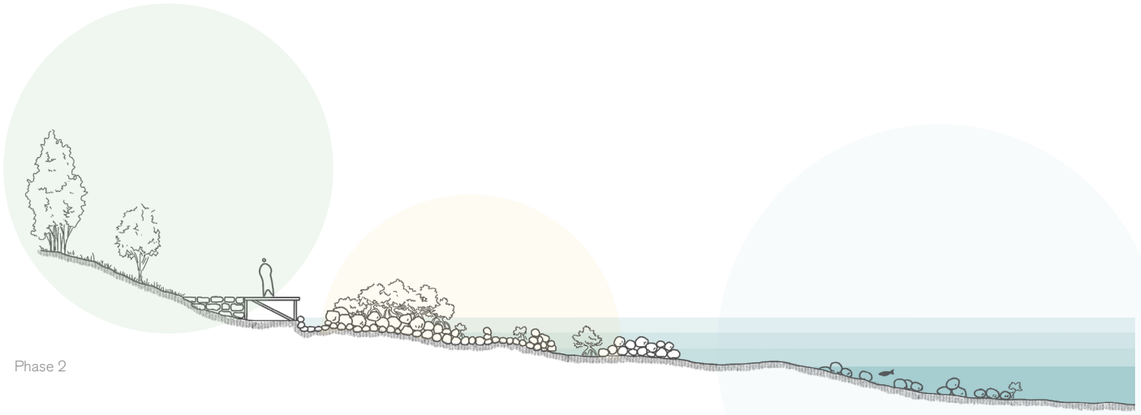
With the help of an environmental-friendly group, the villagers will build a trail with large volcanic rocks around the site to guide visitors.



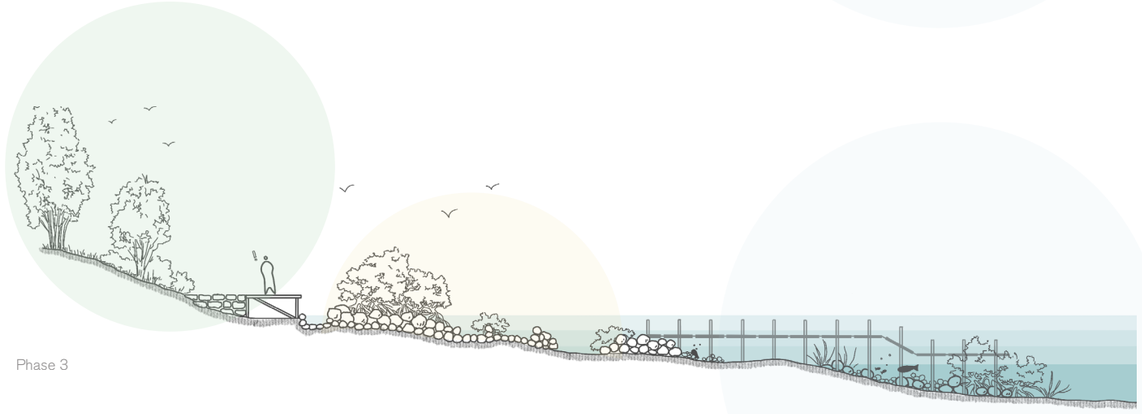
During Phase 3, a more complete landscape trail will be built in the northern Bay area for visitors to explore within the salt heritage park. The completion of the wooden bridge will greatly cut down the distance between the four salt villages and create a relatively stable landscape area in the southern part of the bay. A new rocky trail will be laid out in the area, paving the route for the subsequent opening of the nature park.

Figure 5-35 Phase 3 of the Implementation plan of the bay

Salt Heritage Park



Phase 2



Phase 3

Figure 5-36 Plan of the Salt heritage

Figure 5-37 Plan of the Salt heritage

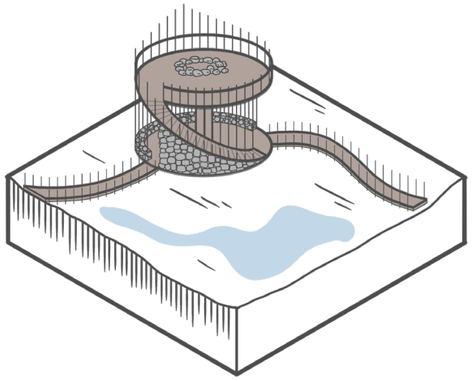
Salt Heritage Park is a natural park built on the structure of abandoned salt fields. The wooden landscape trail crossed the channels that once carried seawater and then leads people up to a small hill of volcanic rocks to admire the mangroves.

