

THE LAST RESORT

Embedding architecture in a disturbed landscape



CONTENTS

INTRODUCTION	1
1 LOCATION & CONTEXT	
Below the surface	7
History of land-use	9
A swell of tourists	13
A wet and dry future	15
Theoretical inspiration	17
2 SITE	
A strip of Fogo	21
With hazards	23
In the crust	27
Down the pipeline	29
Entangled connections	33
3 PROGRAMME	
A miniature cosmos	37
[The last] resort	39
Embedding architecture	41
Agents in and on site	43
Architectural elements	45
Method and submission	49
4 APPENDIX	
additional material	53
UN sustainable development goals	59
CV	61
List of illustrations	62
References	63



Josephine Nørtoft Saabye 140272
Diploma programme 2022

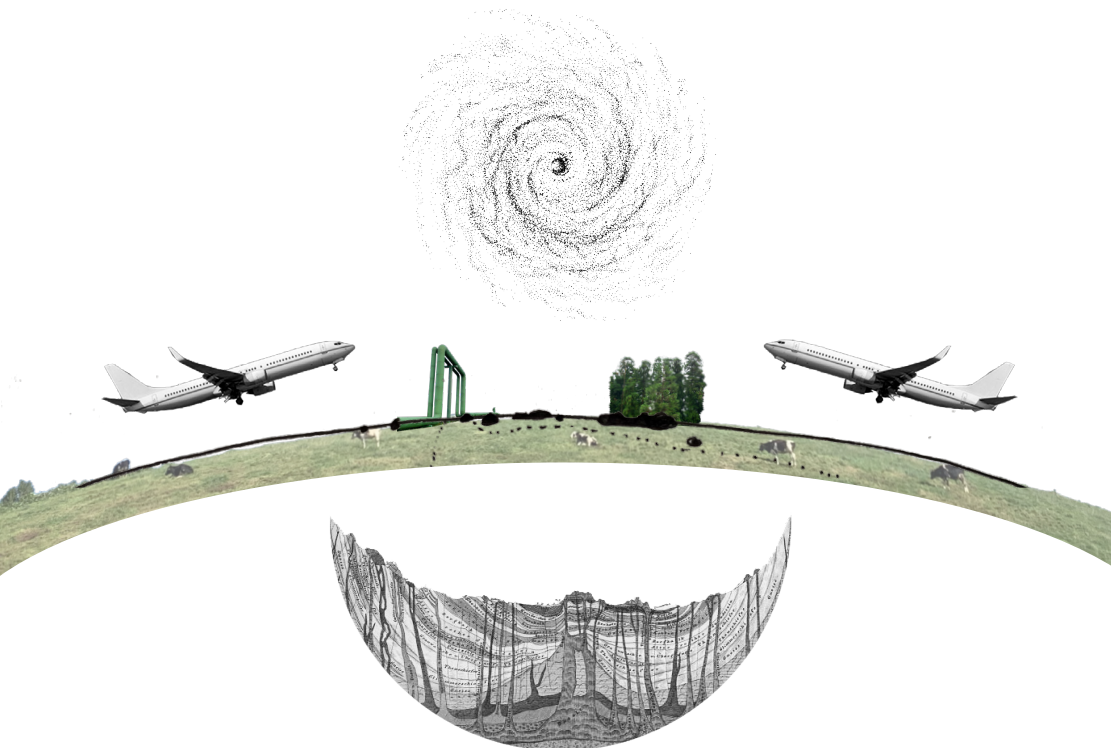
Supervisor: Niels Grønbaek
Political Architecture: Critical Sustainability

The Royal Danish Academy of Fine Arts
School of Architecture

INTRODUCTION

With all our self-consciousness, we have very little sense of where we live, where we are right here right now. If we did, we wouldn't muck it up the way we do. [...] If we did — if we really lived here, now, in this present — we might have some sense of our future as a people. We might know where the center of the world is¹.

Ursula Le Guin, 1982



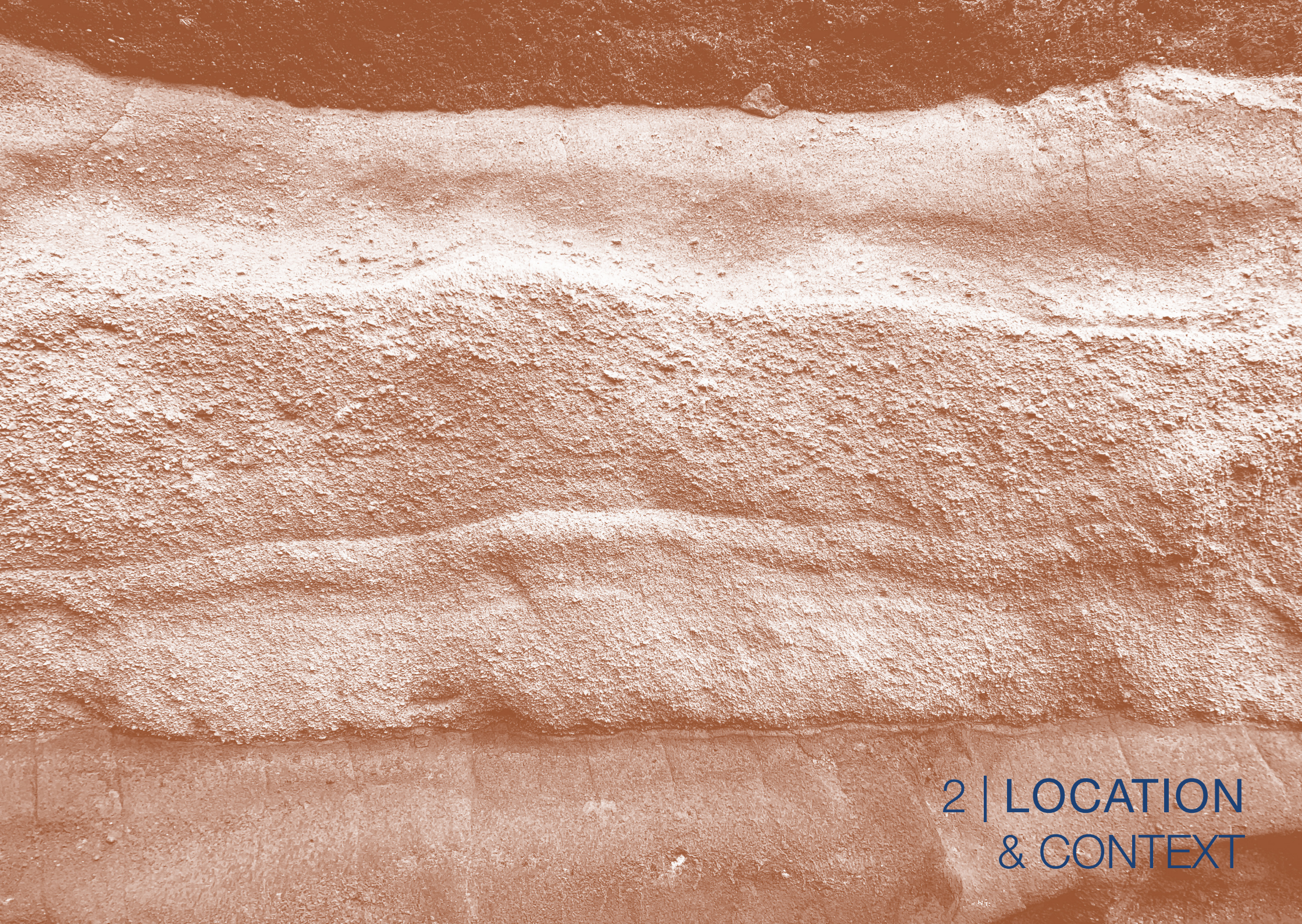
1.1. The present and approaching forces on the Azores

In this age of overarching anthropogenic landscapes, we have created a world in trouble. Humans have allowed themselves and continue to exploit, extract, excavate and explore resources on earth for human consumption and pleasures. Our use of land and disturbance of natural ecosystems is directly entangled with the reality of climate change. This thin layer we live on, which composition we are profoundly changing, is arguably within a closed system between soil, the crust and the atmosphere². A multitude of living organisms depend on this system.

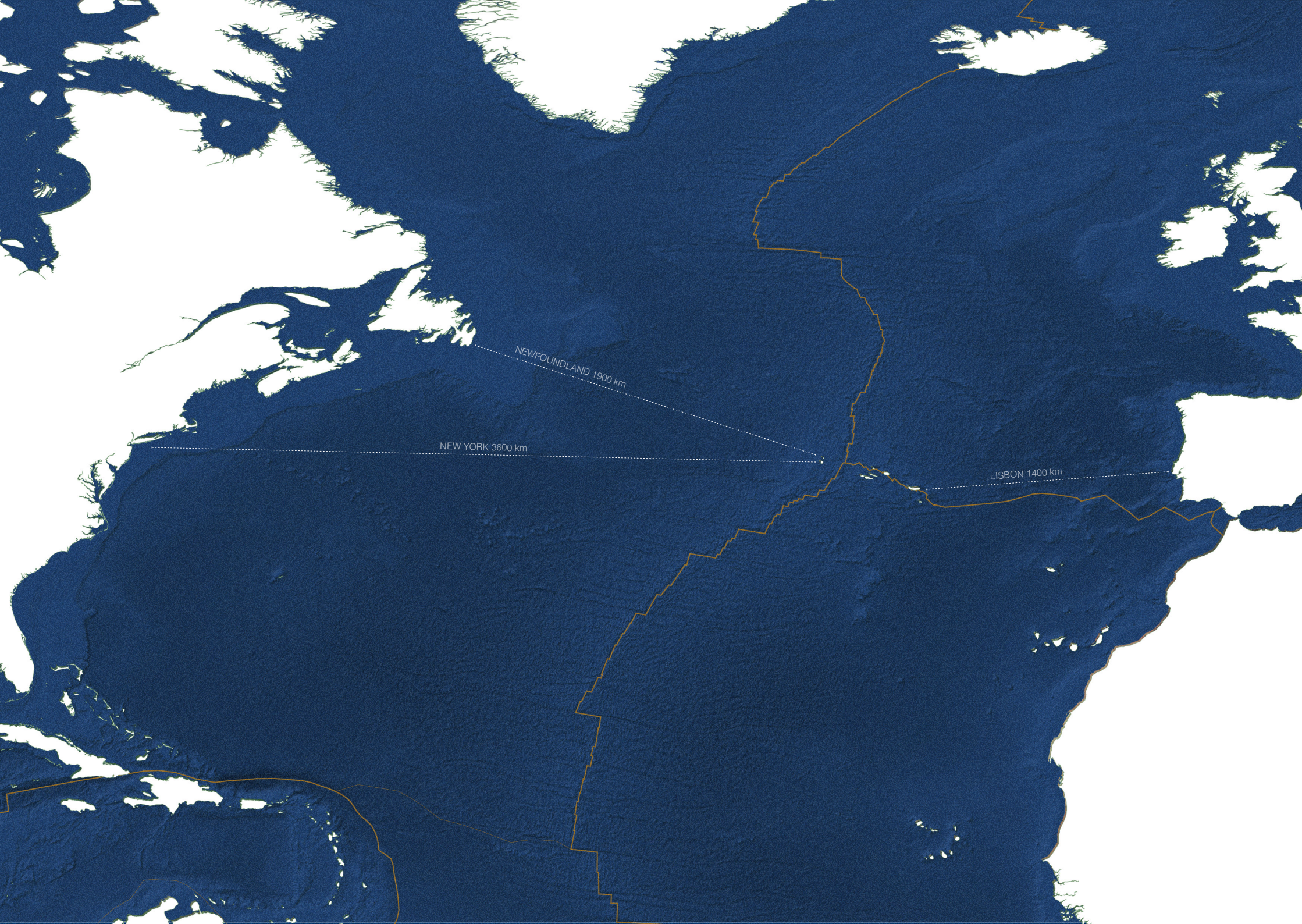
It is within this context this diploma project places itself, but grounds itself on an island; where multiple forms of human land-use are present, where climate related hazards and planes of tourists are in the horizon and where the inner earth shows its presence.

This island will be the site of investigation into how a new tourist destination can infuse visitors with awareness and reflection on land-use, resource-consumption and its consequences on our vulnerable ground. Within this frame the project playfully explores ways of challenging the tourist, their vacating-state-of-mind, the nature they idealize and travel to experience. In addition it brings the materiality and rough character of the island to the forefront to dissolve the flatness of postcard experiences.

Finally the tourist destination is a speculation on how we can rethink and limit our use of land, by entangling layers of human disturbance, create new complex living landscapes while recuperating other natural territories.



2 | LOCATION
& CONTEXT



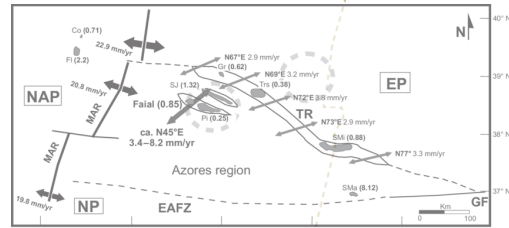
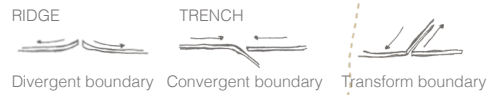
NEWFOUNDLAND 1900 km

NEW YORK 3600 km

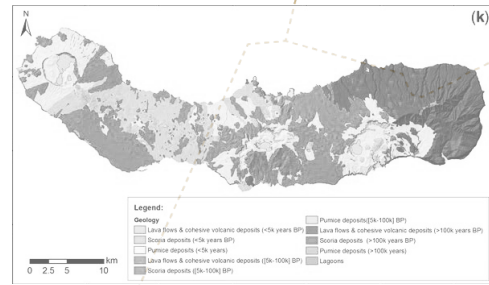
LISBON 1400 km

5000
YEARS AGO

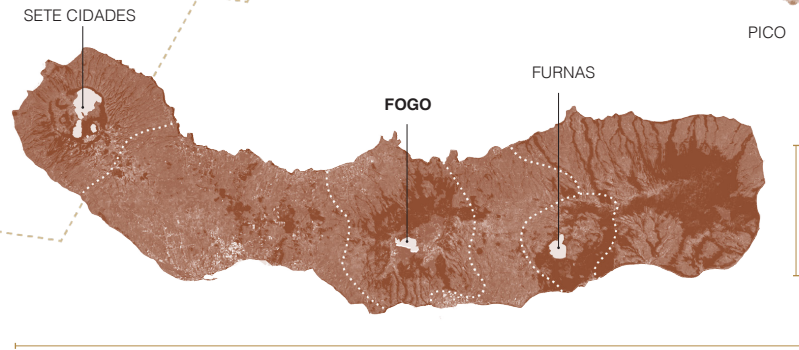
BELOW THE SURFACE



2.1. Tectonic map of the Azores.



2.2 Geological map



TIMELINE EXPLANATION



In the Atlantic Ocean about 1400 km from the Portuguese coast, 3600 km from the North American, nine volcanic Islands are scattered over a distance of 600 km. The archipelago called the Azores.

