

MSc4 Design Report

North Sea: Landscapes of Coexistence
Transitional Territories Studio 2019-2020

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Flotta: A Bruck-Mining Saga



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Mood

‘Once upon a time in a land far, far away...’ Why does the archetypal story always tell of places that are so far away, both in time and space? Clearly, there is something about remote, distant places that stimulates the human imagination. The bookshelves of humanity are lined with volumes from the annals of history, and with tales from far flung lands and seas. Hollywood is much the same- an assemblage of films telling stories of the unusual and the exotic, of characters with experiences somehow different from our own. Perhaps we are drawn to them because in the telling they become a new reality. We relate to the unrelatable. Even as individuals wandering through the maze of life, we seem to tell of our childhoods and holidays much more frequently than is justified by their temporal importance in our lives. Why? Because they are distant, remote- in time and in space. Once upon a time in a land far, far away...

Hold that thought.

Proposition

Globalisation and global urbanisation are reshaping our world. Life in Central Places is expanding; life in remote territories is vanishing. For centuries, subsistence agriculture sustained rural communities the world over; that *raison d'être* has now largely vanished. Cities mine the territory for fuel, material resources, food and even population. Simultaneously, our globalised world faces serious challenges as we try to move beyond oil and to a circular economy. The remote island of Flotta in the Orkney archipelago exemplifies these themes, and offers possible visions for a future world in which the remote territory exists in symbiosis with the centralised city.

In the coming decade, the Flotta Oil Terminal will close. Flotta's population is aging, and its vital services are gradually vanishing. There is a small but significant influx of people fleeing the city- looking for an old, but now-vanished way of life in the remote territory. Friction on Flotta is rising as these few, new romantics interact with the pragmatically-minded last generation of Flottarians. Community is not always rosy. The closure of the oil terminal will likely be the nail in the coffin of human habitation of Flotta. Orkney also has a waste management problem- shipping scrap metal to distant, central locations. Simultaneously the Orkney archipelago is 'the Saudi Arabia of renewable energy'. It already generates much more electricity than it needs, but struggles to export the surplus via a subsea cable designed to transfer power to and not from the islands. Renewable energy is not best suited to central cities- it is Energy at the End of the World.

Traversing the island, the Bruck-Mining Saga forms a connection between the point where the Flotta subsea electricity cable lands and the remote edge of a ruined, wartime landscape facing out to sea. It pragmatically mines metal bruck at infrastructural scale, creating new material for export and thus a new economy by using the locally generated renewable electricity surplus. The metal recycling plant occupies the site of an abandoned airfield from the early days of the oil terminal- which constitutes a form of spatial bruck. In time, the oil terminal will also become bruck.

The creation of 'new metal' in turn facilitates the embellishment/ establishment of a craft metal working/ jewellery making tradition on the island. This draws Flotta into the existent Creative Orkney Trail and brings bruck metal mining to the scale of the human, and indeed even to that of the wearer. These workshops inhabit a series of wartime ruins, which are of course a form of architectural bruck. They preserve and embellish the romantic attraction of this story to visitors of Orkney. Such stories of the remote are vital to humanity: 'Once upon a time in a land far, far away...'

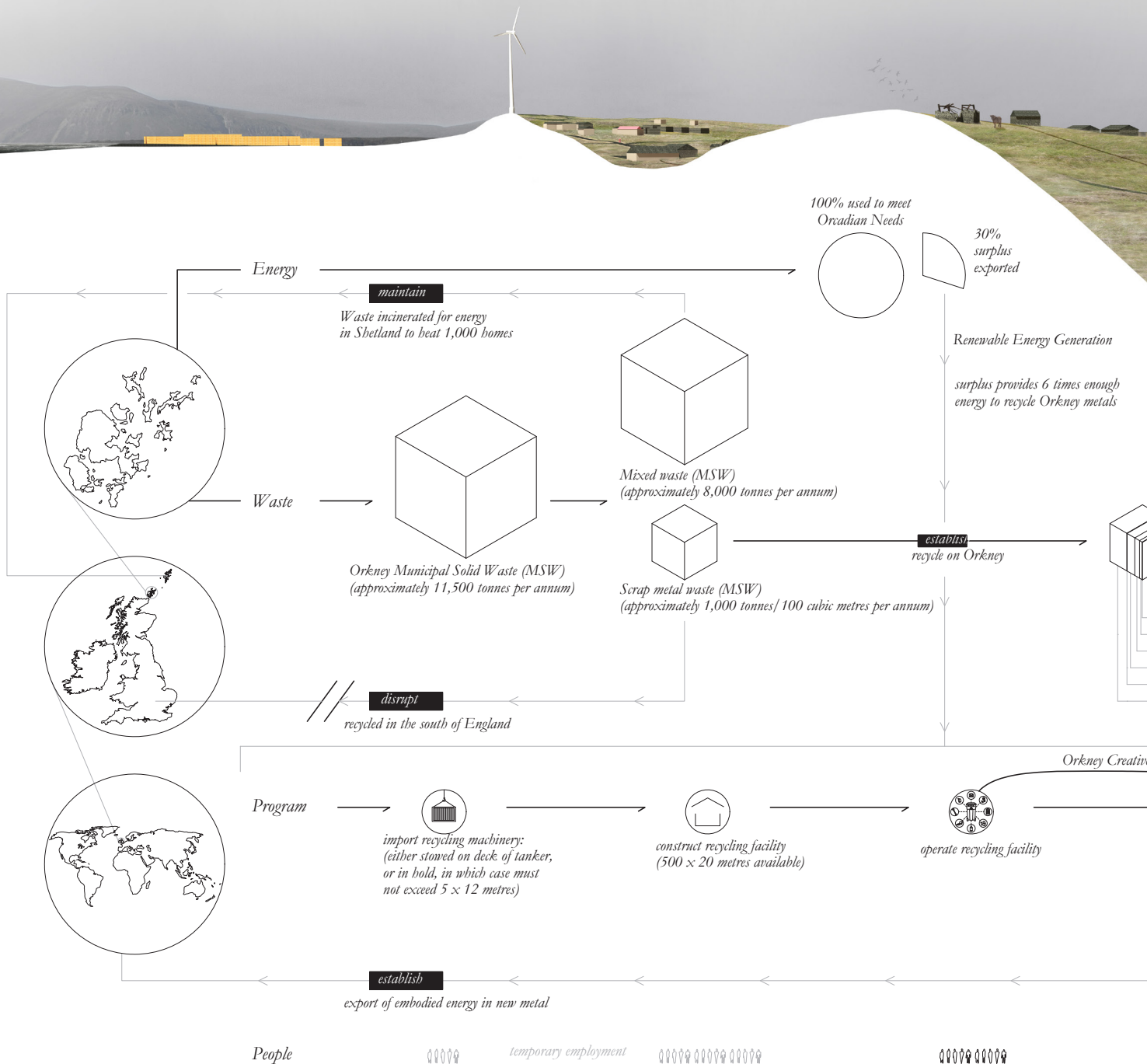
Where does the community fit in- complete with all its beauty and imperfections? It occupies a point of transition between these two spheres of production, where a series of spaces house the rich tapestry of Flotta stories past, present and future. These subterranean spaces form a modern monument which both record and enable the telling of stories that are crucial to the plural identities of the evolving Flotta community, and which in turn reflect our broader humanity. In doing so, they become simultaneously a museum, community arts space and landmark. More permanent than any infrastructure can or ever should be, they cement a part of our humanity in the remote island territory. They say: 'We're still here.'