By watching the seedlings growing out of rocks and mangrove forests survive in the saltwater ponds... Visitors can sense the strong power of the plants. Sitting on the salt stone, visitors can also imagine the salt farmers who once worked there. The ever-growing mangrove forest gives this historic park an atmosphere of post-industrial romance.

5.4.2.4 Phase 4 (YR 5-10)

F. Lookout point

Figure 5-38



COMMUNITY
Villagers

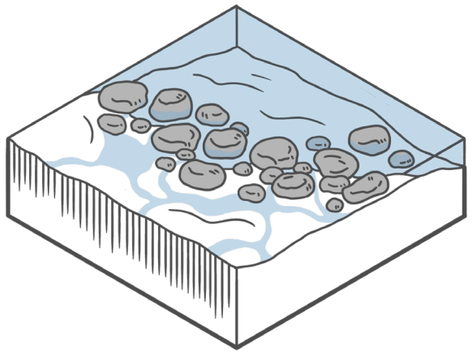
The construction technique of the lookout point is based on the traditional architecture of the salt villages. The rest space on the ground floor allows the people to relax and chat in a cool place.

TOURISM
Tourists

Visitors can go to the second floor of the lookout point and enjoy the view of the whole bay.

G2. Volcanic rock trail

Figure 5-39

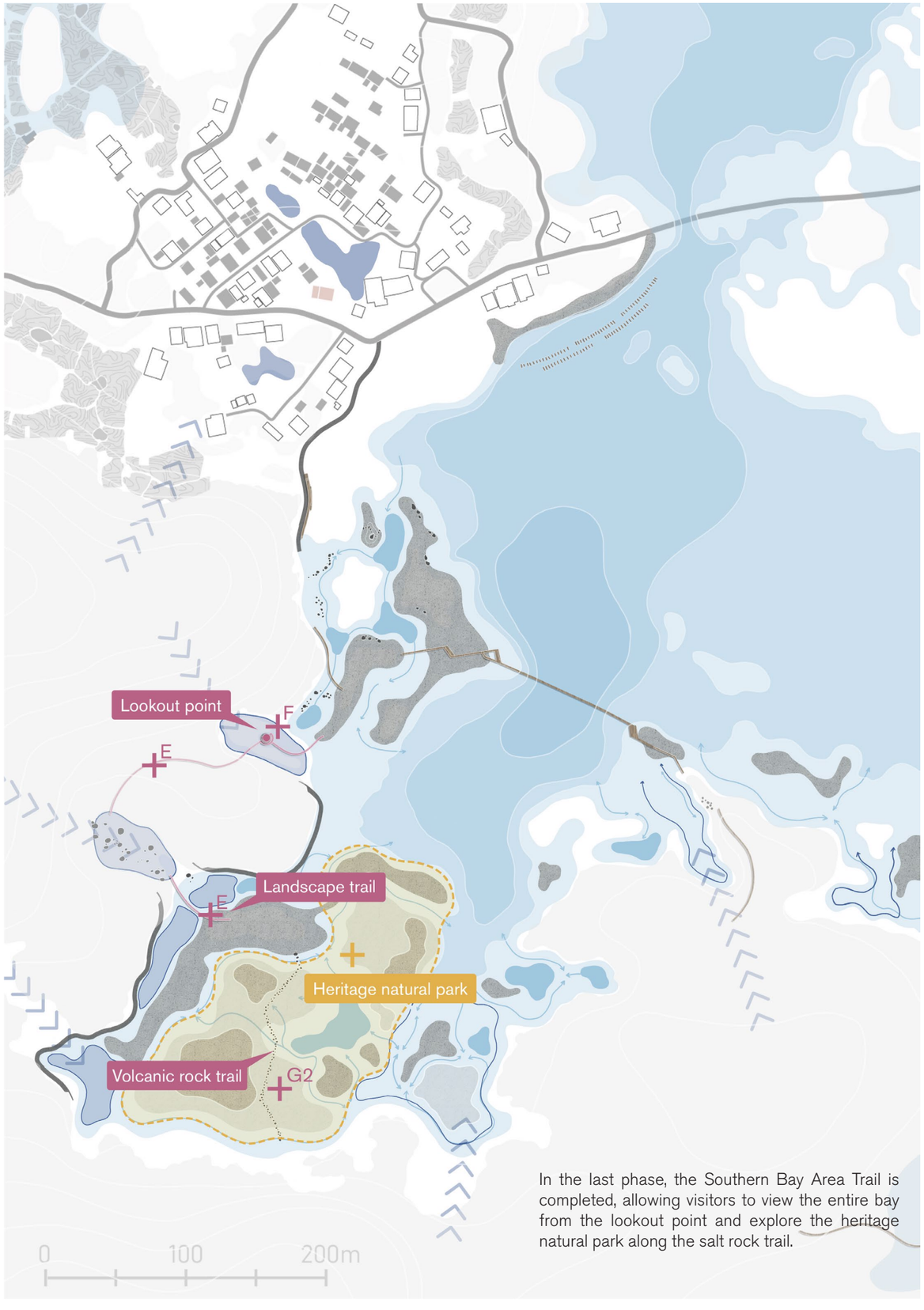


NATURE
Water | Vegetation

Sediment caught by the volcanic rock trail forms a different water level. A variety of flora and fauna can grow and reproduce in this area.

TOURISM
Tourists

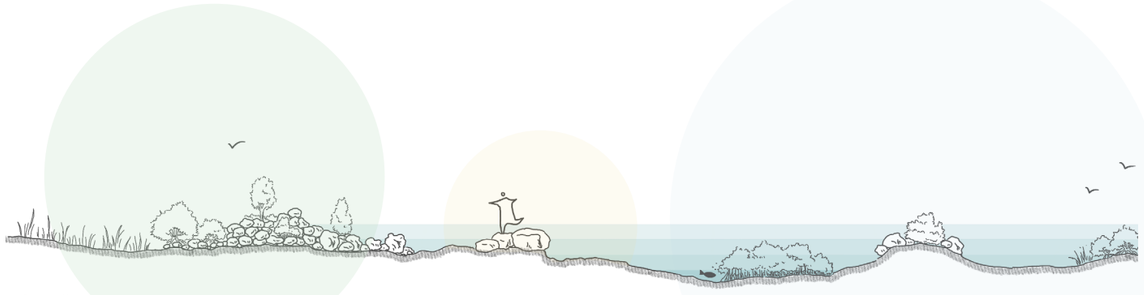
Hiking through the mangrove forest on the volcanic rock trail will be a pleasant experience for visitors in the adventure of the the Bay area.