Their existence is a result of the potent location on top a triple junction of tectonic plates; The Eurasian (Eu), African (Nu) and North American (NA) plates. Seven islands are dispersed along the trench between Eu and Nu, meeting the Mid Atlantic Ridge, while Corvo and Flores lies west of the Ridge with more stable geological conditions³. Faial, Pico, Graciosa, São Jorge, Terceira, São Miguel and Santa Maria are however all in a zone of seismic and volcanic activity, with frequent smaller earthquakes and in historical times both destructive earthquakes and volcanic eruptions⁴.

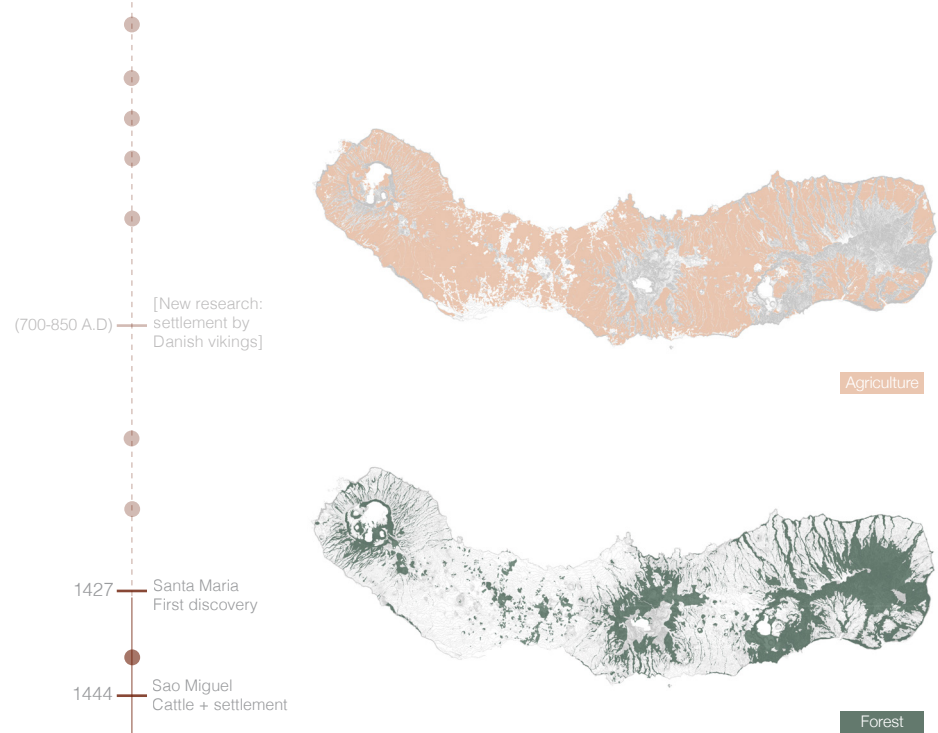
The most active of these Islands and additionally the most populated with 56% of the azorean population is Sao Miguel⁵. The island is geologically divided into 6 volcanic zones, with three volcanoes, Sete Cidades, Fogo (Agua de Pau) and Furnas all characterised by a summit caldera due to a series of eruptions and collapses⁶.

It is on this island and along the north-west side of the largest and central volcano, Fogo, this project will unfold.

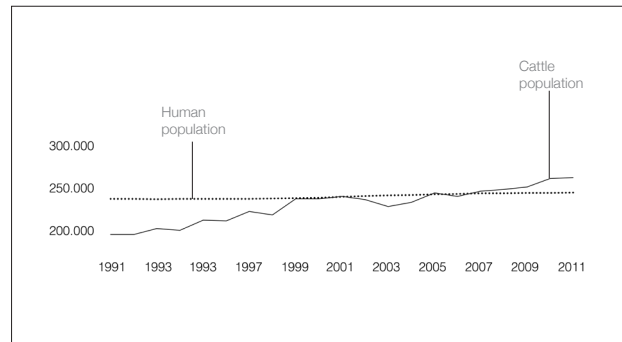


SANTA MARIA

HISTORY OF LAND-USE



2.3



2.4



Sao Miguel is not only the most volcanic active, most populated but also the largest and the main economy of the Autonomous Region of the Azores⁷ (Região Autónoma dos Açores), being one of the autonomous regions of Portugal)

Eventhough new research shows the potential of earlier settlements on Sao Miguel⁸, it is officially still in 1444 when cattle (and their caretakers) from mainland Portugal were placed on the island. The fertile soil and climate have since the 15th century grown a broad variety of produce, among the current famous is tea and pineapple⁹. Today 65% of the land-use of Sao Miguel is agriculture, 36% of these dominate the landscape with green pastures and cows that outnumber people on the island¹⁰ (fig 2.4.)

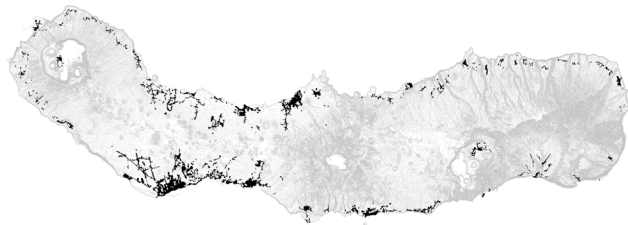
Exploring further the use of land, Cryptomeria, Japanese cedar, was introduced in the middle of the 19th century, along with other foreign trees, initially for the purpose of parks and gardens. Revealing the cryptomeria's great adaptation to the Azorean climate and volcanic landscape the use expanded to afforestation of wasteland and finally also wood production¹¹. Out of the 17% of Sao Miguel which today is covered by forest 44% is occupied by Cryptomeria¹².

1810
1811



Mineral extraction

1852

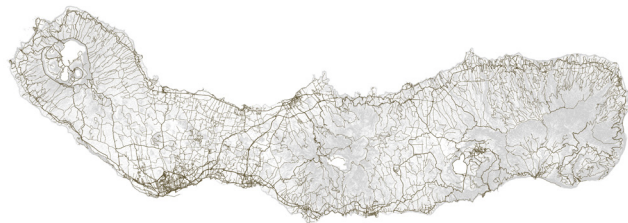


Urban

1932
1935

1947 First airline

1952



Infrastructure

1976 Autonomous Region of the Azores

1980 First geothermal well and turbine

1990 Measured landuse

1997 Heavy rain flooding + landslide

2.5.



As a final note on land-use, examining the so-called artificial surface Sao Miguel has since 1990 seen an increase in urban fabric, commercial areas and mineral extraction sites with respectively 68.0%, 111.4% and 296.6%¹³. Today the artificial surface counts for 6% of the land-use bringing the total area of Sao Miguel used for serving human needs through agriculture, wood production, mineral extraction, housing, shopping etc to almost 80%.

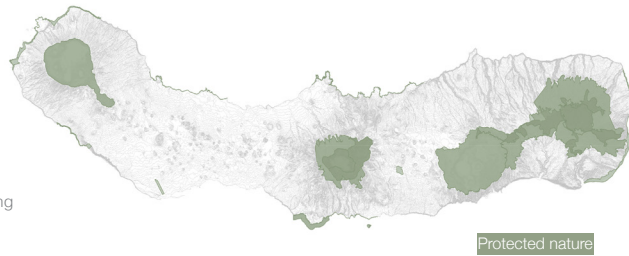
And one thing that is not considered here but what the next page will embark on is how Sao Miguel and the last 20% is faced with a pressure of tourism and serving humans and their need to explore the “natural”.

While the above tells us about the utilisation of the surface - growing, excavating and building on it - one fairly resent resource of Sao Miguel penetrates it and goes up to 1500 m into Earth; Geothermal energy. In 1980 EDA (Eletricidade dos Açores) started developing the potential of using the heat from Fogo Volcano to generate and supply the island with renewable energy¹⁴. Today 42% of the energy consumption is geothermal, all extracted and produced on the north-west side of Fogo Volcano next to, below, across and between pastures, forest, gravel pit and tourist attractions.

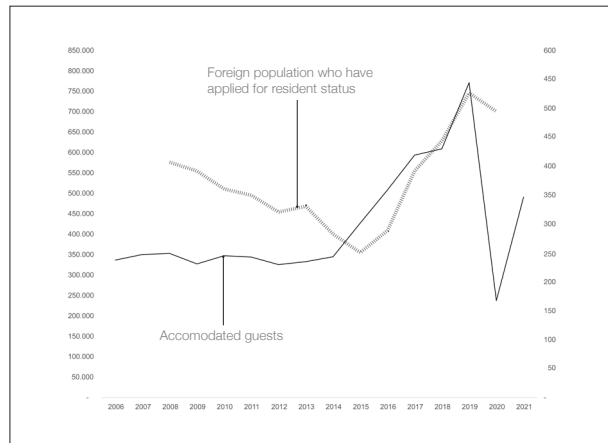
A SWELL OF TOURISTS

In a 'business-as-usual' scenario, tourism would generate through 2050 an increase of 154% in energy consumption, 131% in greenhouse gas emissions, 152% in water consumption and 251% in solid waste disposal¹⁵.

- 2012 - Hurricane Gordon
Hurricane Nadine
- 2013 - Landslide
- Heavy rain + flooding
- 2015 - Ryan Air & Easy Jet
- 2016 - Hurricane Alex
- 2018 - Tropical storm Helene
- 2019 - Hurricane Lorenzo
TUI
- 2021 - Lufthansa
Swiss
- Yellow warning
Orange warning
- 2022 - British Airways
United Airlines



2.6.



2.7. Tourists and foreigners

Award	Organisation	Comments	Year
Top 10 Most Sustainable World Destinations	Green Destinations	First place in "Best of the Atlantic" category	2018
Top 100 Most Sustainable World Destinations	Green Destinations	-	2017
QualityCoast Platinum Award	QualityCoast – Coastal and Marine Union of the European Union	On par with two other Dutch destinations - Goedereede and Westvoorne	2017
Top 100 Most Sustainable World Destinations	Green Destinations	-	2016
Top 100 Most Sustainable World Destinations	Green Destinations	First place, with 8.9 points out of 10	2014
QualityCoast Platinum Award	QualityCoast – Coastal and Marine Union of the European Union	First and, at the time, the only destination with this award	2014
QualityCoast Gold Award	QualityCoast – Coastal and Marine Union of the European Union	Best Quality Coast Destination in Europe	2013
Best of the Best – Nature Award	European Commission	Granted to Project "Life Priolo," which was developed between 2003 and 2008, aimed at the protection and restoring of the risk vegetation of the laurel forest of the Azores	2010
Second Best Islands in the World for Sustainable Tourism	National Geographic Traveler	-	2010

2.8. Azores sustainability and sustainable tourism awards

Since the first aircrafts in 1940s the only airline connection to the Azores was with local companies through mainland Portugal¹⁶. In 2015 it changed. With a new transport model allowing low cost airlines to connect to Sao Miguel the Azores have since seen a steady increase in tourism (fig. 2.7) and as it showed to be a prosperous connection more airlines followed¹⁷; In 2022 United Airlines¹⁸ and British Airways¹⁹ will begin their connection to the archipelago.

A number of organizations presents the Azores for being one of the top sustainable, green travel destinations (fig. 2.8) and what attracts the tourists is exactly the possibility to explore the islands' natural diverse riches. But with the expansion of airline connections, the current steady increase in tourists, how natural and sustainable will it continue to be when the the need of energy, water, land and materials also grows?

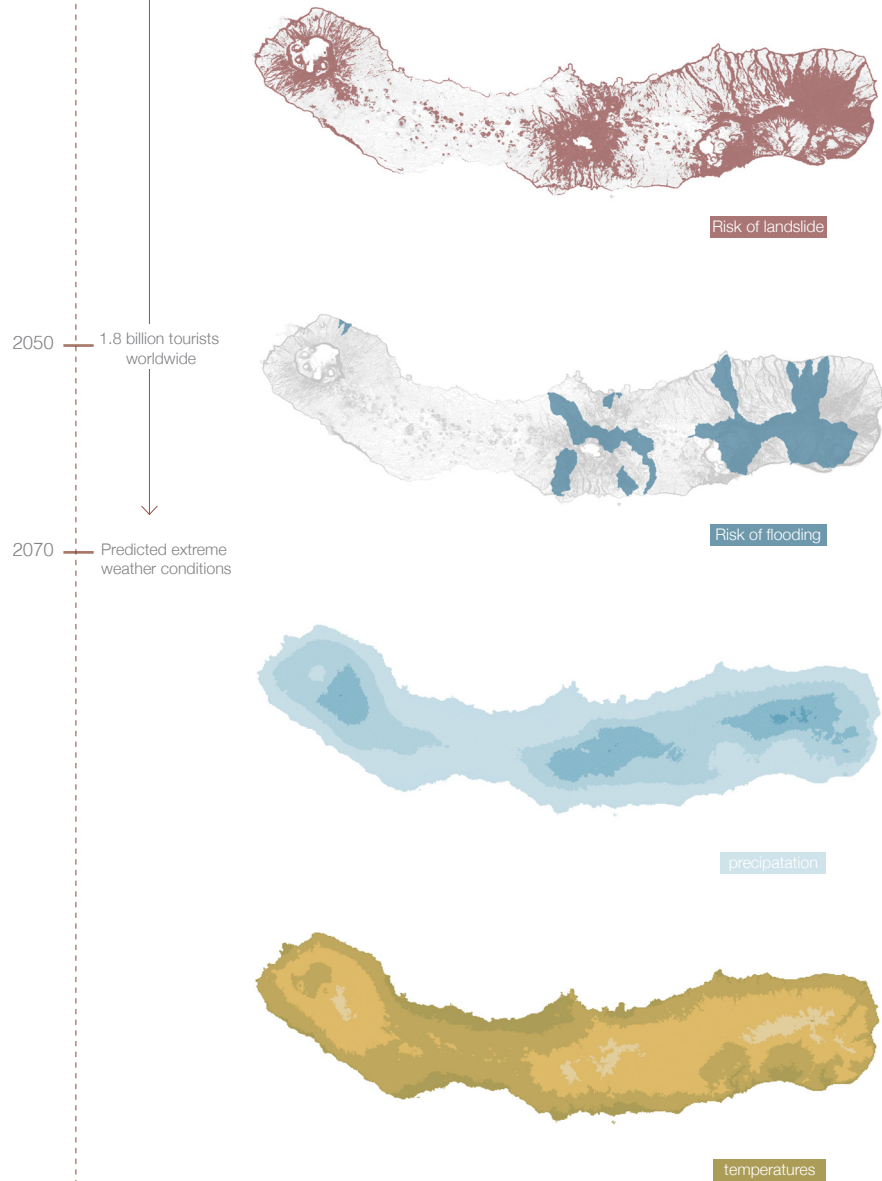
"The New Yorkers are coming!"
Real estate Agent Joao Vieira from Das Janelas Azores Realty, experiencing an increase in new customers in fall 2021

"We don't like what's going on over-there [the US]"
American senior couple met on Sao Miguel looking for a property.