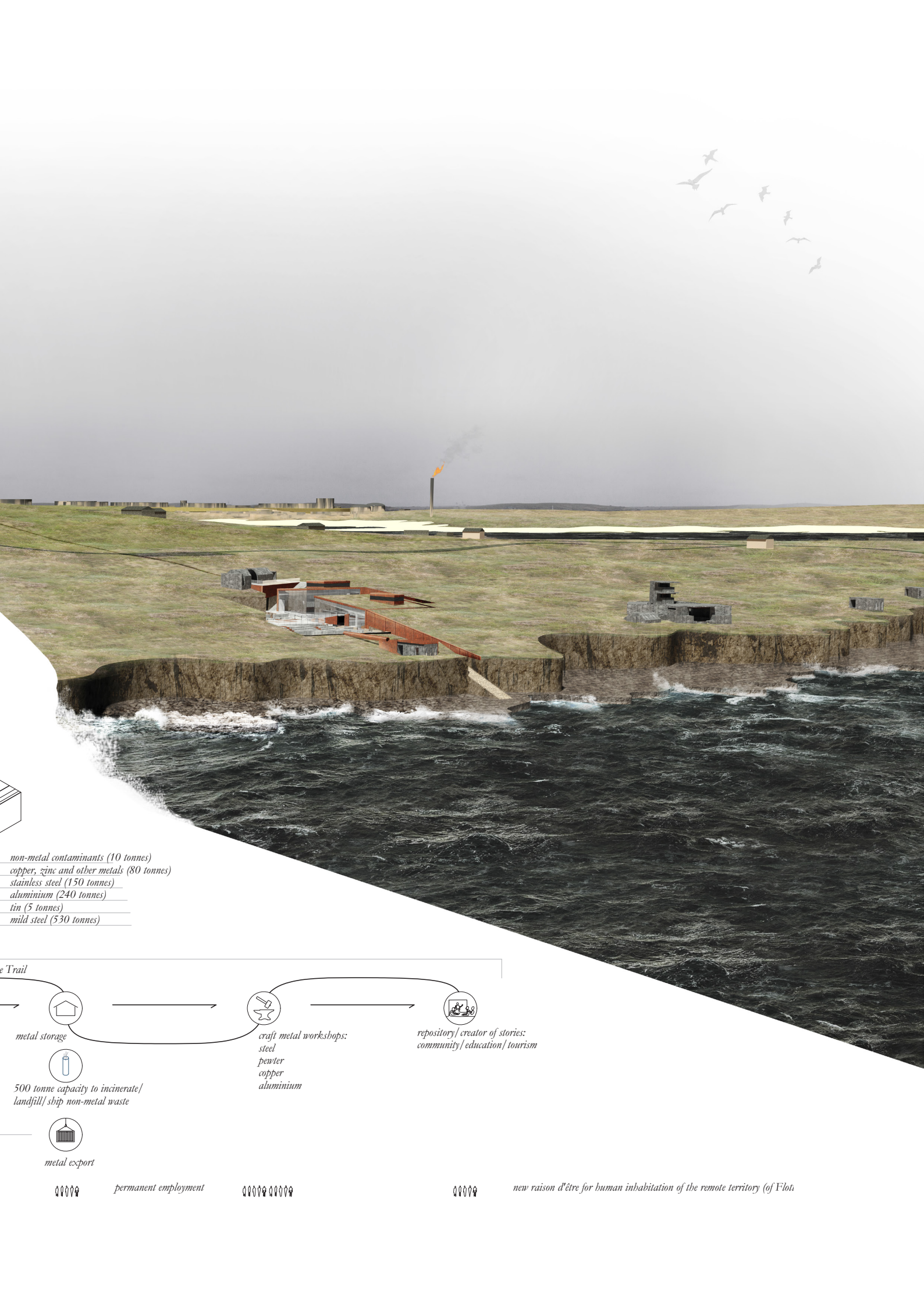
Key words:

(de)centralisation; (im)permanence; underground/overground; infrastructure; human

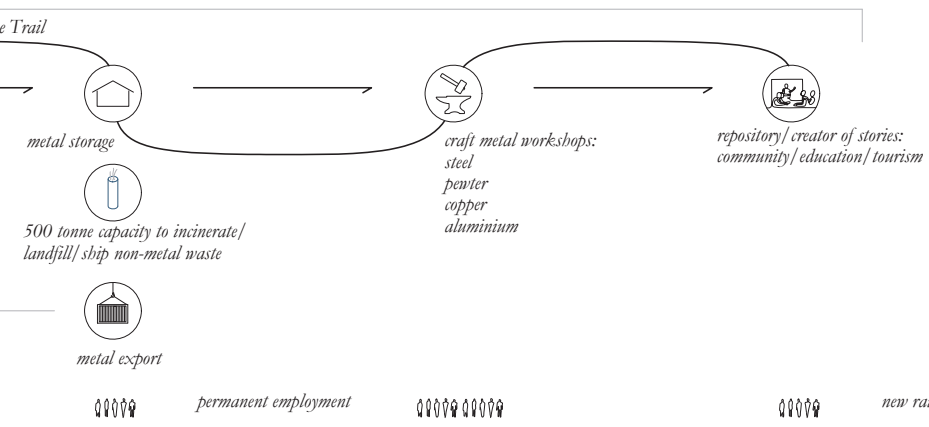
System Proposition

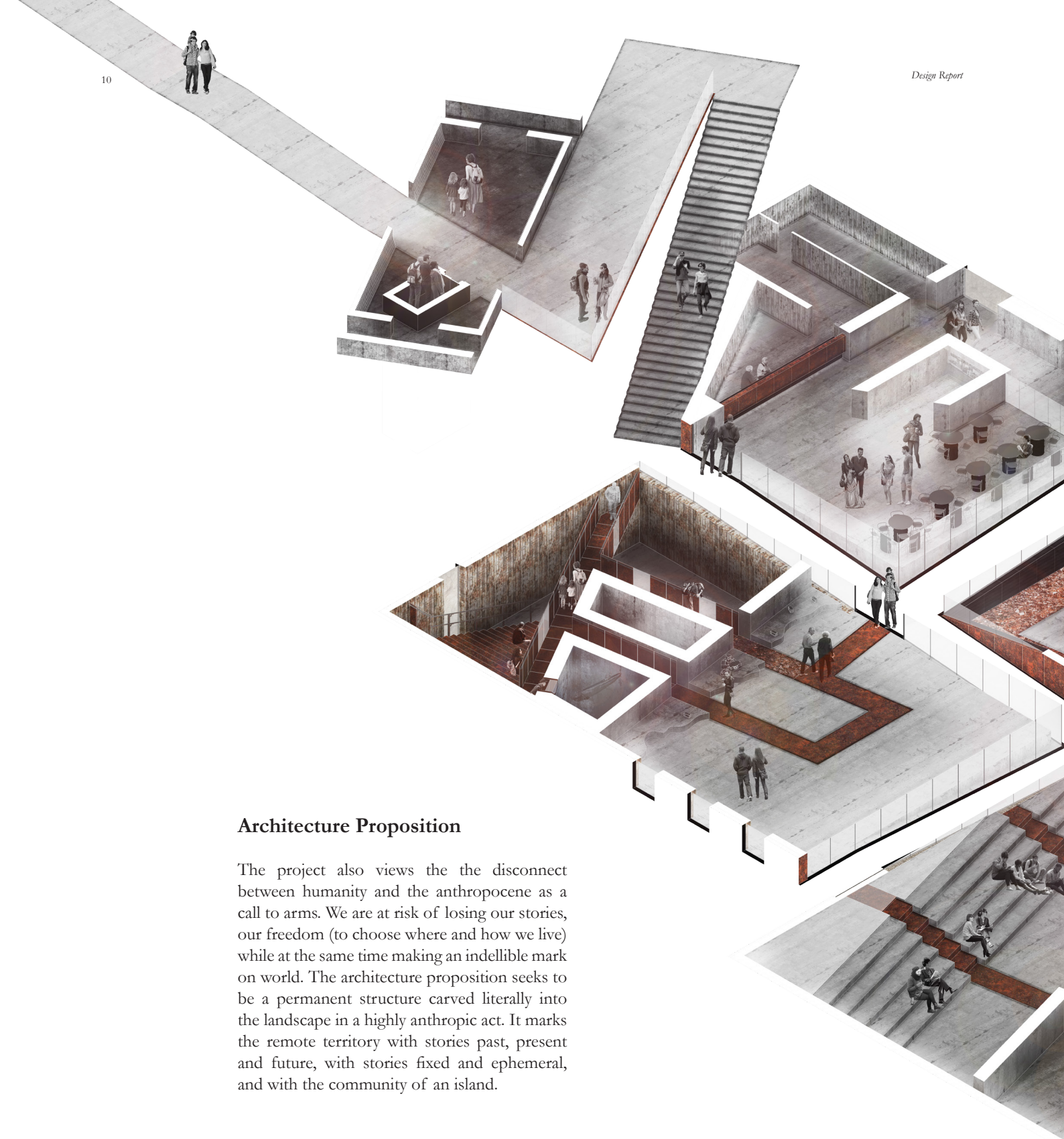
The project seeks to enact a system proposition which re-evaluates the relationship between city and territory in this epoch of the anthropocene. It sees the negative understanding of the anthropocene to rightfully demand systemic change, and seeks to propose how this might happen through this re-evaluation. In doing so, the project seeks to ease transitions to renewable energy and a circular economy.