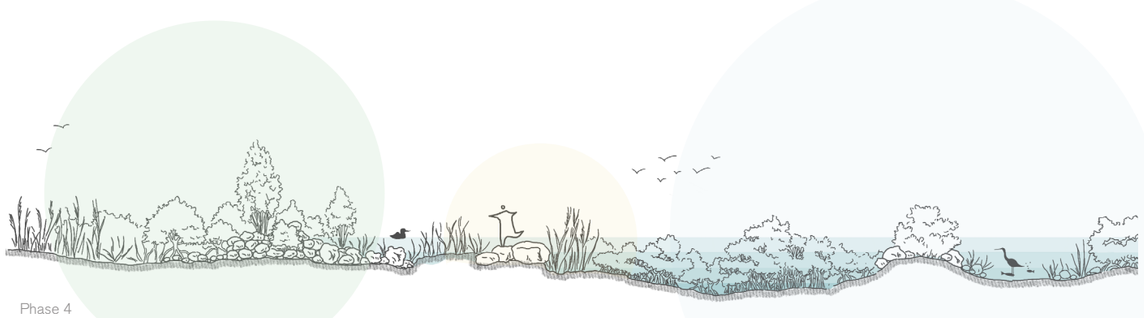
In the last phase, the Southern Bay Area Trail is completed, allowing visitors to view the entire bay from the lookout point and explore the heritage natural park along the salt rock trail.

Figure 5-40 Phase 4 of the Implementation plan of the bay

Heritage Natural Park



Phase 3



Phase 4

Figure 5-42 Plan of the Heritage natural park

Scirpus validus vahl

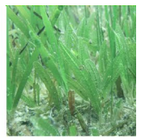
Cerbera manghas

Terminalia catappa

Phragmites

Aegiceras corniculatum

Avicennia marina



Halophila

Figure 5-41 Plan of the Salt heritage

The rainwater collected from the surrounding mountains flows into the bay in this area, which makes the heritage nature park rich in different water quality and water level. Upland freshwater plants and mangroves in wetlands grow together and provide food as well as shelters for many intertidal animals and birds.

Unlike Salt Heritage Park, salt fields in this region can hardly be recognized, except for the construction material volcanic stones. Visitors can pass through the “Salt channels” made up of volcanic rocks and experience the way ancient salt village residents transporting sea salt through the dense mangrove forest.