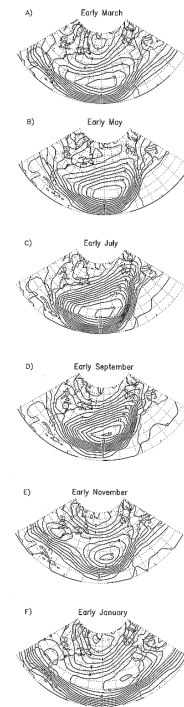
Beyond the temporary visitors another tendency of foreigners is also prevailing on Sao Miguel; Buying property, and planning to move there or at least have it as an escape from the realities they are faced with. Investigated thoroughly by American journalists the extreme degree of this (we are sticking to the earth in this case as the extreme of the extreme would be the pursuit of possibilities in outer space) is wealthy Americans building bunkers that can protect them from a civilisational collapse while a milder getaway-approach is buying land in New Zealand²⁰.

But it is not just tourists and the foreigners that are coming...

A WET AND DRY FUTURE



2.9



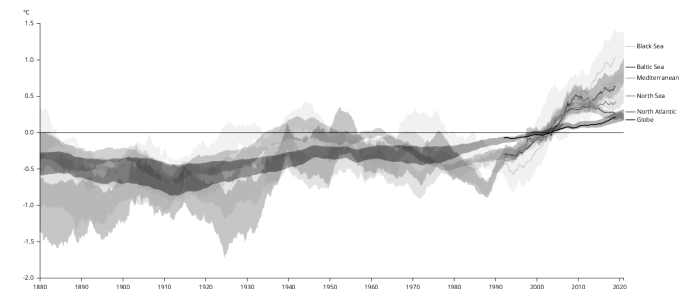
2.10. Atlantic Subtropical anticyclone Seasonality

The Portuguese Institute of the Sea and Atmosphere (IPMA) is responsible for monitoring the weather and issue necessary warnings. Alone In 2021 154 warnings for the archipelago was released due to mainly predictions of heavy rain and wind²¹.

The exposed position of the Azores in the middle of the Atlantic and their limited surface area, makes them extremely vulnerable to externally induced changes; the climate. Today a semi-permanent, high-pressure anticyclone, often protects the islands from the North Atlantic storm track, but rising sea surface temperatures could dissipate or change its position²². With global warming the archipelago is faced with a scenario by 2070 of wet winters with extreme rainfall events and dry summers effecting the water resources of the island²³.

Due to the character of Sao Miguel's volcanic landscape, the island is confronted with high risks of landslide and flash floods (fig. 2.9) only becoming worse with increase in torrential rain events.

The potential of destructive seismic and volcanic activity, the one force, not created by humans and lived with since the first settlement, have been joined by the forces of tourism and climate change in creating a vulnerable, uncertain future for the Azores. This project places itself in the eye of the storm and explores the potent landscape.



2.11. Decadal average sea surface temperature anomaly in different European seas (1870-2020)

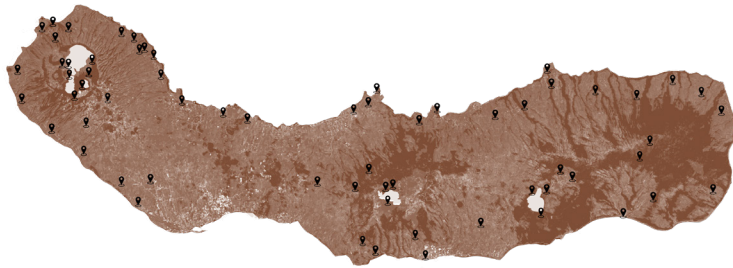
THEORETICAL INSPIRATION

"It never stops. The problems never leave me alone. They follow me when I read the newspaper, they drip on my shoulders when I shower, and they fill up my basket when I am grocery shopping. They follow me into my dreams.

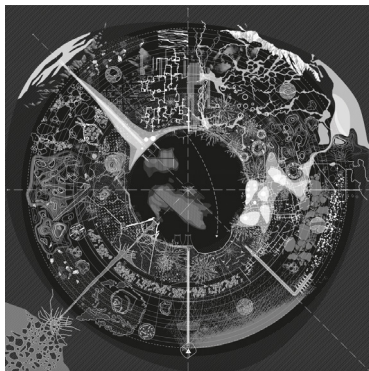
When I lay in my apartment and try to fall asleep during the heatwave, then I know that the fan that I cannot sleep without makes my energy consumption explode. When I wake up and begin working, I know that what I always wished for – having my name on a printed book – contributes to deforestation. How can you dream at night if one's last conscious thought is moral dizziness over what allows you to sleep? How can one dream during the day, if what makes you wake up in the morning accomplices you in the catastrophe?

The problems follow my footsteps; indeed, they are my footprints. So, I go on vacation to disconnect. I want to disconnect from the traces my life is dragging, I want to detach from the material consequences of my existence. I want to be an island! So I flee to an island."

Excerpt of Land sickness
Nicolai Schultz, 2021



2.12 Miradouros on Sao Miguel



2.13. The Soil Map

It is about consuming goods and services which are in some sense unnecessary. They are consumed because they supposedly generate pleasurable experiences which are different from those typically encountered in everyday life. And yet part at least of that experience is to gaze upon or view a set of different scenes, of landscapes or townscape which are out of the ordinary. When we 'go away' we look at the environment with interest and curiosity. It speaks to us in ways we appreciate, or at least we anticipate that it will do so. In other words, we gaze at what we encounter.

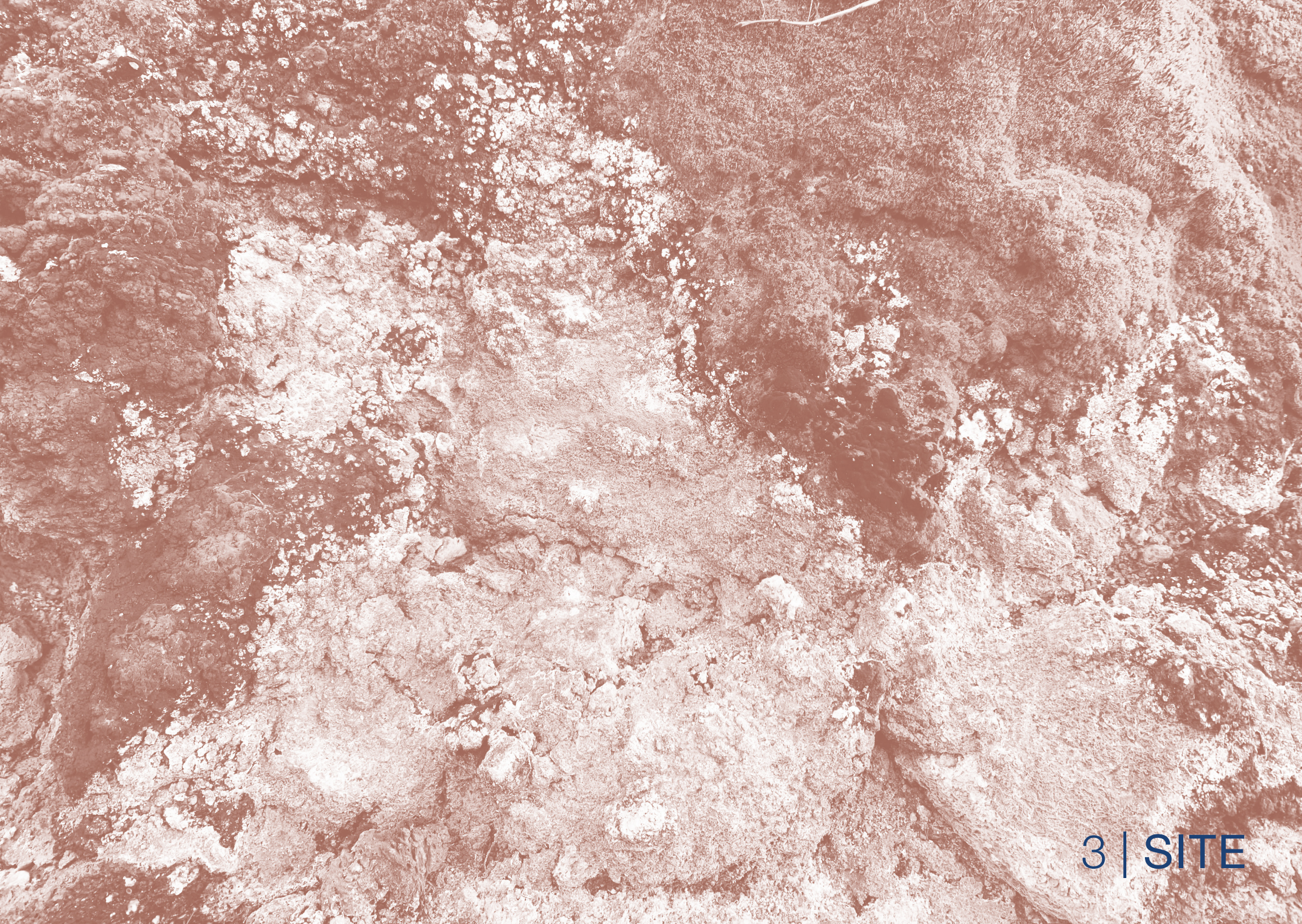
Excerpt from The Tourist Gaze
John Urry, 1990

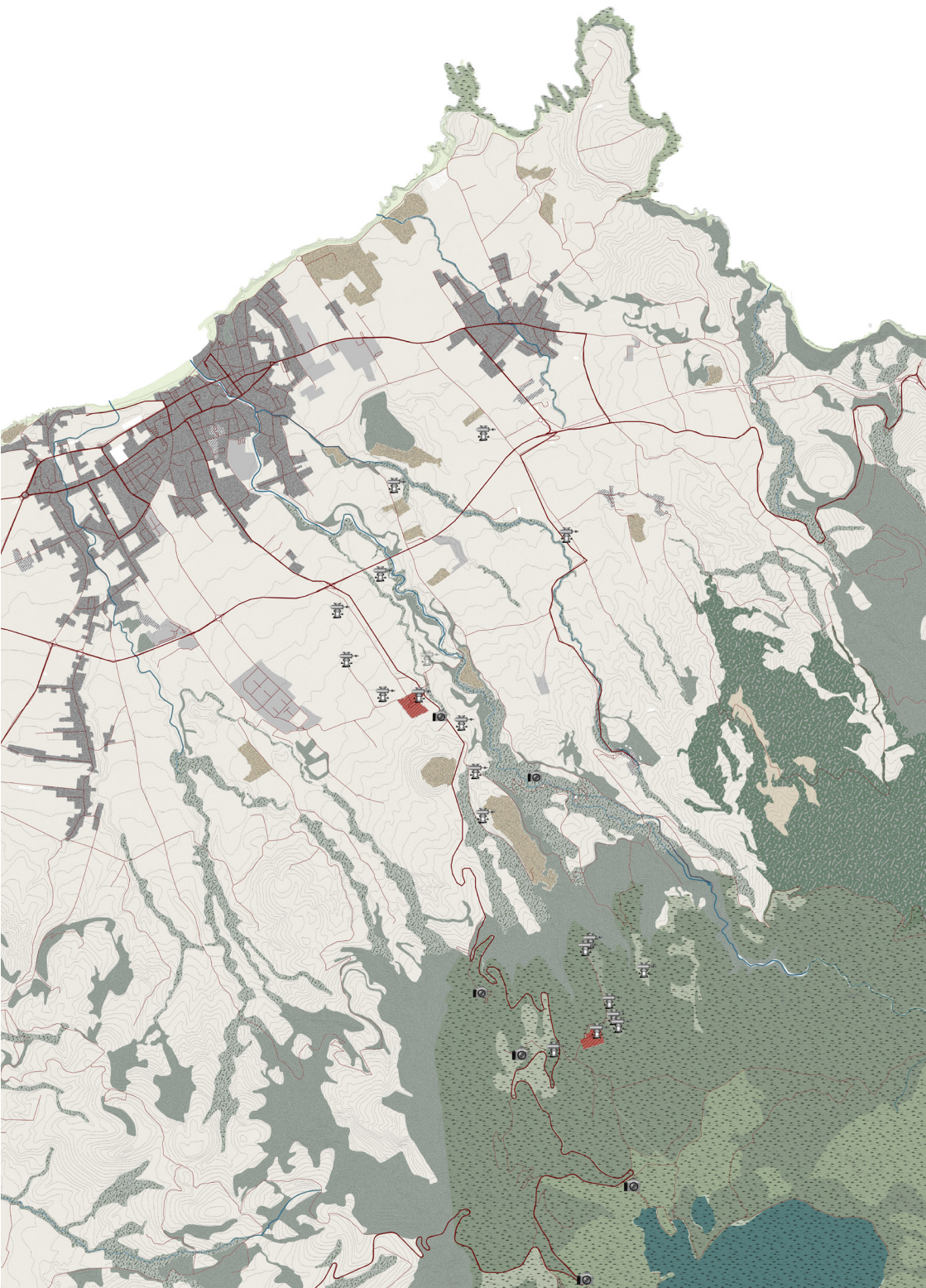
This programme's perception of the tourist and motives of traveling is stretched out between Nicolai Shultz's 2021 account of fleeing to an island²⁴ and John Urry's *The Tourist Gaze* from 1990; We leave to detach ourselves from our everyday life and its embedded worries and use foreign settings and experiences as distraction. Even in times where awareness of climate change is inevitable (and otherwise is a matter of denial), we continue in increasing amounts to pollute while collecting air miles, to explore unknown culture or wild nature. Urry points to this consumption as a pursuit of pleasurable experiences with a certain gaze in focus²⁵. Referring to the map of Sao Miguel showing points of Miradouros (viewpoints), multiple spots scattered over the island are marketed so one can experience postcard scenes, far reaching views of a volcanic island.