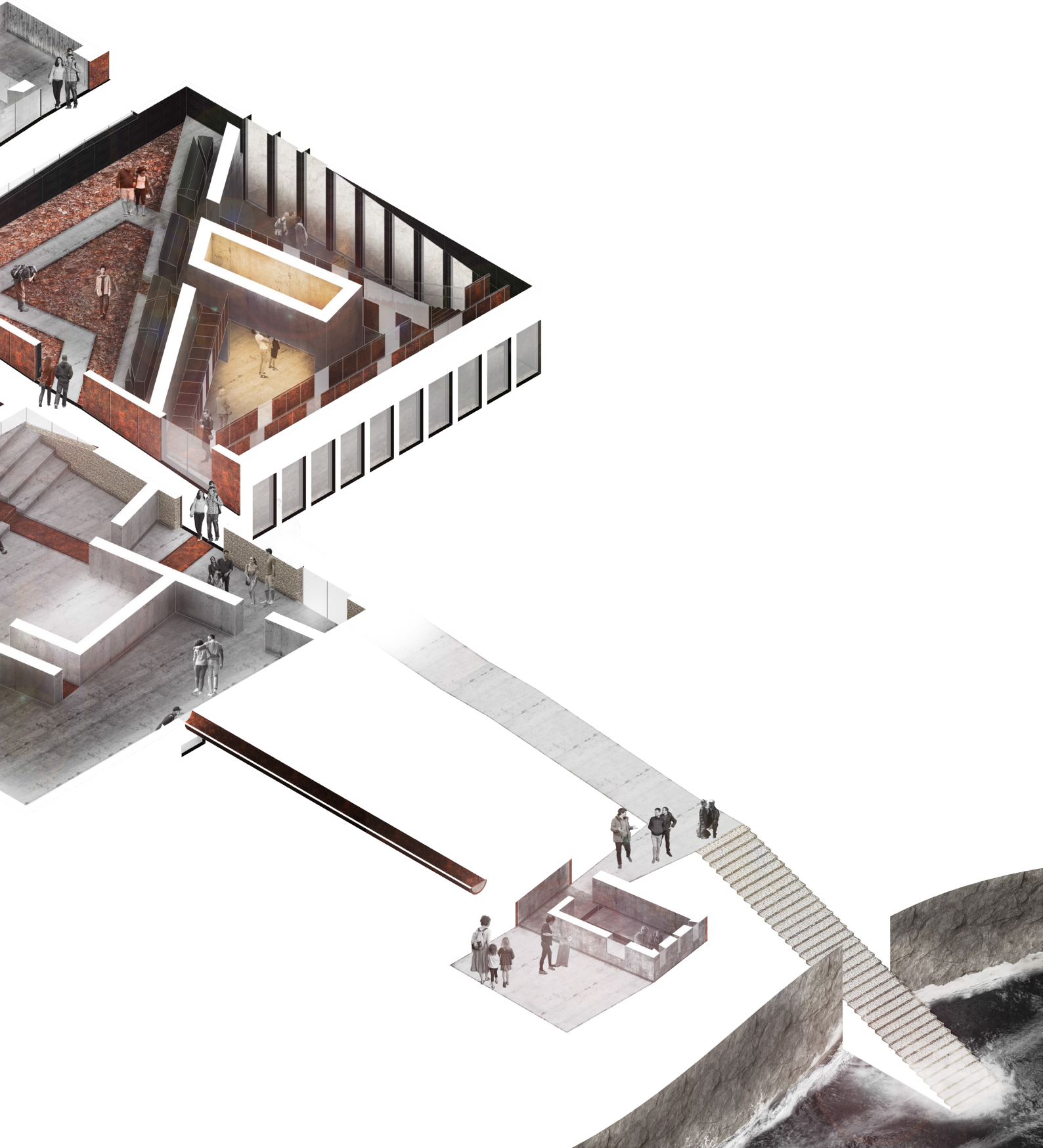
- non-metal contaminants (10 tonnes)*
- copper, zinc and other metals (80 tonnes)*
- stainless steel (150 tonnes)*
- aluminium (240 tonnes)*
- tin (5 tonnes)*
- mild steel (530 tonnes)*





Architecture Proposition

The project also views the the disconnect between humanity and the anthropocene as a call to arms. We are at risk of losing our stories, our freedom (to choose where and how we live) while at the same time making an indellible mark on world. The architecture proposition seeks to be a permanent structure carved literally into the landscape in a highly anthropic act. It marks the remote territory with stories past, present and future, with stories fixed and ephemeral, and with the community of an island.



Narrative

The Project

Objectives

The project proposes a reasoned but nevertheless 'utopian' alternative (at least from my perspective) to the gravitational pull of globalisation and global urbanisation. The project argues for the democratic right of individuals to choose where they live, work and play- whether that be in central cities or in remote territories such as Flotta. It sees the telling of stories to be of central importance to the human condition, and consequently to the anthropic practice of architecture. It understands the origin of stories to be commonly found in remote territories. It therefore sees the continued inhabitation of the remote territory to be vitally important to humanity as a whole. It tries to connect global aspirations for a transition to renewable energy and for a circular economy with the identity and stories of the remote island territory of Flotta.

Relevance

Does the project manage to convey that importance? It must seem questionable whether architecture (even of the very best kind) is able to achieve all of this. Especially if the architecture is 'only' a university project.

The university environment offers (and indeed encourages) the possibility to dream. By dreaming, the university project I've proposed tells a story of a possible world- a world in which we humans manage to overcome the gravitational pull of globalisation and global urbanisation and live as we choose. In my world, we manage to make the transition to renewable energy, and we develop a circular economy. The gravitational pull of central cities does not absorb remote territories, but rather those territories are held in place by a centrifugal force. Other remote, renewable energy-rich territories might undertake other forms of industrial territorialism- aquaculture, chemical manufacturing, data centres, paper manufacturing, cement production... They will also have their own stories to tell. In my world, cities and territories coexist in symbiosis. Surely dreaming is the first step towards reality. What is the role of architecture in all of this? It is the telling of that dream. It is a story, a saga. It is future-making.

I think this is perhaps the most important thing I have learned during the graduation year, and which I am desperate to hold onto as I prepare to leave the university environment behind. I hope never to sacrifice quality for quantity. I intend to keep dreaming, to keep learning. I hope for my architecture to continue to tell stories. This project tells stories (both real and imagined, and as I have perceived them) of the remote island of Flotta: a saga of bruck-mining. There are of course others- other territories, and other stories.

Once upon a time in a land far, far away...

Performance

The project seeks to fully engage with issues of sustainability and humanity in what is being termed the anthropocene. On the one hand, it seeks to counteract some of the negative connotations of the anthropocene by tackling North Sea waste and renewable energy streams. It is therefore decarbonising the creation of material, using existing renewable infrastructure. In doing so, the project engages with and addresses issues of material sustainability and challenges/limitations of energy sustainability.

On the other hand, the project seeks to embrace the notion of the anthropocene- understanding the potential for our society to leave a potentially positive record on the earth's surface. In doing so, it seeks a social sustainability, endeavouring to reconnect (a part of) humanity to remote territories- which are understood as important both in hard infrastructural and softer, democratic and storytelling terms.

Spatial concept

The project is composed of two main parts, connected by a path and services network. Both parts occupy brownfield sites. The first part is infrastructural- a metal recycling facility. It is tectonic, and sits above ground- occupying a long, linear brownfield site. It sits adjacent to but in some sense independent of the connecting path- for it is a temporary visitor to the island, as all infrastructure is.

The second part of the project is (in a design sense) the most important part. It is the antithesis to the former- being stereotomic and carved into the landscape of the island. It occupies a wartime brownfield (heritage?) site. It is more permanent, a modern monument seeking a long term comparison to the ancient village of Skara Brae, or to the likes of Stonehenge. In doing so, this part of the project challenges the understanding that architecture is a surface phenomenon. Indeed, architecture is increasingly tectonic and standardised, and thus non-permanent (such as the proposed recycling facility). By excavating into the rock of the island, an indelible mark of human is carved into the landscape- a part of the anthropocene. Yet at the same time, this structure is more hidden, preserving the superficial natural beauty of the landscape. The reason for existence is of course renewable energy as enabler of bruck-mining, coupled with the limitations of the lone electricity cable running ashore onto the island...

Function and Program

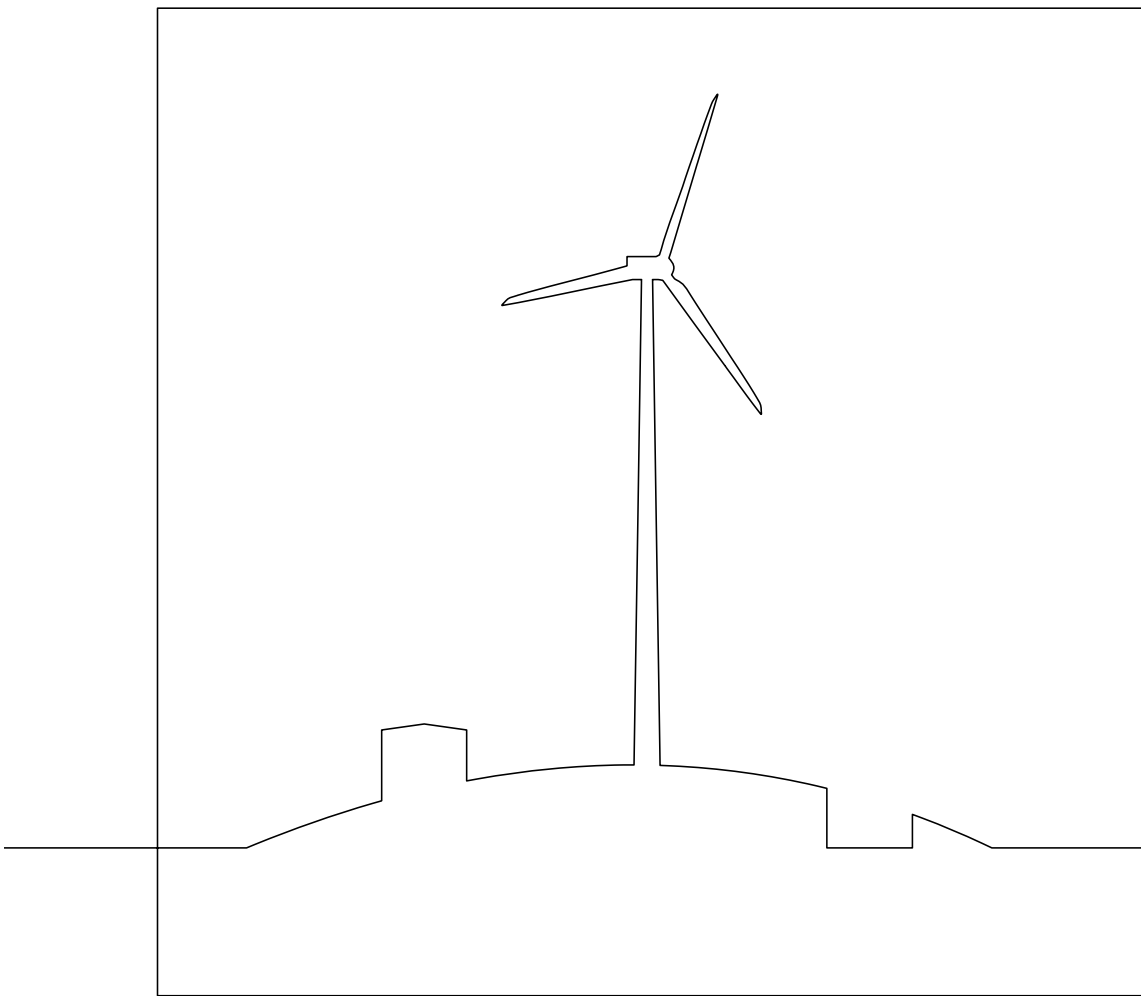
The project seeks to provide employment for the island, and for commuters, in response to the impending closure of the Flotta Oil Terminal. It seeks to tackle the waste management problem of Orkney, and their difficulties in exporting renewable energy, by using the energy to recycle metals and thus export the embodied energy. It thus creates a new *raison d'être* for inhabitation of the remote territory of Flotta.