5.5 Conclusion

This project introduces a hermeneutic approach (landscape narrative) in historical conservation by employing the potential of the heritage value in reactivating the neglected identity of the traditional salt territories of Danzhou. With a design lexicon of local materials, native plants, traditional architecture, salt harvesting techniques, site-specific geographical features and the participation of local communities, this low-cost approach provides a reference case for heritage conservation in economically backward regions.

The research question, “Is it possible to keep the value of the salt harvest cultural heritage alive in making the coastal zone more resilient to sea level rise providing a landscape approach in balancing the historical, local public life and tourism development?”, now has a positive answer.

The important role of salt fields for the cohesion of salt communities and their attractive social attributes have enabled many social activities around salt heritage. Sea Salt, salt fields, salt communities, and even the lifestyle of the villagers have become a driving force for the outside world to explore this area. On this basis, the construction of the Slow Food Community and the organization of workshops and rural tourism will also promote the future development of the salt village. When the economic and social benefits of salt sites are recognized by the government and villagers, the protection of this ancient water system will be easier to progress. Of course, this project is not about leaving these heritages untouched. In addition to some functional adaptations, new facilities will also be built and become an integral part of the heritage landscape.

In addition, the ecological value of the salt site has also been well reflected in the project. Abandoned salt fields structures have been used to shape more resilient intertidal ecosystems in response to new challenges posed by rising sea levels. A good ecological environment will in turn bring more benefits to the villagers from marine agriculture and tourism.

Leading by the concept of landscape narrative, the follow-up design of this project connected four salt villages with different characteristics and made them livable and attractive spots for both residents and tourists. Under the premise of protecting the traditional buildings, salt pans and public spaces, it is possible for the villagers to extend and transform the village for more modern life. The aim of the project is to reconstruct the collective memory of the salt village through the narrative of the salt landscape and to maintain the unique charm of the salt heritage in the process of socialization and naturalization.

The research methods and design interventions used in this project can also be applied to other traditional villages in China, in order to support the conservation of heritage in these economically backward areas and teach local people to live with their traditions.

6.

Reflection

6.1 Reflection

Societal relevance

The societal relevance of the project can be summarized in three aspects: (1) raising the awareness of the social and ecological value of heritage, (2) exploring experiential tourism models that can bring actual economic benefits to traditional villages, (3) and introducing “Building with nature” approach in rural landscape design.

First, the project redefined the values of water heritage and applies these values to the resilience transformation of the heritage. Simply preserving the heritage as it is can no longer adapt to the challenges caused by sea-level rise and dramatic social development. It is, therefore, necessary to explore the social, economic and ecological value of heritage, in order to create new functions and missions of the sites and preserve them in a more sustainable way.

Secondly, the project explores the experience-based rural tourism model. Rural tourism is the main way to vitalize traditional villages. In China, however, the peak tourism brought by tour groups does not bring real benefits to the poor countryside. The project advocates exploring the traditional agricultural activities and culture in traditional villages as a resource for the development of an experiential tourism model. By slowing down the pace of tourism, the design is expected to bring in more income for the villagers.

Finally, different from the traditional way to achieve the landscape project in a short time, this project attempts to introduce the concept of “Building with nature” in the construction of rural landscape. With appropriate interventions, natural processes will interact with the site to achieve the desired design objectives with less artificial construction and cost.

Scientific relevance

This thesis explores the links between heritage conservation, rural revitalization and nature-based solutions by testing tourism development and intertidal landscape design in Danzhou’s rural area that depends on traditional water systems. Through “Research through design”, the project aims to propose new approaches to the protection of traditional water systems towards social and natural challenges.

In the analysis phase, the project mainly uses the research method, and the landscape design is used to guide the scope of the analysis study. After identifying the problem to be solved and the characteristics of the site, the design approach is used to test the results of the research. Through the back-and-forth design between different scales, the problems studied by the project become more concrete. And the relevant analysis is supplemented and used as design criteria.

The strong and weak sides of the chosen design methodology

The strong side of this approach is that the weight of research and design are equally important to the project. The research on background knowledge, natural and social conditions and the study of related design cases provide a sufficient knowledge platform for the follow-up design. As the design progressed, the research questions of the project were gradually narrowed down. Considering the practical ecological and technical problems encountered in the design, some irrelevant analysis was eliminated, which made the project became clearer.