The tourist gaze does not only direct the tourists but also the industry, the landscape.

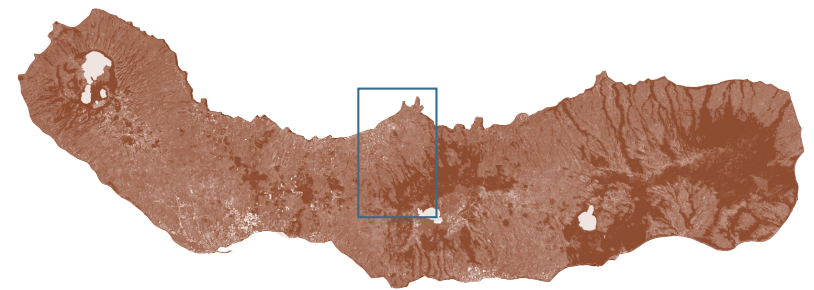
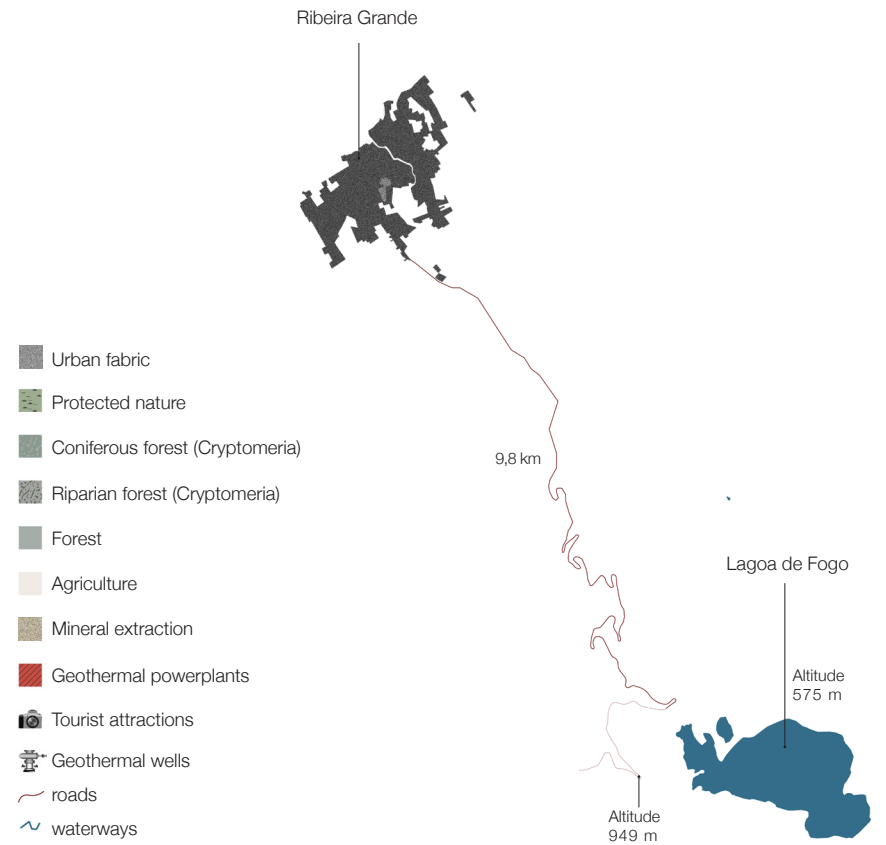
In the lake district of England (a famous area of natural beauty) a farmer was recently prosecuted for keeping a messy farm. He was charged with keeping broken and rusty machinery around the buildings and dumping piles of odd stuff on the land. A popular tourist footpath looked out on the farm and the concern was that people would get a bad impression of the area²⁶.

The programme wants to directly challenge this gaze, the experiences we seek when vacating, the oblivious state of mind we enter. For this theorist Donna Haraway's *Staying with the Trouble* becomes central. She distances herself from the human centred concepts Anthropocene and Capitalocene and proposes the Cthulucene. With this she suggests that we must accept the damaged earth we have shaped and explore new ways of living in it, in unexpected collaborations and combinations of species, technology, culture and nature, to recuperate²⁷. Staying with the trouble will influence the continuous work as a central theoretical framework for the architecture.



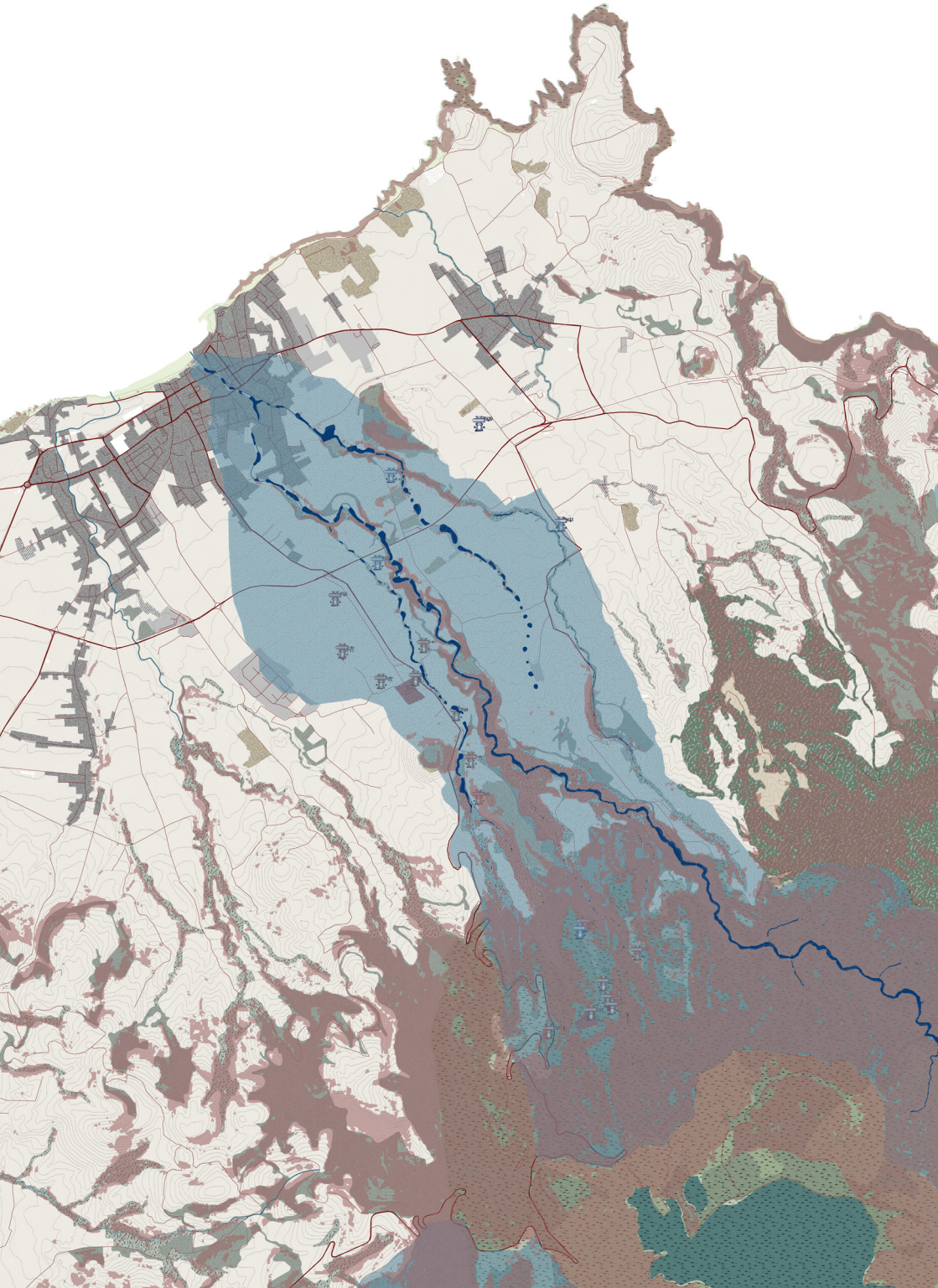


A STRIP OF FOGO



< 3.1 Area of site

WITH HAZARDS



In a place where different forms of land use overlaps, where high risks of landslide and flooding exist, where a frequent fog or a cloud of steam blur one’s view, where the inner heat of a volcano comes to the surface with fumaroles, hot springs and power plants, where tourists go to hike with a far reaching view, relax in natural warmed pools and stand under a waterfall, and where a pipeline cuts through it all, that is where the site is.

This potent combination is situated on the north flank of Fogo Volcano stretched out between the caldera and Ribeira Grande. A road can take one straight from the center of Sao Miguel’s second biggest town, through a plane of fields, then ascending through patches of Cryptomeria and other vegetation to some of the most popular tourist attractions on the island; The Caldeira Velha thermal pools, the waterfall Salto do Cabrito and Lagoa de Fogo. The road winds through the site along with a river that curves left when meeting the slope of Fogo while the road goes right.

The river, as the spine in a river basin, transports heavy loads of rain from Fogo Volcano through Ribeira Grande to the sea. It is identified as one of the high risk zones of flooding on Sao Miguel²⁸, making especially the town, its population, and roads vulnerable while increasing the risk of landslides down the slope of Fogo.

- High risk of landslide
- High risk of flooding
- High level of flooding

In between the road and river lies a mineral extraction site where excavation continues to reshape its gravel pit. In the bottom of the pit a new geothermal well is being drilled producing an abundance of steam and a smell of sulfur moved around by the frequent strong wind. The well will soon connect to a Geothermal power plant and increase the production of electricity being produced for the island.

< 3.2 Area of site layered with hazards



3.3 Scenes from the north west strip of Fogo Volcano

IN THE CRUST

The layer that makes itself visible with pipelines, wells and powerplants, is the extraction of geothermal energy. By drilling between 500-1500 m into the earth temperatures around 240°C are reached for electricity production. Four natural circumstances create the necessary conditions for successful extraction:

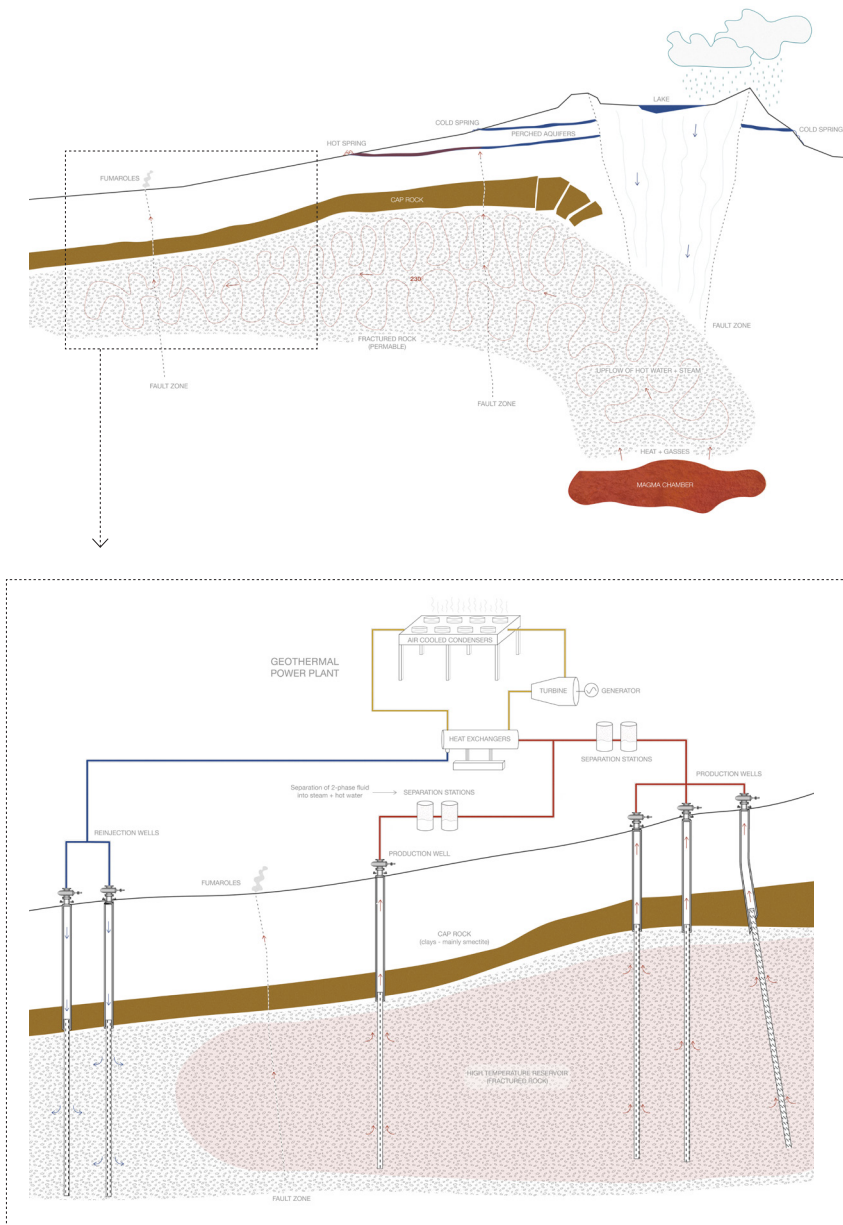
- Heat:** magma chambers in the crust (which is the case in volcanic zones.)
- Water:** transporting heat (Lagoa de Fogo, precipitation and reinjecting fluids)
- Permeability:** porous rock where fluid can pass through (high temperature reservoir)
- Cap rock:** shield of cold rainwater cooling down reservoir (clay in this case)

And finally the extractors must ensure a sustainable balance of water channeled in and out, to not dry out or cool the reservoir.