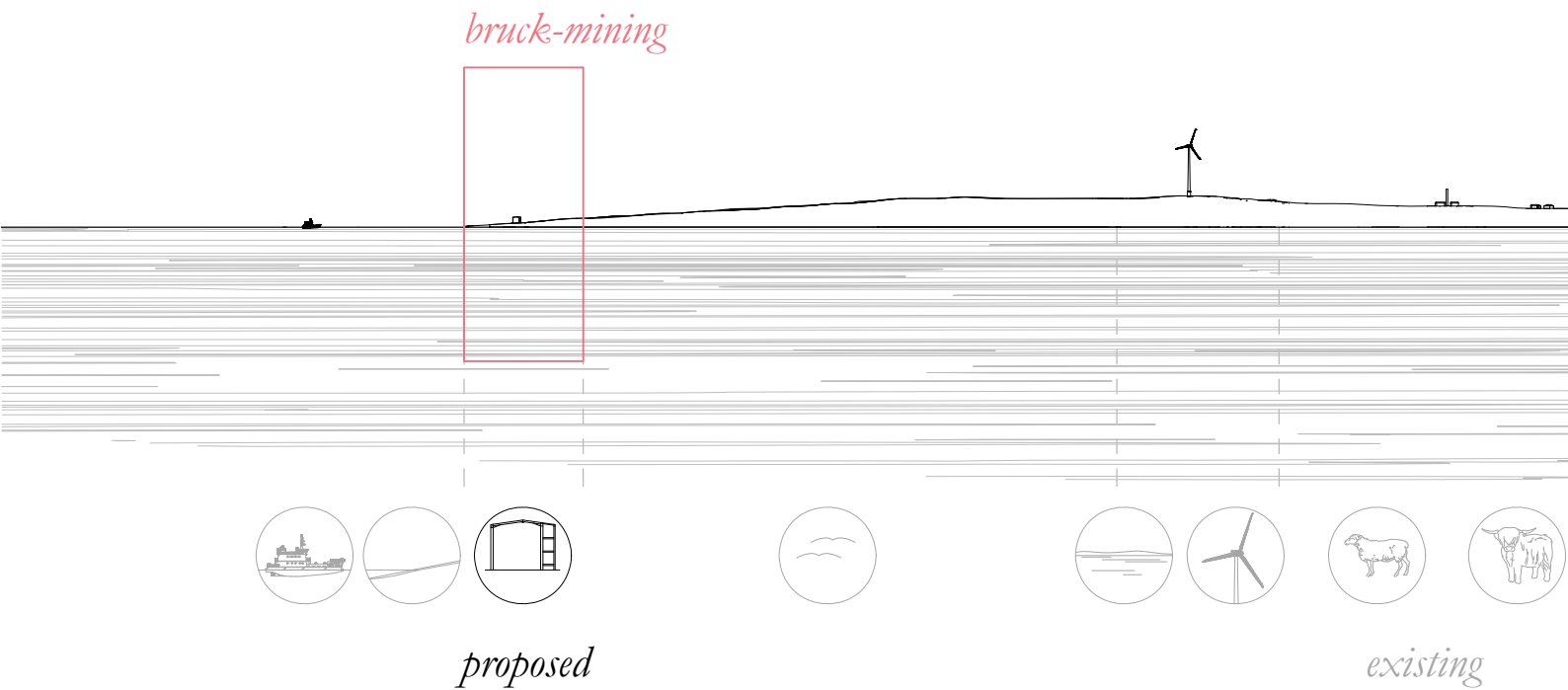
The project also seeks to provide community space, and to strengthen the eroding sense of community. This is intended to be positive- unity through shared enjoyment and pride in the existing and proposed stories and events of the island which bring together the disparate parts of the community in transition. But it might also be negative- shared animosity to a foreign intruder, much as East and West Berliners were united in their dislike for the Berlin Wall. These spaces provide a cafe, exhibitions, performance venue, cinema, and lecture room.

The last part of the program is the most small, human element of the project- craft metal workshops within wartime ruins. These are rough, workspaces which sit just above the cliffs and bring together the past stories of conflict with new stories of creation.

Underground/overground

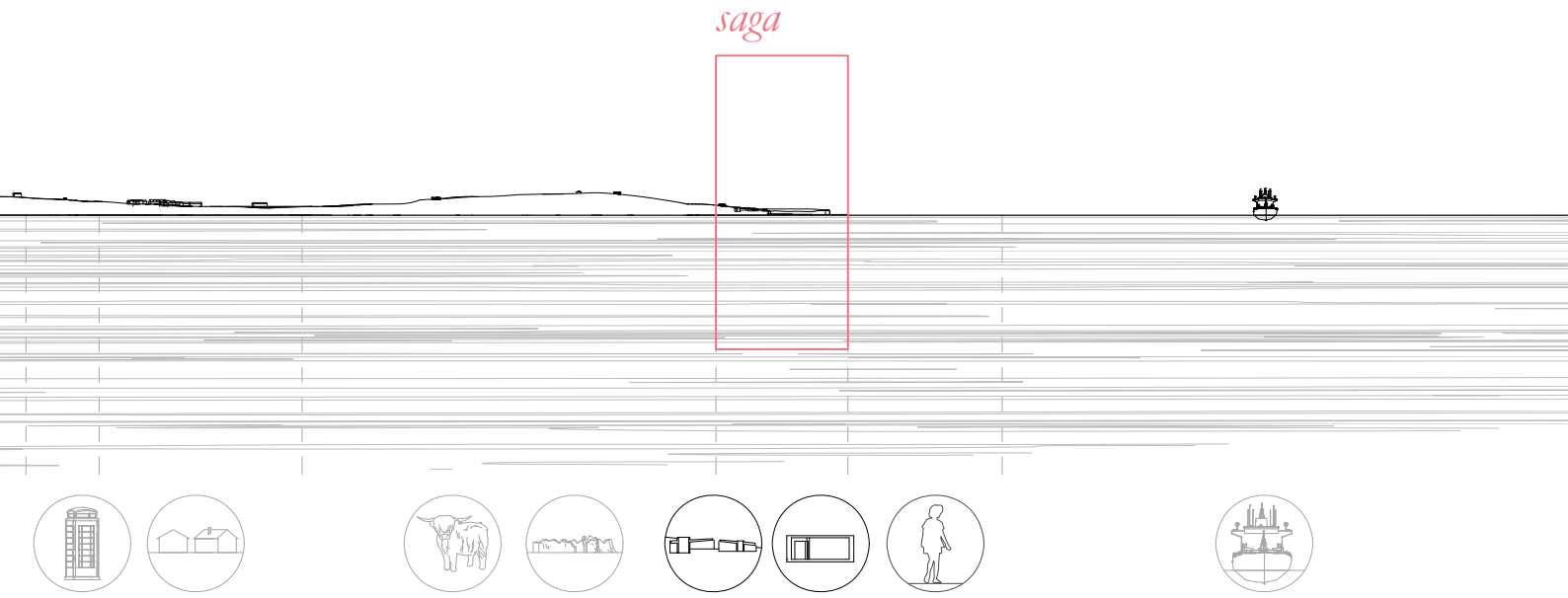
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*centralisation:
proposed infrastructure scale*