However, there are some weak parts in the research methodology. As the research problem is gradually concretized in the process of design, repeated revisions and additions made the analysis part take up a long period of time. Therefore, leaves the detail design as well as the reflection time relative tight. To the author’s regret, the project didn’t propose a more general design toolbox.

Moreover, tourism, as an important driver of development in design, is easily influenced by society. Tourism, for example, will take a hit when Corona leads to a blockade. So in addition to tourism, traditional villages also need other industries as economic pillars to support more stable development.

Possible problems that occurred during data collection

The research site located in a remote area of China, little official information about hydrology, architecture can be found. And because of the Corona, author was not able to investigate on site. Therefore, most of the maps and materials for this project are obtained through student papers. Although the author asked local photographers to take the drone images, due to the lack of landscape-related expertise and time constraints, some of the site information is still incomplete, which also caused certain difficulties to the follow-up design.

Possibilities to generalize the results of the research

The project focuses on exploring the historical, social and natural values of the water heritage to better adapt it to social and natural developments in the future. Because heritage has multiple values, these stakeholders need to be taken into account when discussing how to design with those values. The author intervenes in the design by bringing in different stakeholder roles in the project. This approach allows the design to take fuller advantage of the historical, social and ecological value of the salt fields, allowing the heritage to retain its identity in a transition that is more responsive to future conditions. Although the characteristics and value of historical sites are different, the method of classifying and applying the value in the design of this project can be used as a reference by other sites renovation projects

The project site is located in China's relatively backward development areas, so the difficulties faced by the project can be seen as a more common phenomenon. Therefore, it is of great significance to apply the methods of "build with the community" and "build with nature" used in this project to recall the collective memory and cut down the cost of construction.

Ethical issues and dilemmas

In the course of research and design, the author has encountered a number of moral dilemmas:

(1) Limiting the urbanization of traditional villages to protect heritage sites

From the point of view of heritage conservation, every ancient building in a traditional village is an extremely precious treasure. However, experts and designers should not be divorced from the basic needs of villagers, holding the moral and rational point of view to criticize the owners of ancient buildings on their own property treatment. Every individual has the right to strive for a better and more comfortable life. So, instead of restricting the villagers of ancient villages to rebuild or demolish ancient buildings in order to preserve tradition, it makes more sense to guide the villagers to take pride in their traditions and give professional help to guide the development of their villages.

(2) "Build with Community" in rural areas

Time-consuming, efficient funds, and conflicts of interest are always the problems of community-based projects. These problems are more pronounced in rural areas, which are relatively poor and poorly educated. Therefore, how to mobilize the villagers to participate in the design has become a challenge. When it's inevitable to sacrifice some people's interests during the process of renewal and transformation, the coordination of "Public" and "Private" becomes a big issue.

As a vulnerable group, most villagers have weak rights protection awareness and lower education level. When designers sacrifice the interests of a small number of villagers in exchange for collective profits, they should take into account the potential rewards of the victims from the community and their future development.

(3) Control nature or live with it

The relationship between man and nature has always been a hot topic for landscape architects. Should man use advanced technology to control nature? Or should one embrace the changes of nature and abandoned one's familiar way of life?

In this project, a portion of the abandoned salt site was returned to nature, but the design of the active salt fields area was primarily based on human needs. The author tries to balance the relationship between human activities and natural succession by setting up different functions and landscape characteristics. However, due to the limitations of the author's knowledge, the project takes human needs as the main starting point and regard nature as a design tool. Learning how to better deal with the relationship between human and nature is the future goal of the author.

The relationship to the Circular Water System lab

CWS is a lab that focuses on the story between water systems and human activities. As a member of the lab the author was able to apply a systematic approach to the analysis of the close relationship between the traditional water system and people in the research site. These studies on traditional water system provide a rich knowledge platform for the author's thesis.

The goal of this graduation project is to continue the circular water story of Danzhou's salt villages in a sustainable way. Based on the social and natural values of the traditional water system itself, the author aimed to seek the potential for this heritage to live with more extreme tidal conditions, social development and tourism pressure in the future. The thesis based on the studio's frame and explores the possibilities for its implementation in the villages of Danzhou, China.

The relationship to the Landscape Architecture track

The landscape Architecture track of TUD has always required students to train their minds and evaluate their projects through perception, process, palimpsest and scale continuum four perspectives. In the analysis phase of this project, the scale continuum method was used to explore the effects of various factors of different scales on the site landscape formation and possible future impacts. Palimpsest is used as one of the most important approaches in the project's research methodology. Through understanding the landscape biographies (skill trained in Q2), the thesis created a narrative of salt heritage. In the course of design, the author considered the influence of the natural process on the site and paid attention to the perceptions of different areas in the path design.