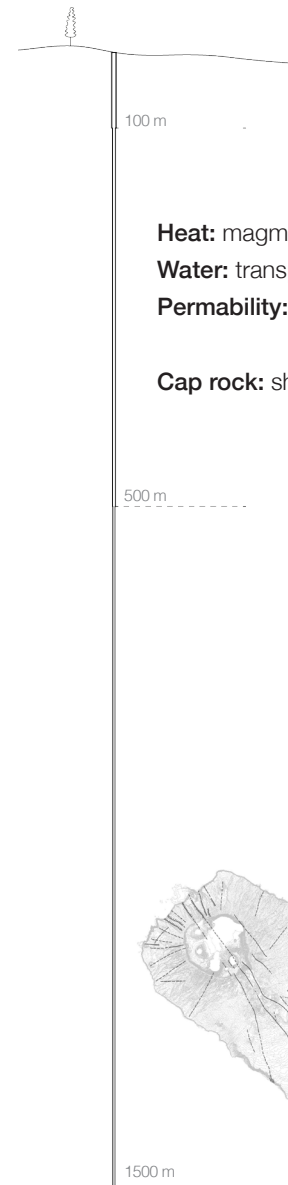
With the constant heat inside the earth, energy can be continuously extracted under these conditions, making it a renewable energy.

This invisible landscape below the site will be explored in the further process of architectural design.

This knowledge was obtained in deep conversation with António Franco, Geothermal Geologist working for EDA.



3.4. Explanatory section of Fogo Volcano and geothermal extraction



1:10.000



3.5. Faults in Sao Miguel

DOWN THE PIPELINE

Two Geothermal power plants on Sao Miguel use the heat from the magma chamber of Fogo Volcano to produce electricity; Central Geotérmica do Pico Vermelho and Central Geotérmica Ribeira Grande. Both of them are placed within the investigated site.

Transporting steam and hot water from wells to power plants sections of pipeline are spotted throughout the surrounding landscapes. Structural points of solid steel and concrete lift the pipe of the ground and are built to withstand a certain magnitude of earthquake. The characteristic loop is in case of temperature changes in the transported water (and therefore also the pipe), which could make the pipeline contract and then break. The loop gives the pipeline a certain flexibility for both expansion and contraction.



Changing the path



[own images]

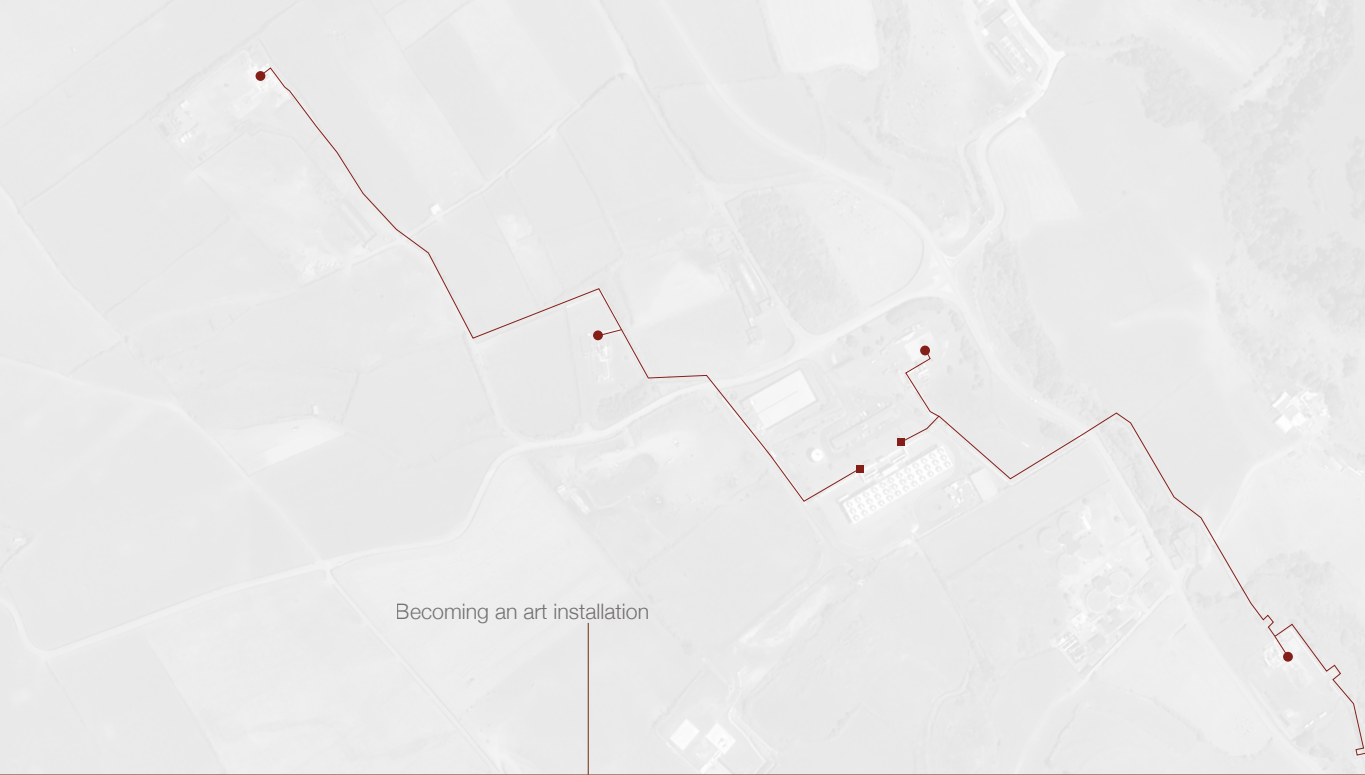
Obstructing the view

Respecting the landscape

Stirring up curiosity

Creating a barrier

CENTRAL GEOTÉRMICA RIBEIRA GRANDE



Becoming an art installation

Painted green as an attempt to smoothen its appearance in the nature it moves along, across or around, it still strikes as a strange industrial object that makes one wonder where it leads. If one notice what they notice.

Following the pipeline by foot or car the proximity of different forms of land-use became apparent, situations for inspiration were framed and the possibilities of this line in the landscape awoke a curiosity.

The pipeline will become an integral part of the unfolding project working as a physical red thread. Like a seam or a spine across the site it will create structure for architectural interventions and link functions of the proposed programme.



[own images]



Following the fields

Dividing space

CENTRAL GEOTÉRMICA DO PICO VERMELHO

Framing a road

Making shelter

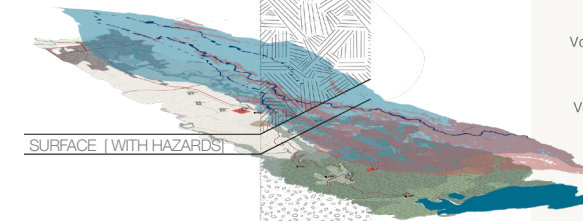
↑ OUTER SPACE
THERMOPHERE
MESOSPHERE

ENTANGLED CONNECTIONS

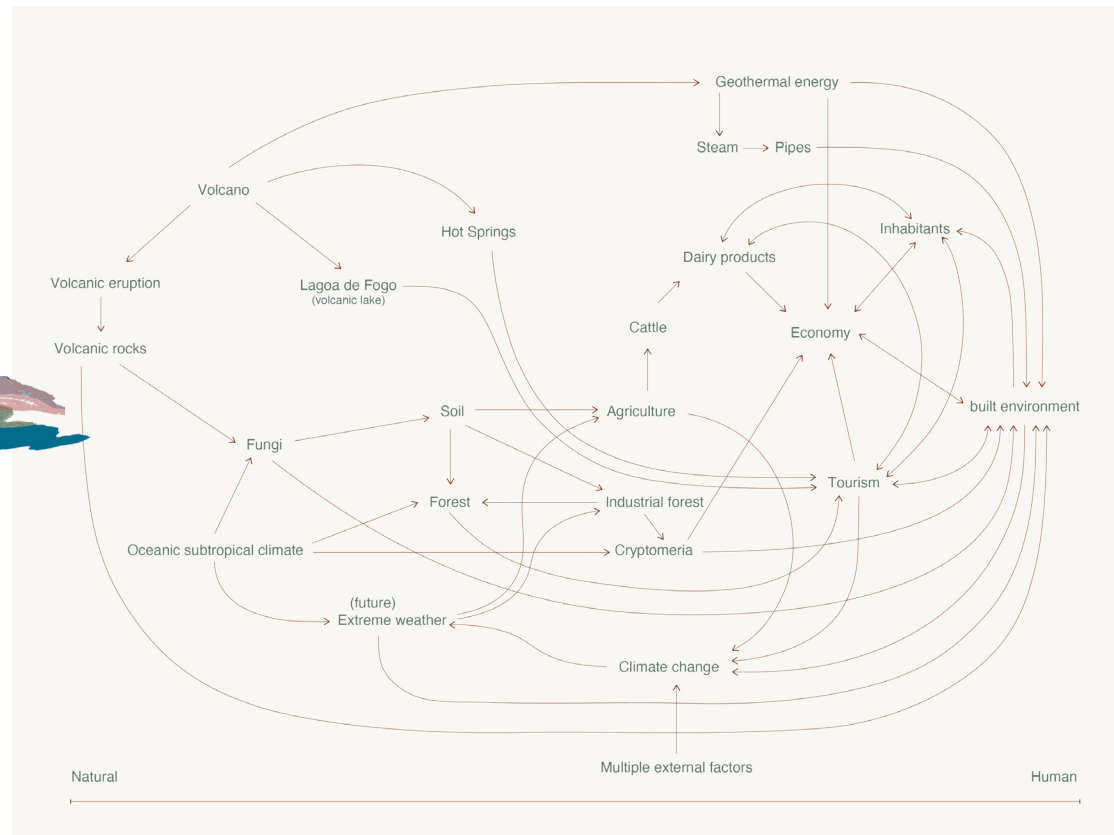
This section of Sao Miguel presented on the previous pages holds a potent complexity; Landuse, natural hazards and a vertical section also showing its face on the surface through the impact of rain and wind and the usage of earth's heat stored in the crust.

This relational complexity is key to this diploma project and will inform the continuous research and the role of architecture.

↑ STRATOPHERE ~ 50 km
↓ TROPOSPHERE ~ 10 km



↑ CRUST ~ 10 km
↓ MANTLE ~ 2900 km



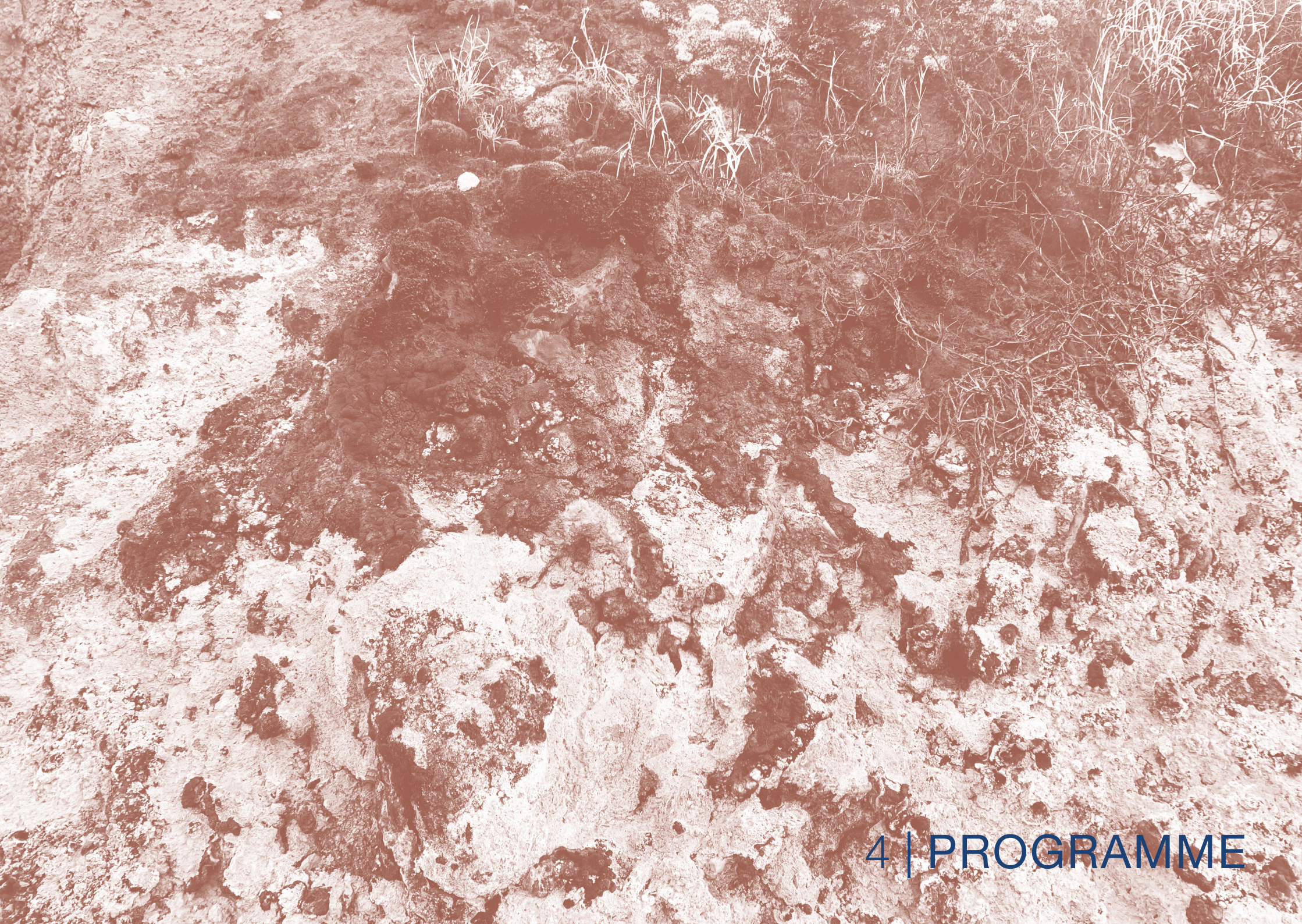
3.6 Visualization of the vertical section

A diagrammatic site analysis showing the entangled connections between the landscape, objects and conditions.