Creative Orkney Trail a



saga

proposed

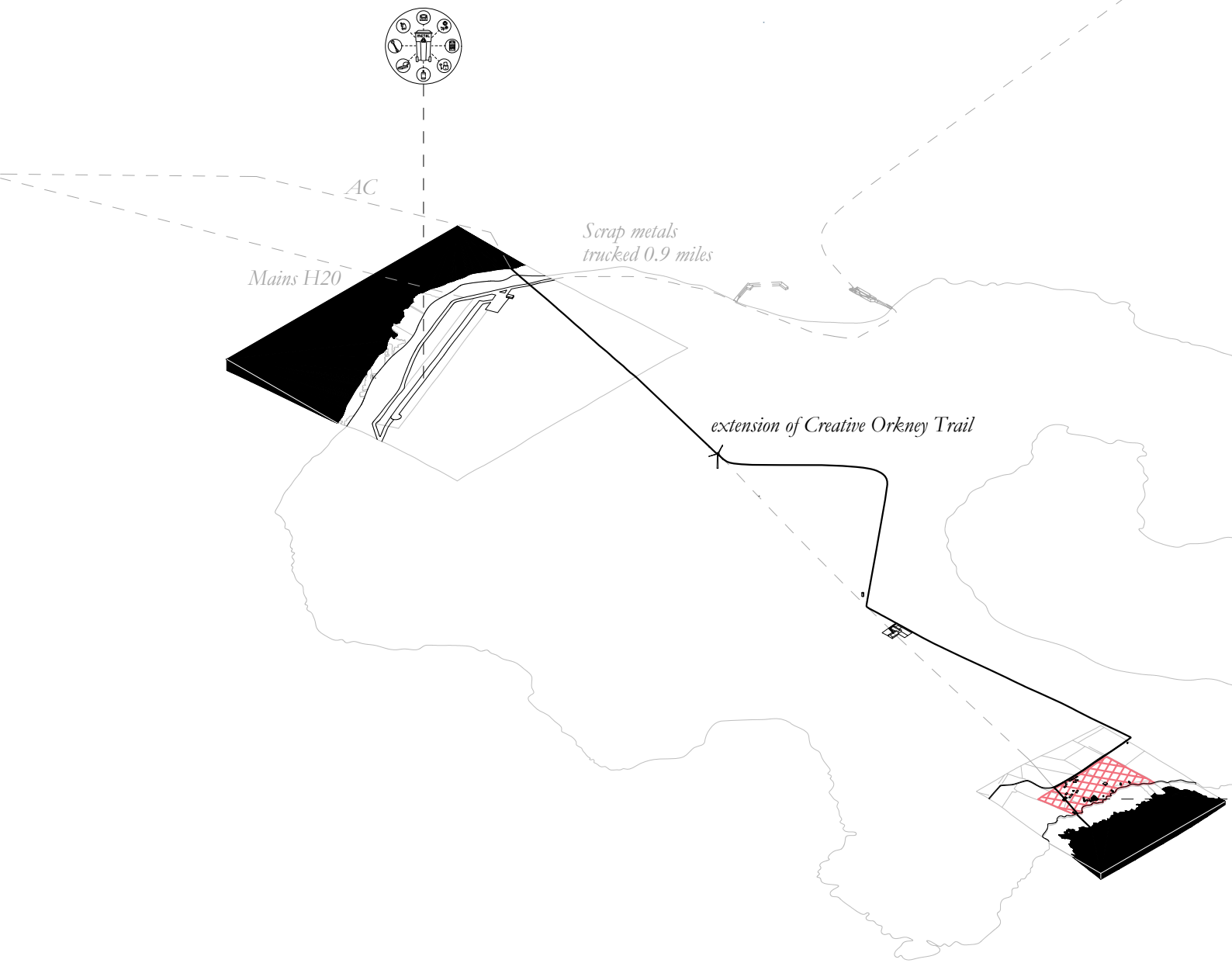
and district heating network



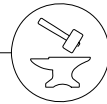
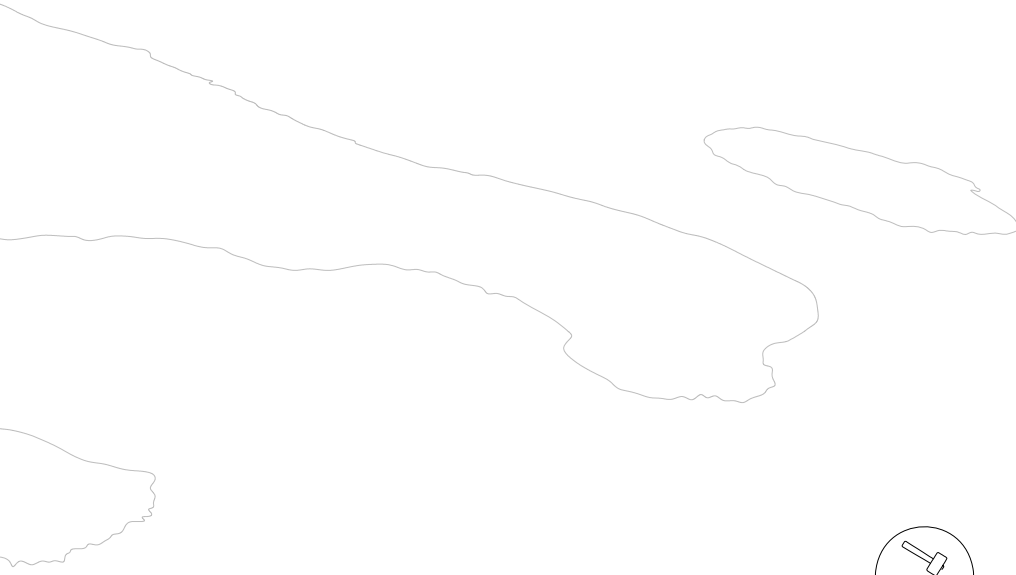
*remoteness:
proposed human scale*