In addition, the workshop on "Mapping", "GIS", "Public space" and "Drawing time" attended was very helpful for the project. In general, the project attempted to apply the new knowledge author learned in the Landscape Architecture track to research and design.

7.

Appendix

Representative image

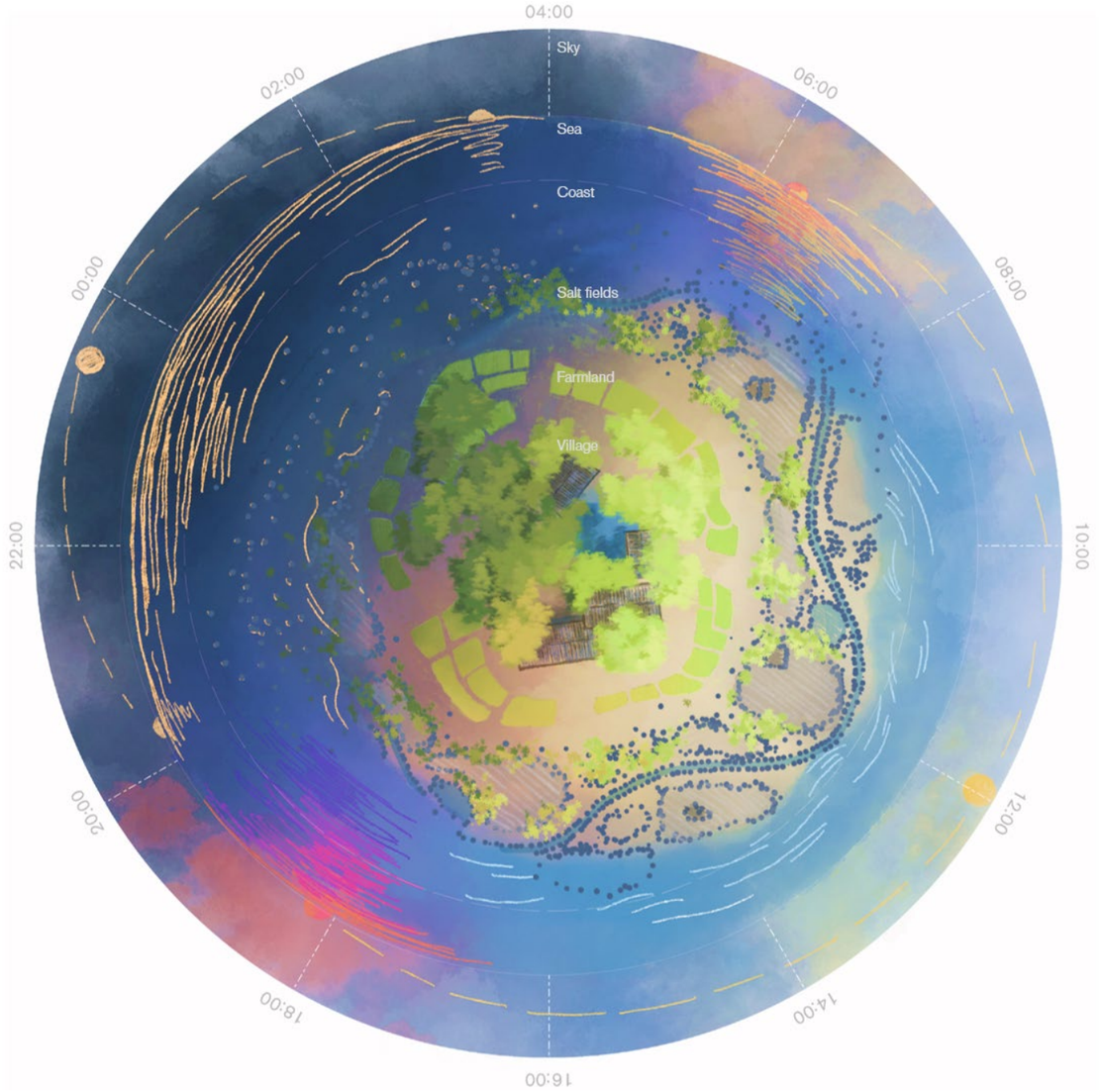


Figure 7-1 The day-to-day view of the salt heritage

Circular water story

Figure 7-2 Circular water story of the ancient salination

Reference

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