Site: characterized by presence of multiple land-use categories

↓ CORE



4 | PROGRAMME



A MINIATURE COSMOS

A model is like a miniature cosmos, in which a biological curious Alice in Wonderland can have tea with the Red Queen and ask how the world works, even as she is worked by the complex-enough, simple-enough world⁶⁹.

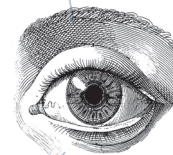
This programme explores a strip of land that represents multiple forms of human intervention on nature. It carries the history of land-use on Sao Miguel, its volcanic origin, its materiality. It reveals natural beauties attracting an increasing amount of tourists and Azorean weather conditions with an intensifying forecast.

This project embeds itself in this complexity, to explore its potential as a site for rethinking our worldwide continuous utilization of land, be it tourists on adventures or excavators digging. It investigates ways of diminishing areas of human disturbance through layering and entanglement.

Between the urban fabric of Ribeira Grande and the protected nature around Lagoa de Fogo is the area that I will refer to as active-industrial nature; where pastures, power plants, gravel pit and cryptomeria meet. The core of the project will develop in this zone.

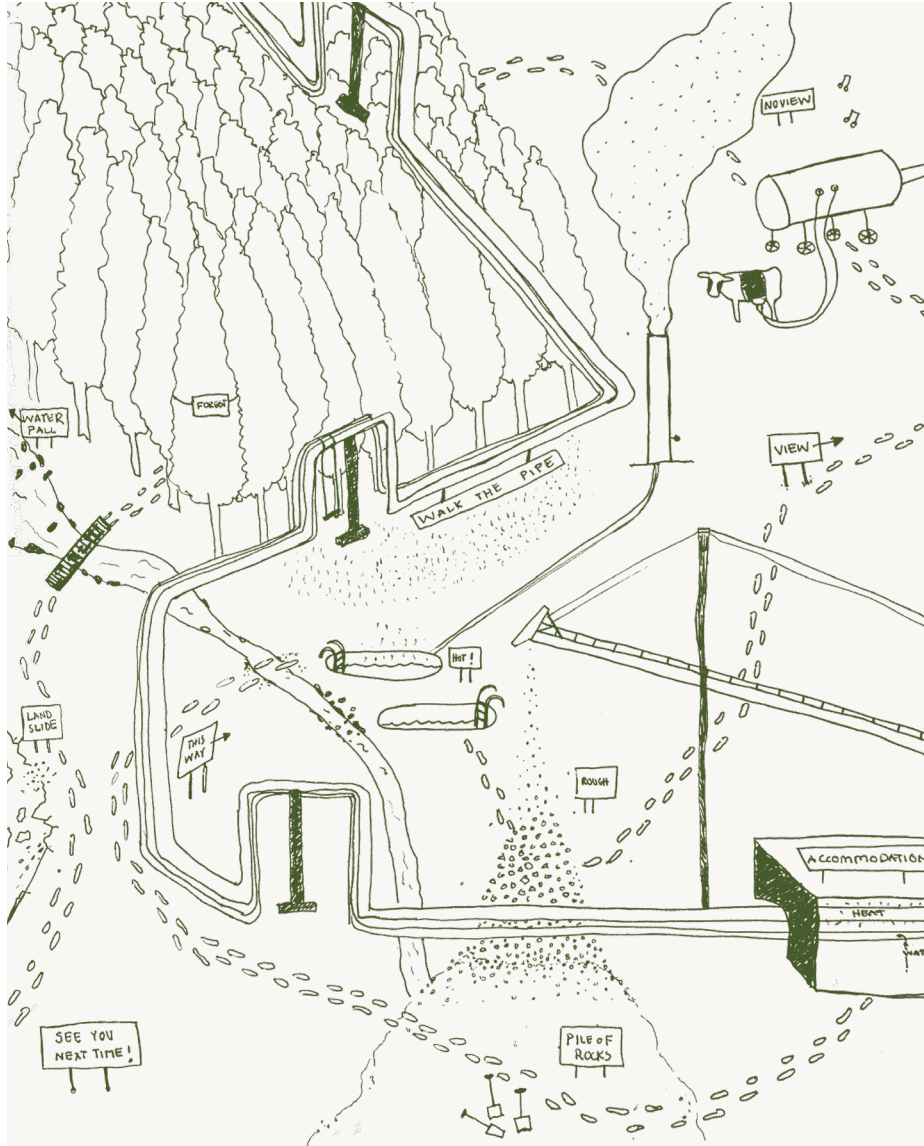
Industrial sites are often characterised by fences and signs of no entry, to not risk a curious person getting hurt, disturb the order of practice or as if it should not be witnessed what is being done for the sake of resources. This will be challenged.

The active industrial nature is juxtaposed by the layer of tourism. The project will intensify this juxtaposition by entangling a tourism programme into and across the sites of resources playing with the concept of The Tourist Gaze and nature experiences we travel for. The intention is not to idealize or shame industrial sites by making them accessible, exploratory even, but to use them as a subtle didactic space of land-use, consumption and its environmental impact. And finally, support not to avoid the trouble we have created but imbed ourselves in it.



< Active-industrial nature
Collage of own images

[THE LAST] RESORT



The Resort experience
- A very first sketch

RESORT | rɪˈzɔːt |

a place that is a popular destination for vacations or recreation, or which is frequented for a particular purpose

RESORT | rɪˈzɔːt |

the action of turning to and adopting a strategy or course of action, so as to resolve a difficult situation

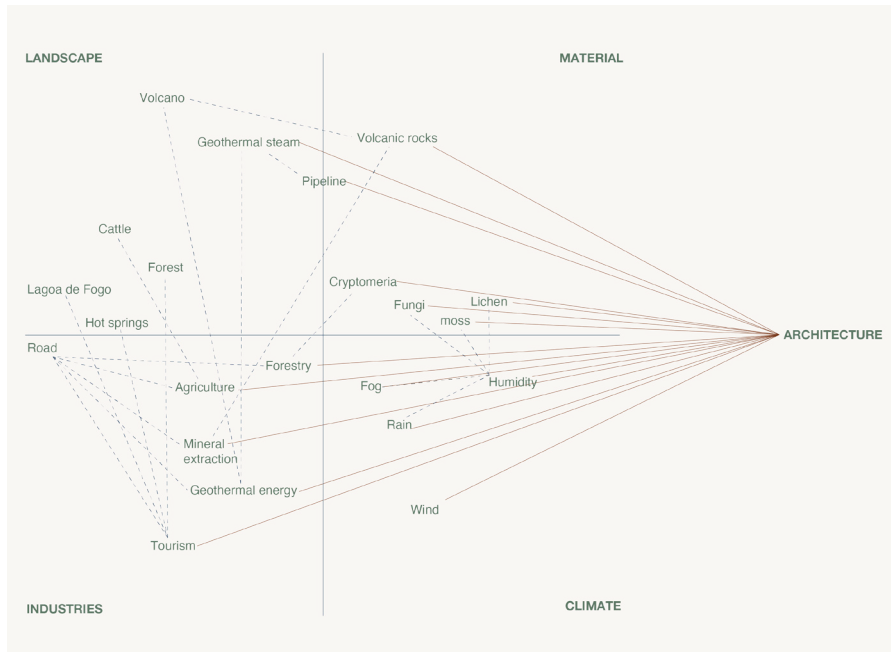
Between this double meaning of the word 'resort' the architectural programme unfolds. The tourist attraction mingled into the active-industrial nature will be a resort. But the nature of it profoundly challenges the immediate connotation of the word. Is it not an all-inclusive experience in its original sense. But it does offer accommodation, activities, food and, hopefully, great company.

The resort invites visitors to experience a different kind of nature; to hear the sounds of milking machines and cows, to watch rows of trees grow, to disappear in geothermal steam, to shower in heavy rain falls and their sporadic rivers down the volcano, to warm up in thermal pools, to see the growth and coloring of fungi, lichen, moss on walls, to sleep in fog, to feel the gravel falling from the crusher machine, to take a break at a waterfall, to smell the earthy gasses, to experience the different natural materials of Sao Miguel.

The purpose is not to beautify but rather to intensify the theatrical and dramatic character of the different industrial sites and resources, to frame and serve the landscape in its roughness.

In a playful way a serious story is told. The resort becomes indirectly a didactic space where the tourist does not detach themselves from the reality of 2022 but are immersed in it and, upon departure day, leave as a different kind of tourist.

EMBEDDING ARCHITECTURE



The situated complexity that will inform and shape the architecture

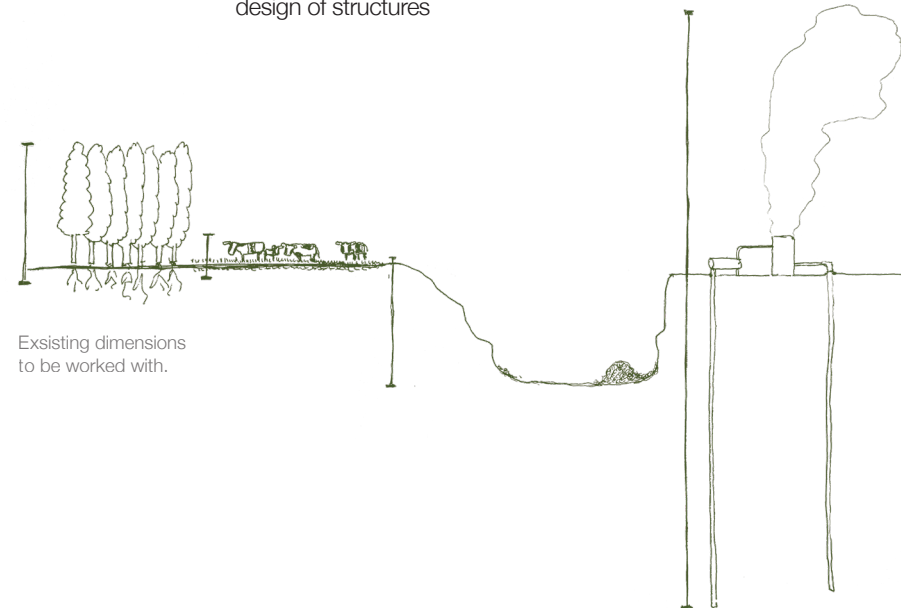


From ground to aggregate
[own images]

The architecture embeds itself in an entangled and layered landscape. By small dispersed interventions it will add a connective tissue across different situated industries. Each intervention will relate to and architecturally explore active industrial activities. The architectural tissue takes visitors on a journey through human land-use, of growing, breeding, extracting and producing resources mixed with existing tourist attractions as hot springs and photogenic views.

Information layered in the site will shape the design and organization:

- Local materials** will be used for constructing the architecture.
- Different stages** of the present materials - from ground, aggregate to concrete component - will create strings in the architectural tissue.
- Physical dimensions** of the present industries, above and below the surface, will give form to structures
- Locations** of industries will direct the organization of interventions
- Weather related and natural hazards** will effect aesthetics and the design of structures



Existing dimensions
to be worked with.

AGENTS IN AND ON SITE



Four different agents
[own images]

Cattle	green pastures muddy pastures paths smells sounds
excavator	gravel pit piles of rock roads pools of water
EDA (Eleticidade dos Açores)	geothermal powerplants pipelines wells steam
Farmer	field roads traces of tractor wheels sound of milking machine place of feeding stone walls fences stocking rate
Forester	rows of trees density of trees density of branches pathways tall forests young forests piles of tree trunks empty land for planting
Fogo Volcano	Eruptions Lake Hot springs fumeroles slope
Lichen, moss and fungi	patterns colors traces uneven surfaces
Visitor	footsteps trails viewing points parking lots signs
Weather	wind rain streams of water sunlight fog

Agents and their direct and indirect
ways of shaping the landscape

Tools for planning within the active industrial nature, with its multiple components, is informed partially by the behaviour of the pipeline and gentle architectural operations; The actions of

Connecting

Framing

Inserting

Plugging on

Adapting

Directing

works as initial strategies in designing the resort and embedding a tourist destination into industrial sites.

In addition to the above the architecture collaborates with a number of present agents in changing the landscape. Their impact on the site has different temporalities; from a slow but continuous growth of lichen, cycles of 2-50 years of Cryptomeria, to the potential of a sudden volcanic eruption.

The architecture will find inspiration and specific sites for the proposed interventions in these ways of changing or having changed the landscape.

The agents will play essential roles in the design, aesthetics and experience of the resort, letting the farmer shape the road, the moss grow, the rain run, the piles of rocks block, and the pipe heat. When the resort opens the agents of different species and inanimate objects become guides. They entertain, direct, inform and challenge the tourist.

In the unfolding of this project these collaborative entanglements will be further and spatially investigated.



ARCHITECTURAL ELEMENTS

A series of conditions and outputs from agents and industries will be explored as architectural elements; the impact of the regional weather, its markings on the built environment, fog that often hides the top of Fogo Volcano, heavy rain that rushes down the slope, the cloud of geothermal steam, the verticality of tree trunks. They will together with more tangible materials and classic elements constitute architectures of different functions within the programme of the resort. The previous proposed actions will work as methods in turning these components into building elements. Experiencing them in new compositions creates the narrative of the project and serves the visitors the material reality and roughness of Sao Miguel.