Infrastructure Scale

Orkney waste metal recycling



*Orkney scrap metals imported via
Ferry to Mainland [Orkney]*

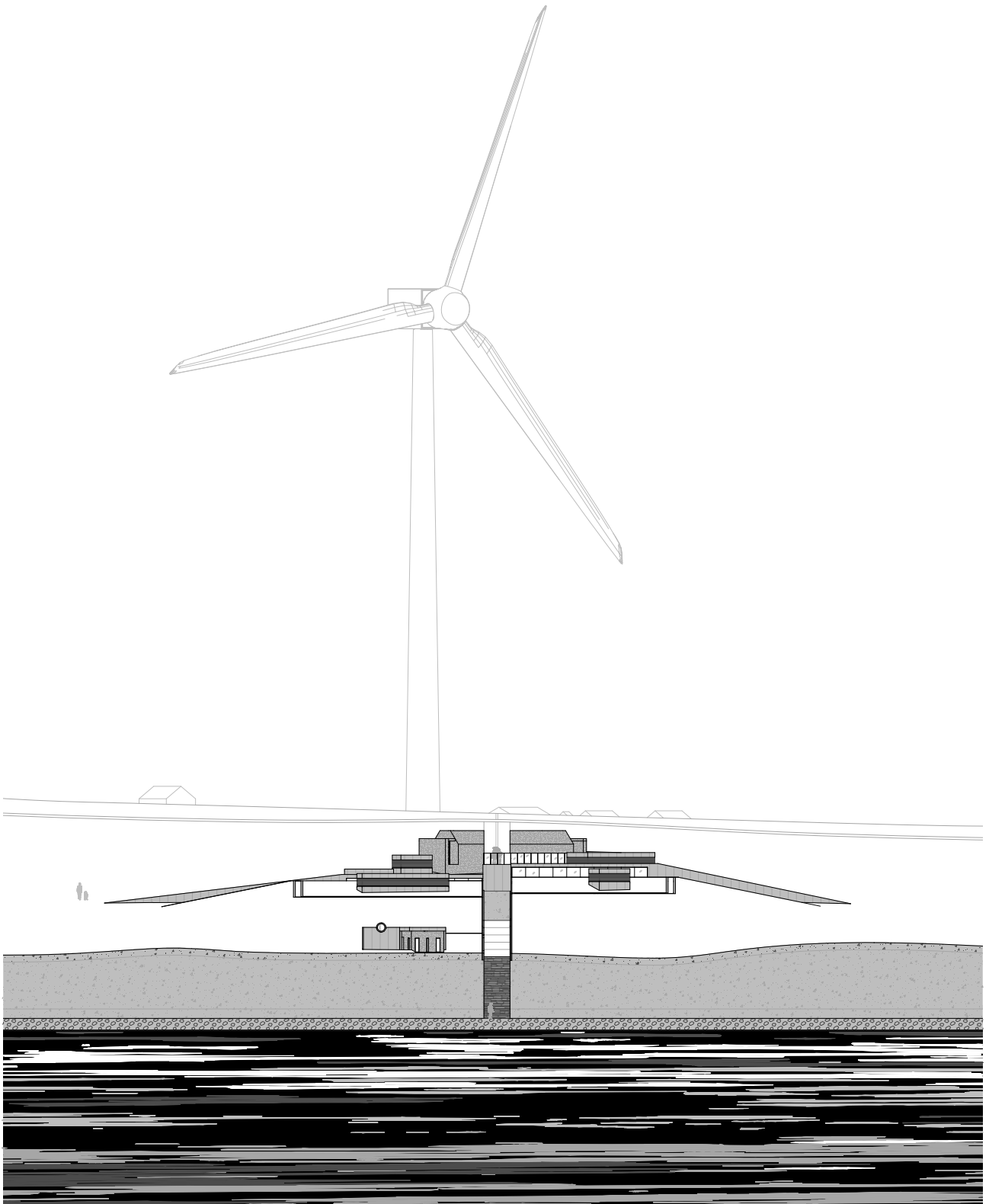


Human Scale

repository of Flotta stories leading into craft metal workshops

Infrastructure, landscape, architecture

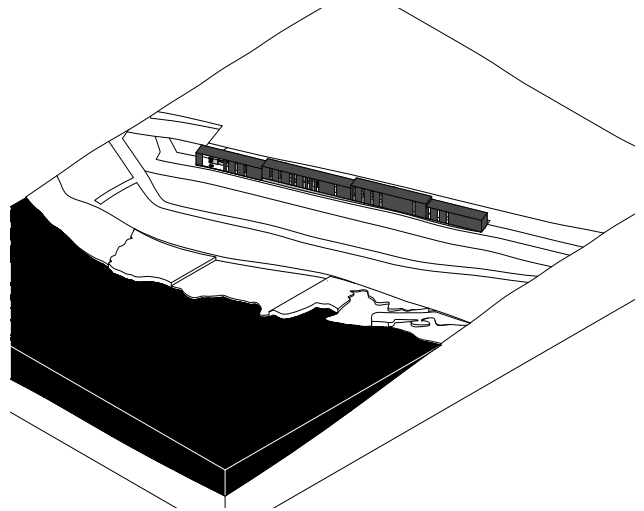
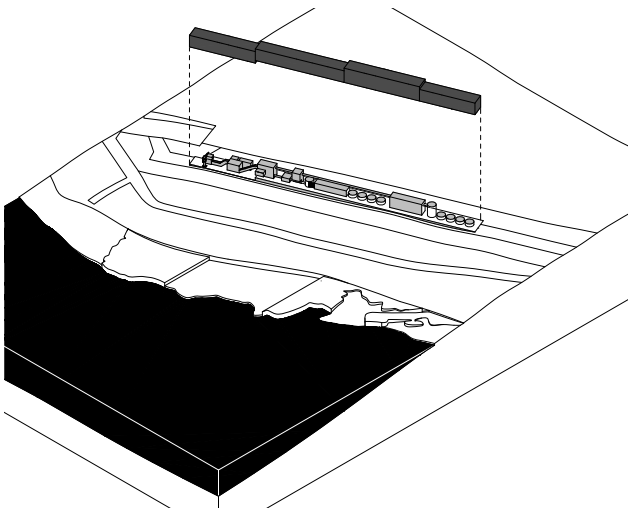
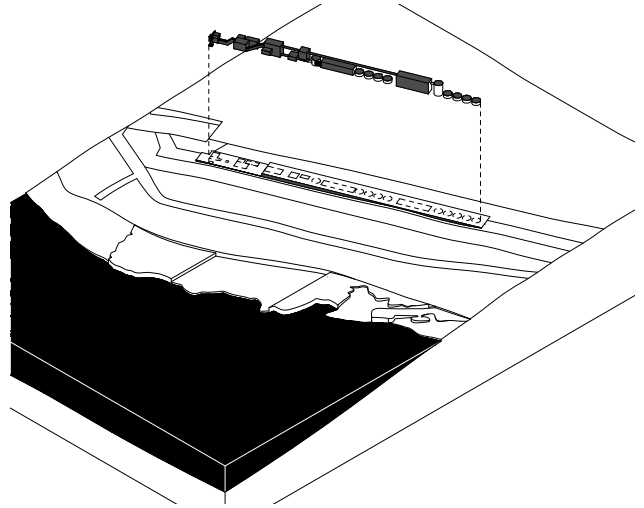
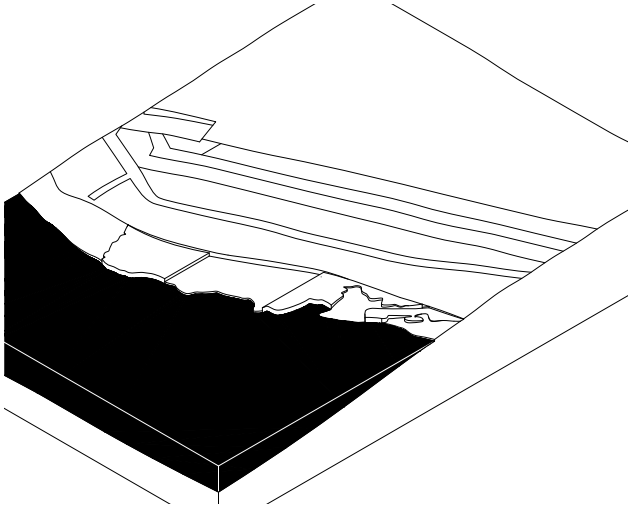
Flotta means ‘the flat island’ in Old Norse. This means that elements protruding from its landscape are particularly prominent. The existing wind turbine functions as landmark, while the community arts space and craft workshops closely follow the contours of the site and are indeed embedded in the landscape.



Development

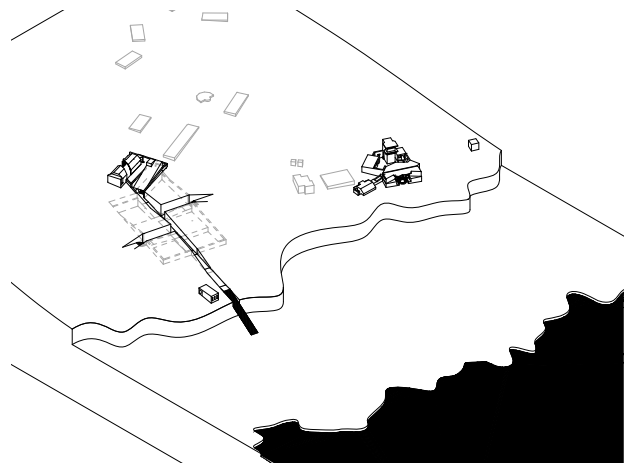
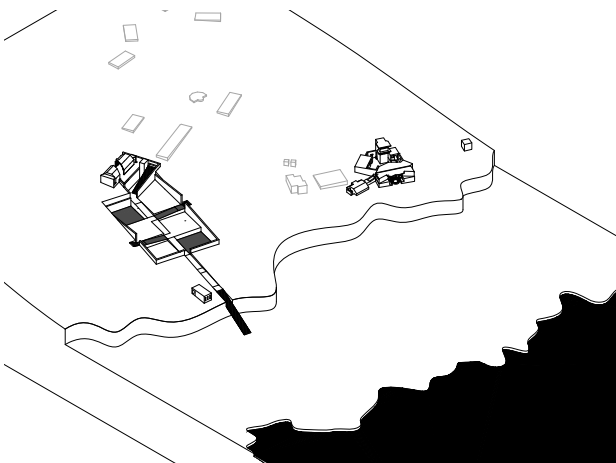
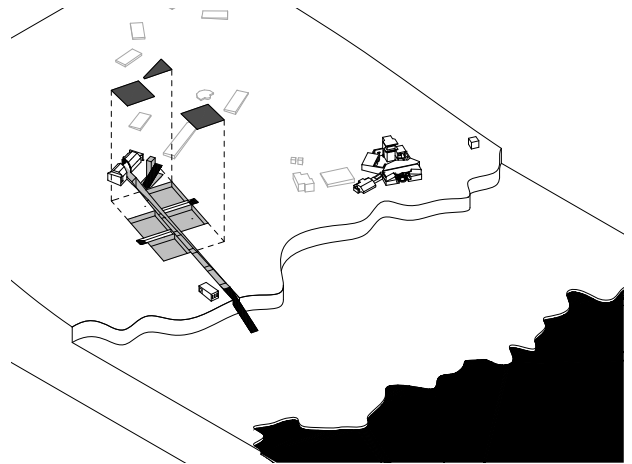
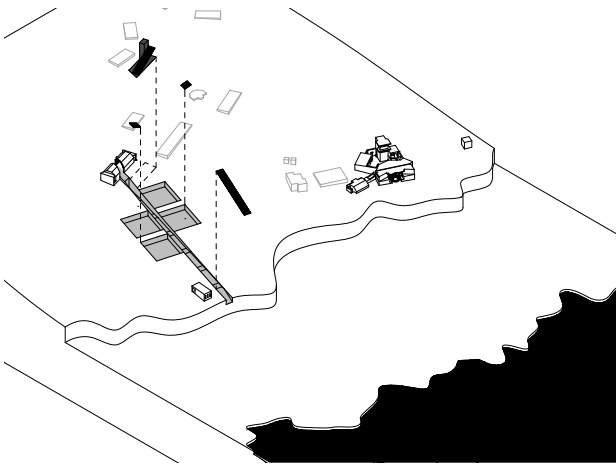
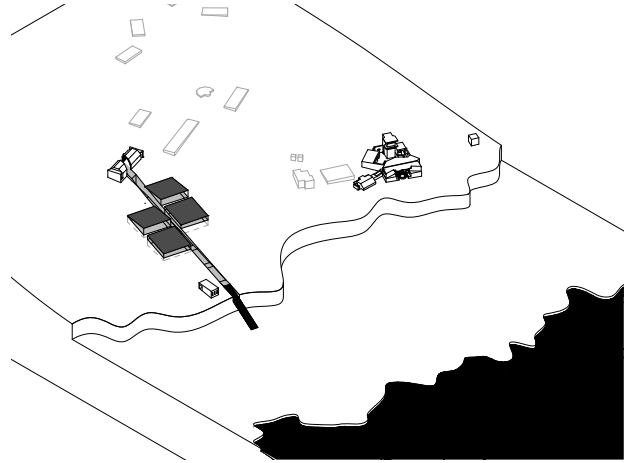
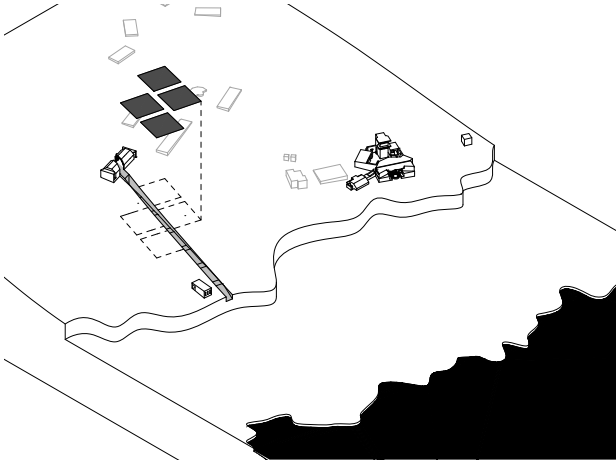
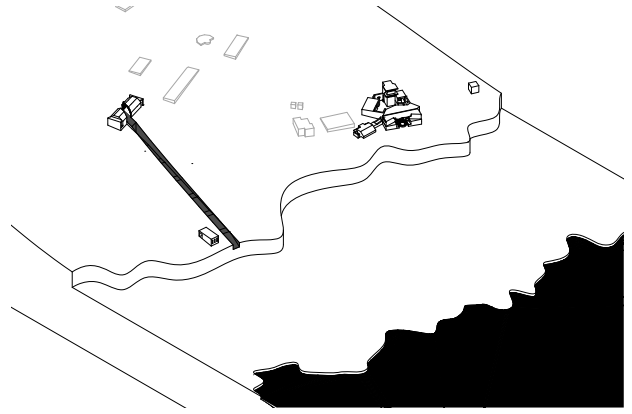
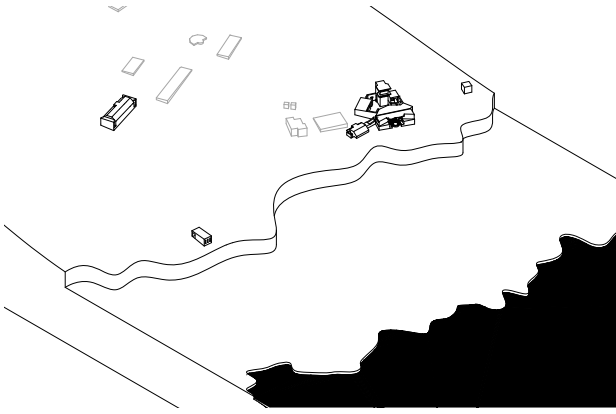
**Conceptual development:
Recycling Facility**

1. Existing condition
2. Arrange program
3. Enclose
4. Openings for views of process



**Conceptual development:
Community arts space**

1. Existing condition
2. Cut landscape
3. Arrange program
4. React to landscape
5. Circulation
6. Vary
7. Adapt levels
8. Integrate with landscape



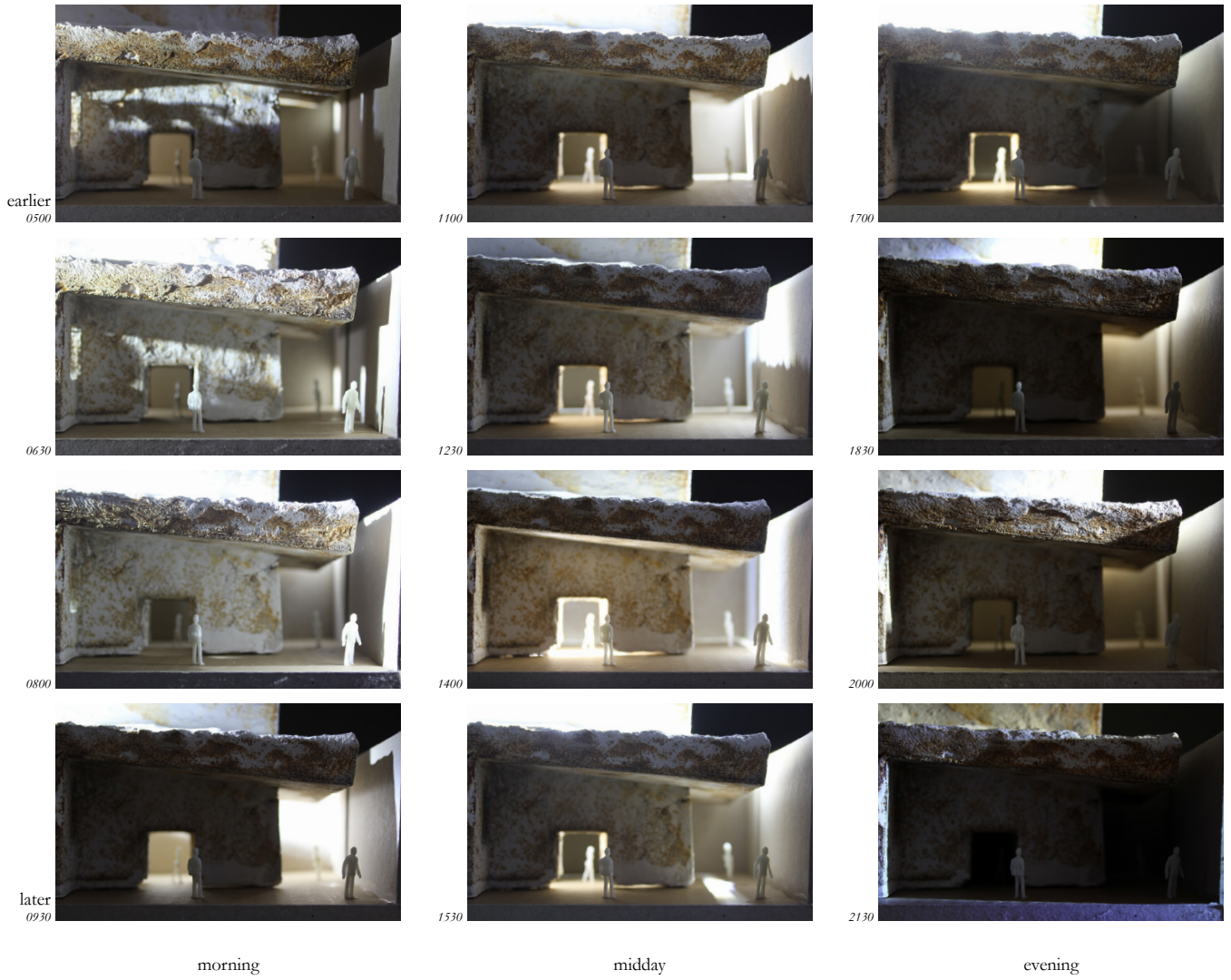
Natural Light

Orkney is the land of the Northern Lights. It experiences 18 hour days in summer (when most visitors come) and 6 hour days in winter. Light is therefore a centrally important quality to the character of Flotta, which the project seeks to respond to.

In the words of William Cairns, who undertook the design of the Flotta Oil Terminal in the 1970s:

“Although unimpressive physiographically any visual assessment of Flotta must take account of the subtly powerful relationship which the islands and the peninsulas of Scapa Flow have in relief with sky and sea, and the continually changing quality of light. For many it is the purity of the atmosphere, the long shadows, the low horizons, the whole land, sea and skyline which expresses their aspirations and gives returning Orcadians a very profound sense of homecoming.”

The opposite lighting exploration investigates the changing light and shadow during a long summer day.