Current identified elements to be explored:

The rows of trees

the steam

the fog

the pipeline

the rain

the muddy fields

the wind

the raw rocks

the lichen, moss & fungi

the falling aggregates

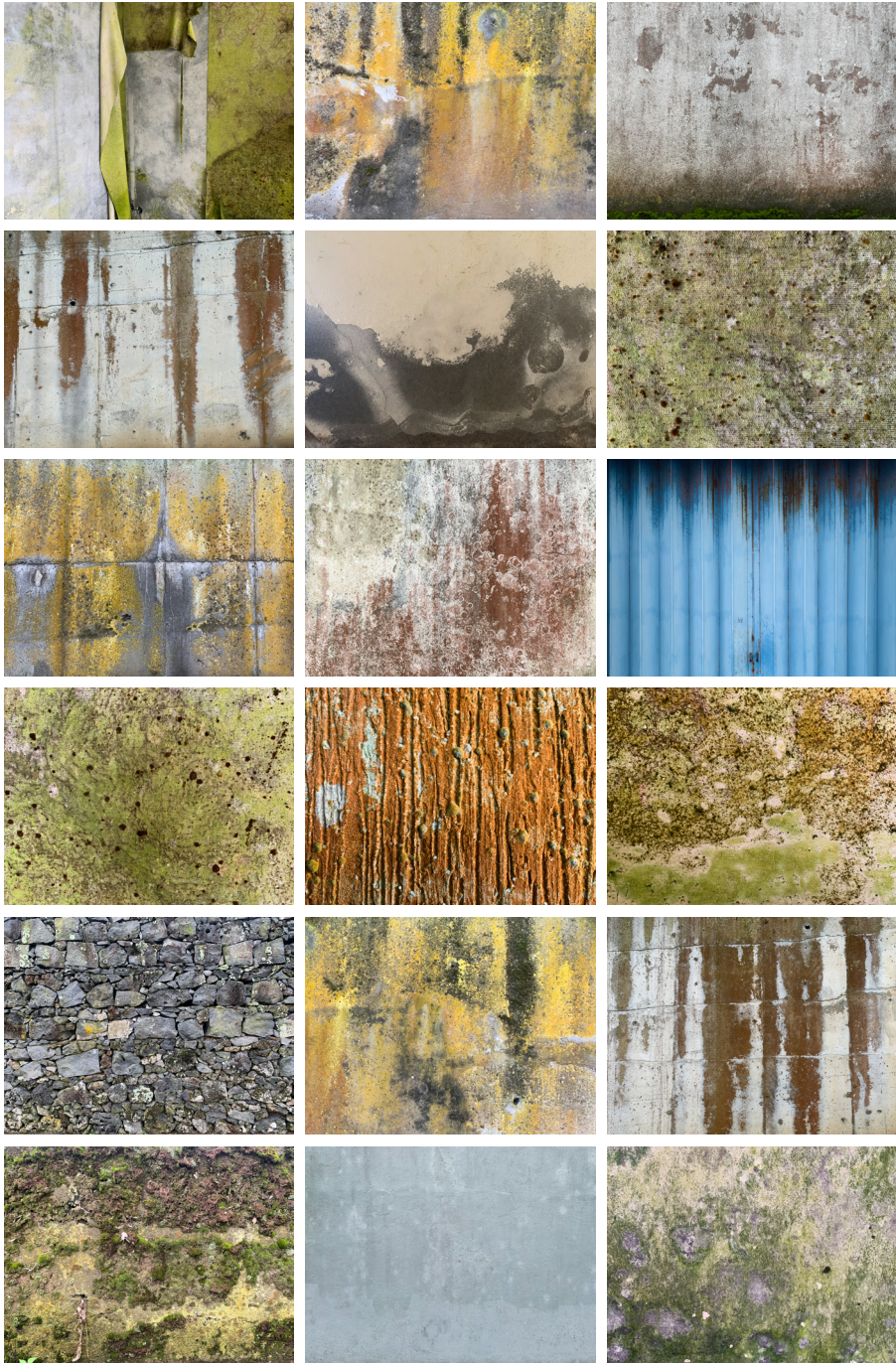
the machines



Composition of elements
[own images]

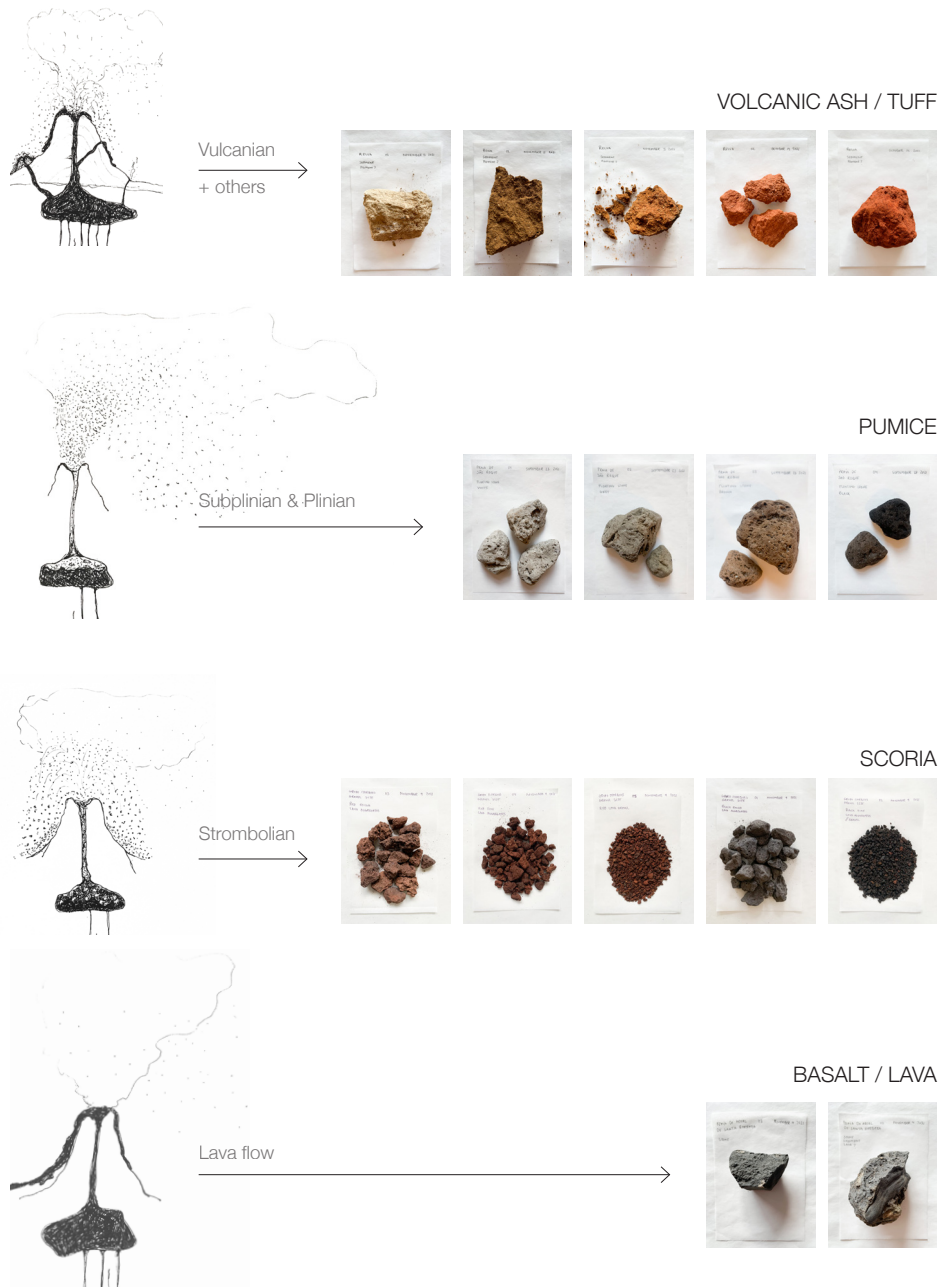
The elements, activities, materials, landscapes within the landscape, agents, temporalities, all entangled, all present within the strip of land, constitutes as the collection of multiple components to inform this architectural project

< Wind and steam
working together



Lichen, moss and fungi on vertical surfaces in Sao Miguel [own images]

METHOD AND SUBMISSION



Collected volcanic rocks and their typical source of origins
[own sketches and images]

The working method will interweave artistic explorations with on going research into both scientific and historical information; Geological and biological site specific data on the ground and vegetation; the origins and development of resorts and their designs. The scientific knowledge will guide methods of embedding architecture into this specific landscape, where risk of earthquakes, growing circumference of trees, the structure of rocks etc. must be considered in the design. Research on resorts will inform further the programme and its organisation, not seeing these as ideals but sources of inspirations for challenging and playing with a resort's original characteristics and mechanisms of attracting tourists.

A series of material testings with collected materials will develop the architectural materiality and add an essential tangible and physical dimension in the project. Through the action of drawing I will explore the site further and the concept of an architectural tissue. Finally with the approach of model-making I will explore the structures of interventions and their relationship to site-embedded components.

The final submission will include:

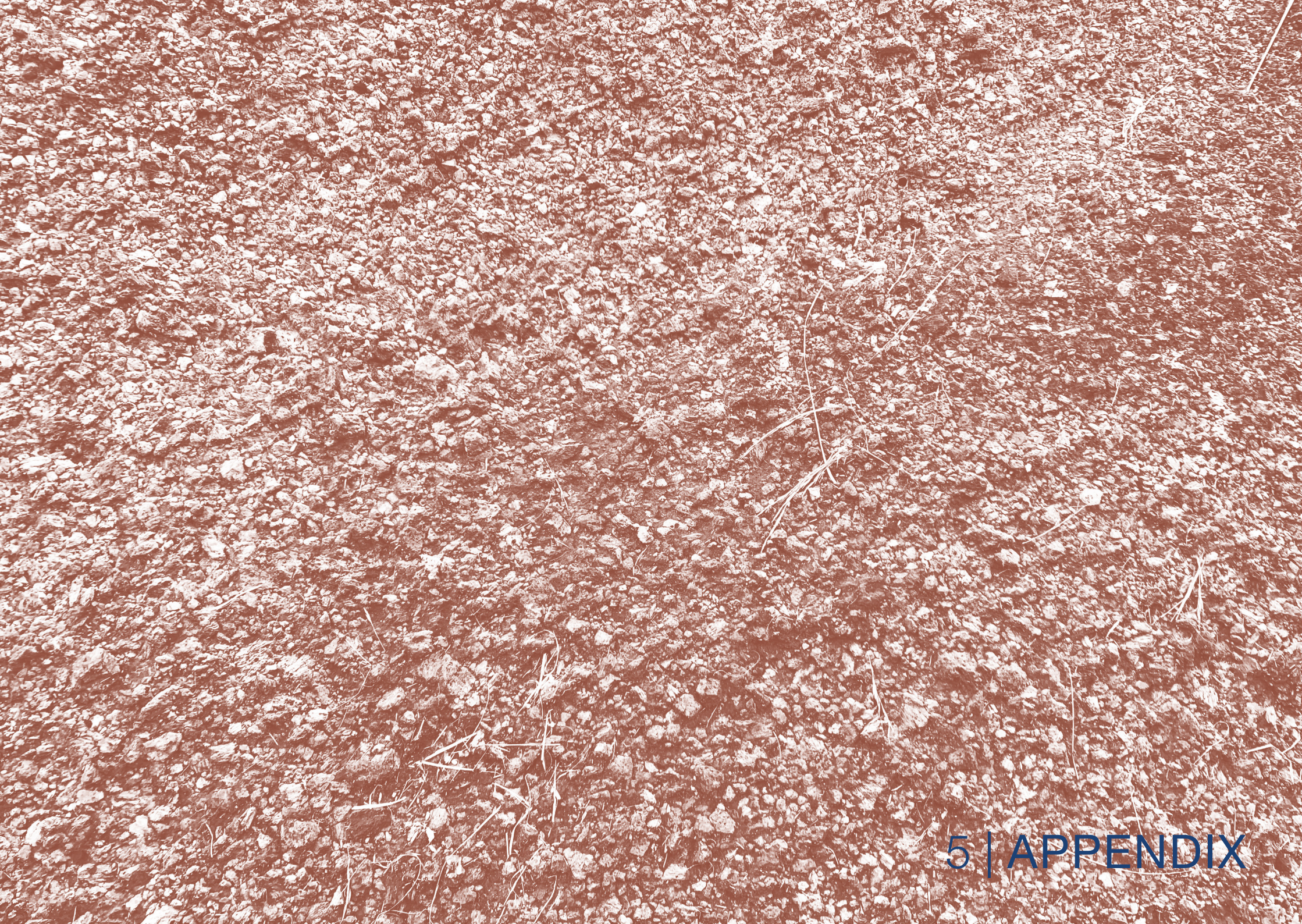
1:1 Material samples and testings representing the materiality of the project

1:500/1000 drawings of site layered with the architectural tissue and design

1:50 drawings of relationship between landscape conditions and structures in plan, section or elevation depending on the area of focus.

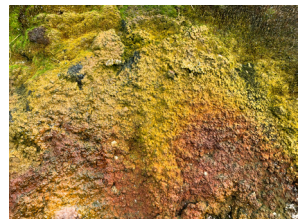
Model studies of different smaller architectural interventions

Series of illustrations visualizing tourist experiences within the site





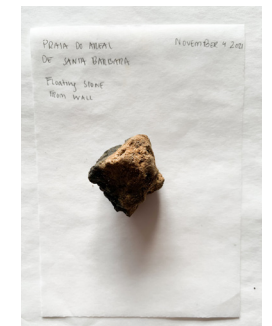
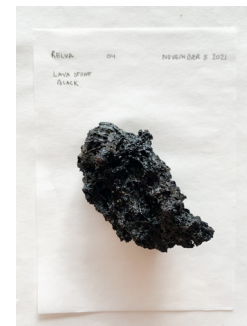
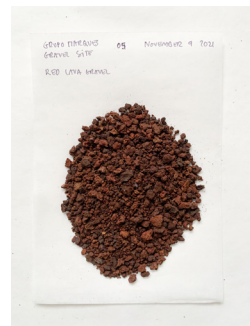
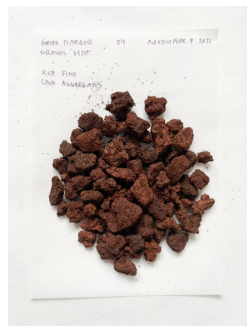
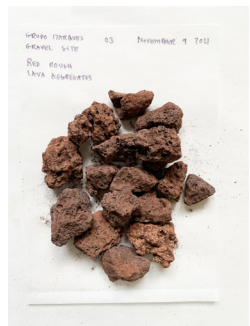
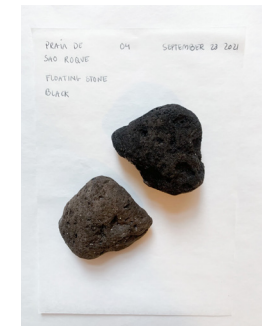
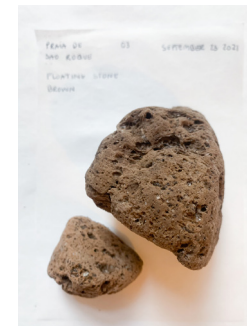
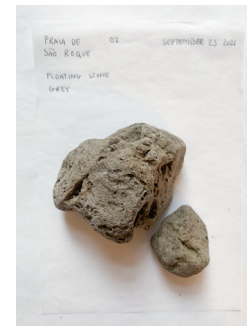
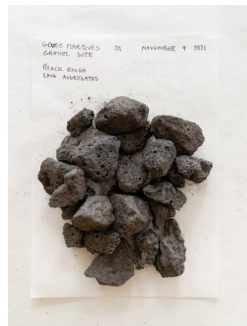
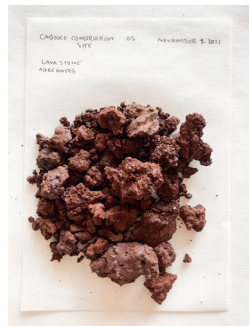
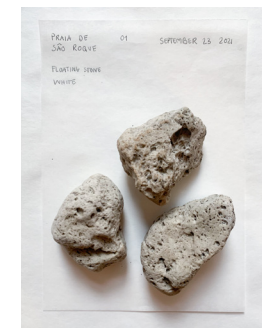
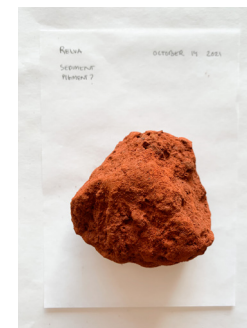
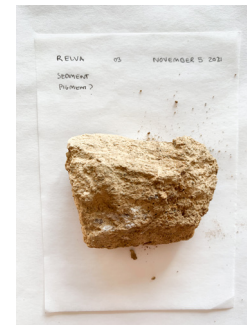
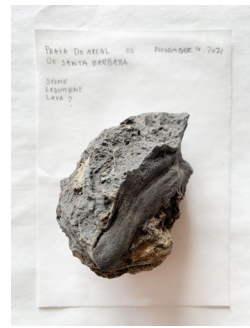
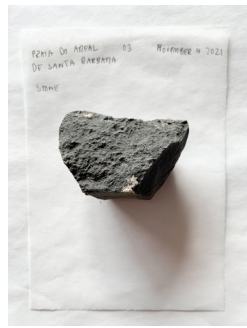
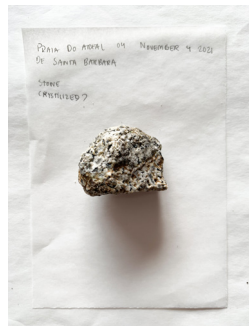
Pipeline without exterior shell showing the layer of insulation
[António Franco]



Well station
Air cooled condenser
Soil coloring by fumaroles
[own images]



Bodies of water: crossing a road, following a road, through the urban fabric, shaping sand, merging the ocean [own images]



UN SUSTAINABLE GOALS



The project embeds itself in an green area of different production sites - cattle, aggregates, wood, electricity - with a tourism programme to confront the on going expansion of land-use, to challenge our perception of nature, and to increase awareness of these present related industries. Referring to **Goal 12**, Responsible Consumption and Production, becomes obvious in this case, while target 12.8 is particularly worth highlighting.

12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

The intention of planning an architecture dealing with climate-related hazards and a fundamental didactic layer in this programme, relates directly to **Goal 13**, Climate Action, specifically the following three targets:

13.1

Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

13.2

Integrate climate change measures into national policies, strategies and planning

13.3

Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

Finally the programme deals with **Goal 15**, Life on Land, especially target 15.5, in trying to rethink landuse, layering the surface on which humans intervene to relief other areas for biodiversity and natural species to flourish.

15.5

Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

CV

EDUCATION

Ma Architecture 2019-2022
The Royal Danish Academy of Fine Arts
School of Architecture

Ba Architecture 2014-2017
The Royal Danish Academy of Fine Arts
School of Architecture

BSc student 2013-2014
Business Administration & Sociology
Copenhagen Business School

WORK

Project development 2019 -
Rural Agency
Denmark

Project development 2017-2019
Arts, Letters & Numbers
New York

Research and teaching assistant 2018
Rural Urban Framework
Hong Kong

Student assistant 2015-2017
The Royal Danish Academy of Fine Arts,
Schools of Architecture

Internship 2016
Rural Urban Framework
Hong Kong

ADDITIONAL

Student representative 2016-2018
Board of The Royal Danish Academy of Fine Arts

Student representative 2016-2018
Studyboard of School of Architecture
The Royal Danish Academy of Fine Arts

LIST OF ILLUSTRATIONS

- 1.1. *The present and approaching forces on the Azores* [own collage]
Lower clip out: A plate from the atlas of Alexander von Humboldt's
Kosmos illustrating the earth's crust.
- 2.1. *Tectonic map of the Azores*, drawing by Jose M. R. Pacheco, 2014
- 2.2. *Geological map*, illustration by R. Marques, P. Amaral, I. Araújo, J. L. Gaspar and J. L. Zêzere, 2015
- 2.3. *Agriculture & Forest*, GIS data from Sistema Nacional de Informação Geográfica (SNIG), 2022
- 2.4. *Population*, Statistical data from Statistics Portugal (Instituto Nacional de Estatística), 2022
- 2.5. *Mineral extraction, Urban & infrastructure*, GIS data from Sistema Nacional de Informação Geográfica (SNIG), 2022
- 2.6. *Protected nature*, GIS data from Sistema Nacional de Informação Geográfica (SNIG), 2022
- 2.7. *Tourists and foreigners*, Statistical data from Statistics Portugal (Instituto Nacional de Estatística), 2022
- 2.8. *Azores sustainability and sustainable tourism awards*, table by João Crispim Ponte, 2018
- 2.9. *Risk of landslide, risk of flooding, precipitation & temperatures*, GIS data from Sistema Nacional de Informação Geográfica (SNIG), 2022
- 2.10. *Atlantic Subtropical anticyclone Seasonality*, Journal of Climate 10, 4 (1997)
- 2.11. *Average sea surface temperature anomaly in different European seas (1870-2020)*, European Environment Agency, 2021
- 2.12. *Miradouros on Sao Miguel*, data from Google Maps, 2022
- 2.13. *The Soil Map*, Frédérique Ait-Touati, Alexandra Arènes, and Axelle Grégoire, in: Terra Forma, manuel de cartographies potentielles, 2019, detail.
- 3.1 *Area of site*, GIS data from Sistema Nacional de Informação Geográfica (SNIG), 2022
- 3.2 *Area of site layered with hazards*, GIS data from Sistema Nacional de Informação Geográfica (SNIG), 2022
- 3.3 *Scenes from the north west strip of Fogo Volcano*, own images except for photo of thermal pool; source: Avrex Travel, 2021

3.4. *Explanatory section of Fogo Volcano and geothermal extraction*, reworked drawings in courtesy of António Franco, 2022

3.5. *Faults in Sao Miguel*, GIS data from Sistema Nacional de Informação Geográfica (SNIG), 2022

3.6 *Visualisation of the vertical section*, information from NASA, Earth's Atmospheric Layers, 2013, National Geographic, Mantle, 2015 and António Franco, thickness of crust in the Azores, 2022

REFERENCES

- 1 Le Guin, U. K. (1982) A Non-Euclidian View of California as a Cold Place. In Dancing as the edge of the World: Thoughts on Words, Women, Places. p. 84-85. New York: Grove Press.
- 2 Ait-Touati, F., Arènes A., and Grégoire, A. (2021) Terra Forma, Mapping Ruined Soils. Retrieved from <https://feralatlus.supdigital.org/?cd=true&r=true&cdex=true&text=terra-forma-mapping-ruined-soils&ttype=essay>
- 3 Gaspar, J. L., Guest, J. E., Duncan, A. M., Barriga, F. J. A. S. & Chester, D. K (eds) (2015). Volcanic Geology of São Miguel Island (Azores Archipelago) Geological Society, London, Memoirs, 44, p. 1 – 3. <http://doi.org/10.1144/M44.1>
- 4 Gaspar, J. L., Queiroz, G., Ferreira, T., Medeiros, A. R., Goulart, C. & Medeiros, J. (2015). Earthquakes and volcanic eruptions in the Azores region: geodynamic implications from major historical events and instrumental seismicity. In: Gaspar, J. L., Guest, J. E., Duncan, A. M., Barriga, F. J. A. S. & Chester, D. K. (eds) Volcanic Geology of São Miguel Island (Azores Archipelago). Geological Society, London, Memoirs, 44, 33 – 49, <http://doi.org/10.1144/M44.4>
- 5 Castanho, R.A.; Naranjo Gómez, J.M.; Couto, G.; Pimentel, P.; Sousa, Á.; Batista, M.d.G. (2021) Analyzing the Patterns, Trends and Dynamics of the Land-Use Changes in Azores Region: From 1990 to 2018. Sustainability, 13, 5433. p.3 <https://doi.org/10.3390/su13105433>,
- 6 Medeiros, J., Carmo, R., Pimentel, A., Vieira, J. C., and Queiroz, G. (2021). Assessing the impact of explosive eruptions of Fogo volcano (São Miguel, Azores) on the tourism economy, Nat. Hazards Earth Syst. Sci., 21, p. 417–437, <https://doi.org/10.5194/nhess-21-417-2021>,
- 7 European Parliament. (2017) Research for REGI Committee: The economic, social and territorial situation of the Azores (Portugal) p. 4 Retrieved from https://www.europarl.europa.eu/RegData/etudes/BRIE/2017/601971/IPOL_BRI%282017%29601971_EN.pdf

8 Gashler, K. (2021) Viking mice: Norse discovered Azores 700 years before Portuguese. Retrieved from <https://cals.cornell.edu/news/2021/11/viking-mice-norse-discovered-azores-700-years-portuguese>

9 Governo Dos Azores, (2021) São Miguel. Retrieved from <https://portal.azores.gov.pt/web/drturismo/-/s%C3%83o-miguel>

10 Castanho, R.A. et al. (2021) p.10-11

11 Dias, E. (2007) Açores. In: Silva, JS, ed., Árvores e florestas de Portugal. Vol. 6. Açores e Madeira. A floresta das ilhas. III. A chegada dos Portugueses às ilhas - O antes e o depois. Público-FLAD

12 Castanho, R.A. et al. (2021) p.10-11

13 Castanho, R.A. et al. (2021) p.10-11

14 Franco, A. & Ponte, C.. (2019). The role of geothermal in the energy transition in the Azores, Portugal. Retrieved from <https://eurogeologists.eu/franco-the-role-of-geothermal-in-the-energy-transition-in-the-azores-portugal/>

15 UN Environment programme. (2022) Tourism. Retrieved from <https://www.unep.org/explore-topics/resource-efficiency/what-we-do/responsible-industry/tourism>

16 Sata Azores Airlines (2022) History. Retrieved from <https://www.azoresairlines.pt/en/institutional/history>

17 Couto, G., Pimentel, P. And Ponte, J. (2017) Tourism Development Potential in an Insular Territory: The Case of Ribeira Grande in the Azores. J Tourism Res Hospitality 6:2. Retrieved from <http://fundodemanio.com/natureza/anexos/54.pdf>

18 TPN/Lusa (2021) New York to Azores route announced. Retrieved from <https://www.theportugalnews.com/news/2021-10-16/new-york-to-azores-route-announced/62995>

19 Breaking travel news (2021) British Airways adds Azores to summer portfolio. Retrieved from British Airways adds Azores to summer portfolio

20 Osnos, E. (2017) Doomsday Prep for the Super-Rich. Retrieved from <https://www.newyorker.com/magazine/2017/01/30/doomsday-prep-for-the-super-rich>

21 Serviço Regional de Proteção Civil e Bombeiros dos Açores. (2022) Information to the Population. Retrieved from <https://www.prociv.azores.gov.pt/alertas/?cat=1>

22 Hernández, A., Kutiél, H., Trigo, R., Valente, M., Sigró, J., & Cropper, T. and Coelho, M. F. (2016). New Azores archipelago daily precipitation dataset and its links with large-scale modes of climate variability. International Journal of Climatology. 36. 10.1002/joc.4642.

23 Santos, F., Valente, M., & Miranda, P., Aguiar, A. B., Azevedo, E., & Tomé, A. And Coelho, M. F. (2004). Climate Change Scenarios in the Azores and Madeira Islands. p. 473-491. World Resource Review. 16..

24 Schultz, N. (2021, July 6). Land Sickness [Online]. The Sociological Review Magazine. <https://doi.org/10.51428/tsr.zaei1314>

25 Urry, J. (1990) The Tourist Gaze: Leisure and Travel in Contemporary Societies. p. 1-15 London; Newbury Park: Sage Publications

26 Sutherland, A. (2011) Images of Farming. Ed: Wapke Feenstra, Antje Schiffrers. p. 98 .Heijningen, the Netherlands: Jap Sam Books

27 Haraway, D. J. (2016) Staying with the Trouble: Making Kin in the Chthulucene. p. 117-118. Durham & London: Duke University Press.

28 Pacheco, D., Mendes, S., and Cymbron, R. (2020). Azores Assessment and Management of Flood Risks. 10.1007/978-3-030-34397-2_26.

29 Haraway, D. J. (2016) Staying with the Trouble: Making Kin in the Chthulucene. p. 63. Durham & London: Duke University Press.