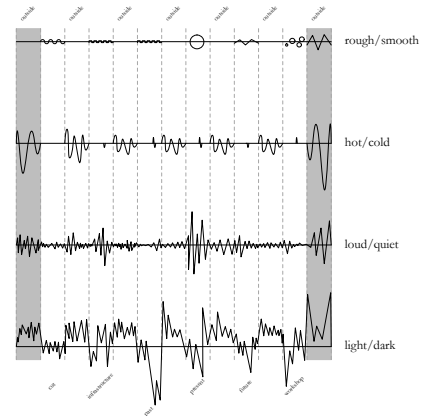
Senses

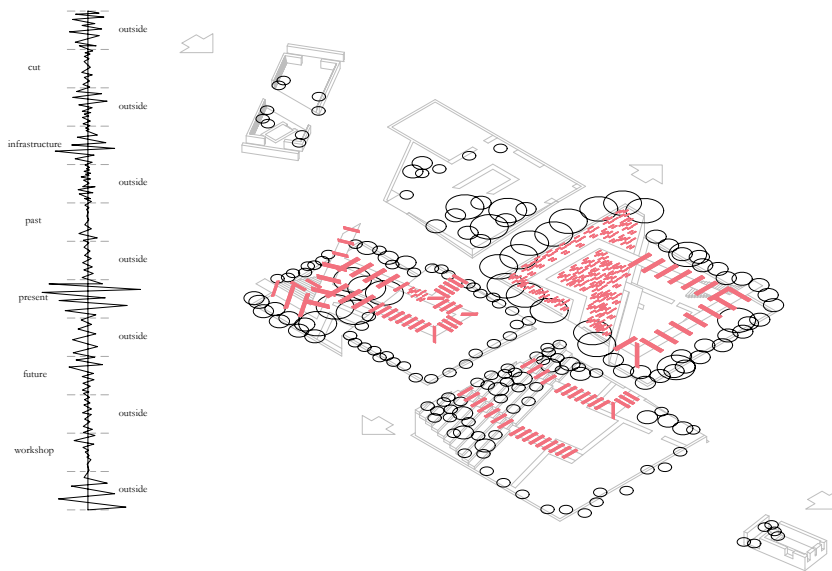
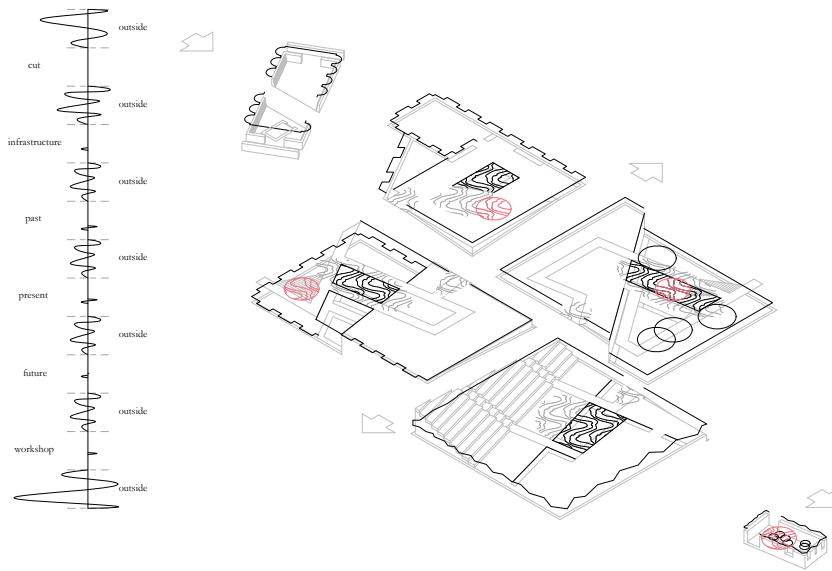
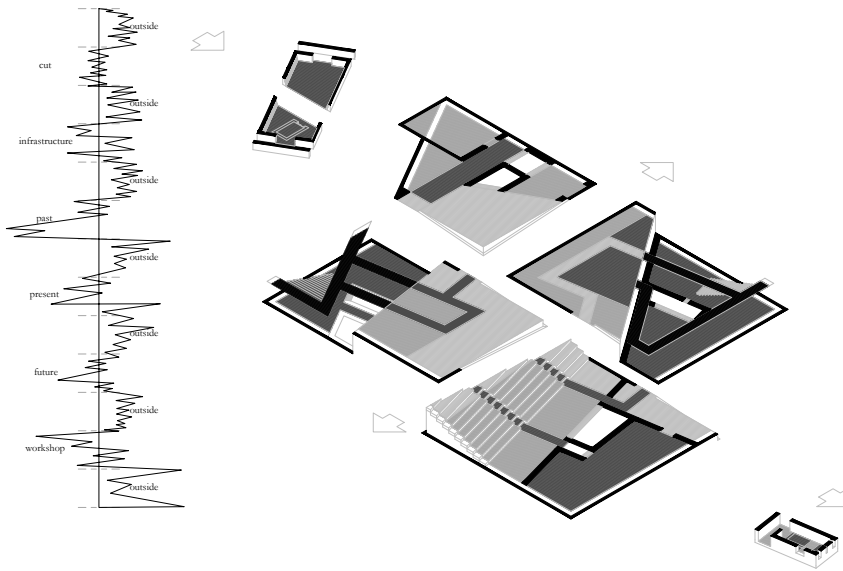
With the importance attached to humanity in the territory, the human scale part embraces an array of the human senses. Natural and artificial light (top right) is carefully controlled to visually shape a structure which appears almost as an impossible space, separated as it is from the perimeter walls.

This in turn highlights the changing materiality and texture of the different perimeter walls (middle right). Airflow is controlled passively, with specific parts of the project experiencing noticeable draught- cold draught in the 'air raid' space of the wartime past, and warm draught in the 'furnace' space of the bruck-mining present. Specific areas are warmed using infrared heaters with motion sensors to emphasise the warmth of a 'crowd', or the 'furnace', or to provide comfort without insulation in the wartime ruins.

The varying materiality and form in turn shapes the acoustic experience (bottom right), with a corten steel walkway echoing more, and again more when it becomes 'elevated' as the ground falls away from it. This forms an element of wayfinding as we follow the path around (red), while the edges create greater reverberation.

Each of the spaces uses the senses slightly differently to readjust the focus to the needs of the individual space. However, the beginning and end are the moments at which the senses collectively receive their strongest stimulus-emphasising the rough character of the remote, unbuilt territory. Thus, in the space between, we undergo a transition in appreciation for this remote island.

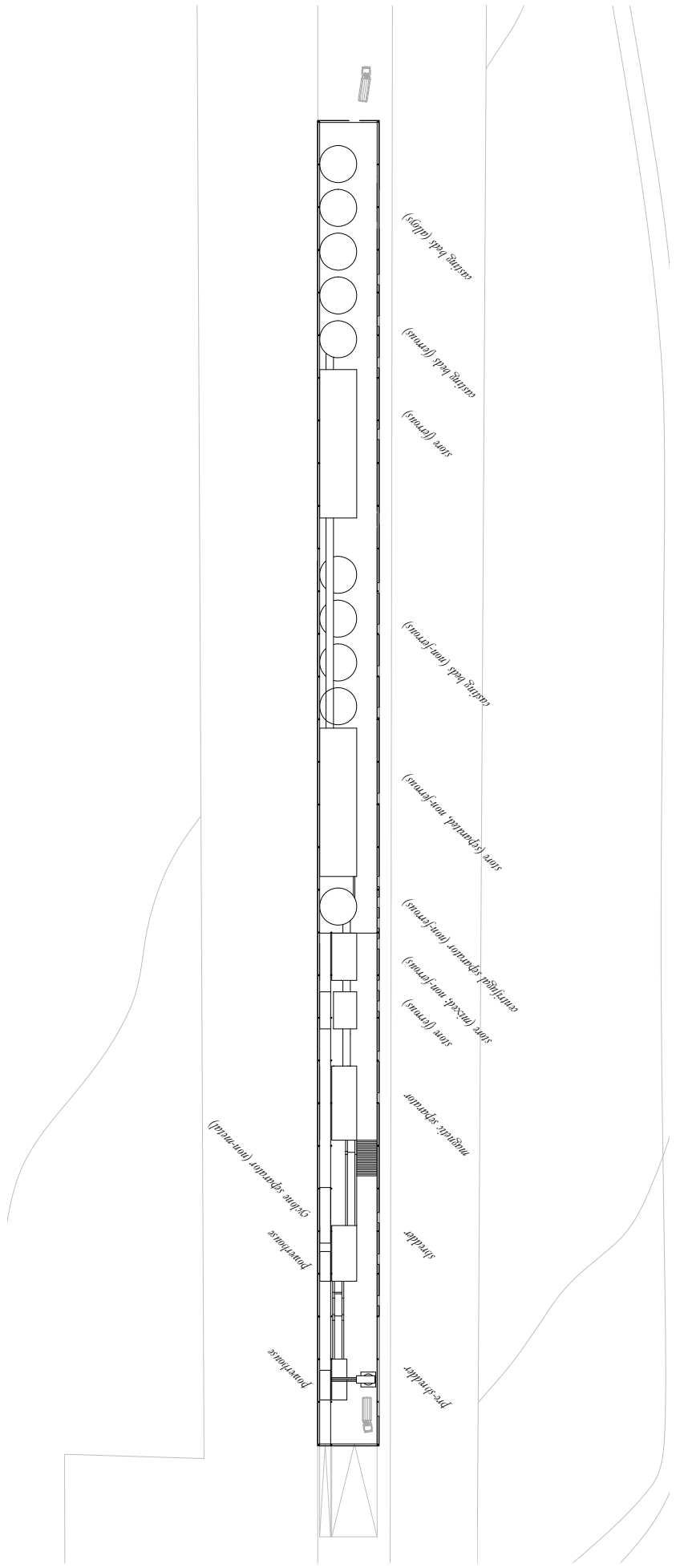
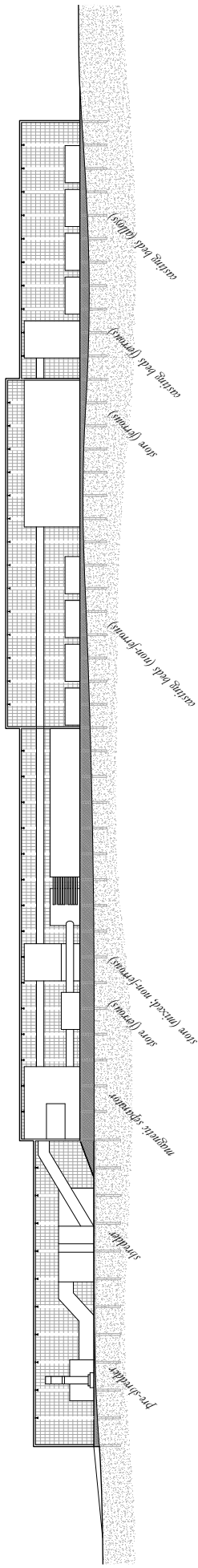


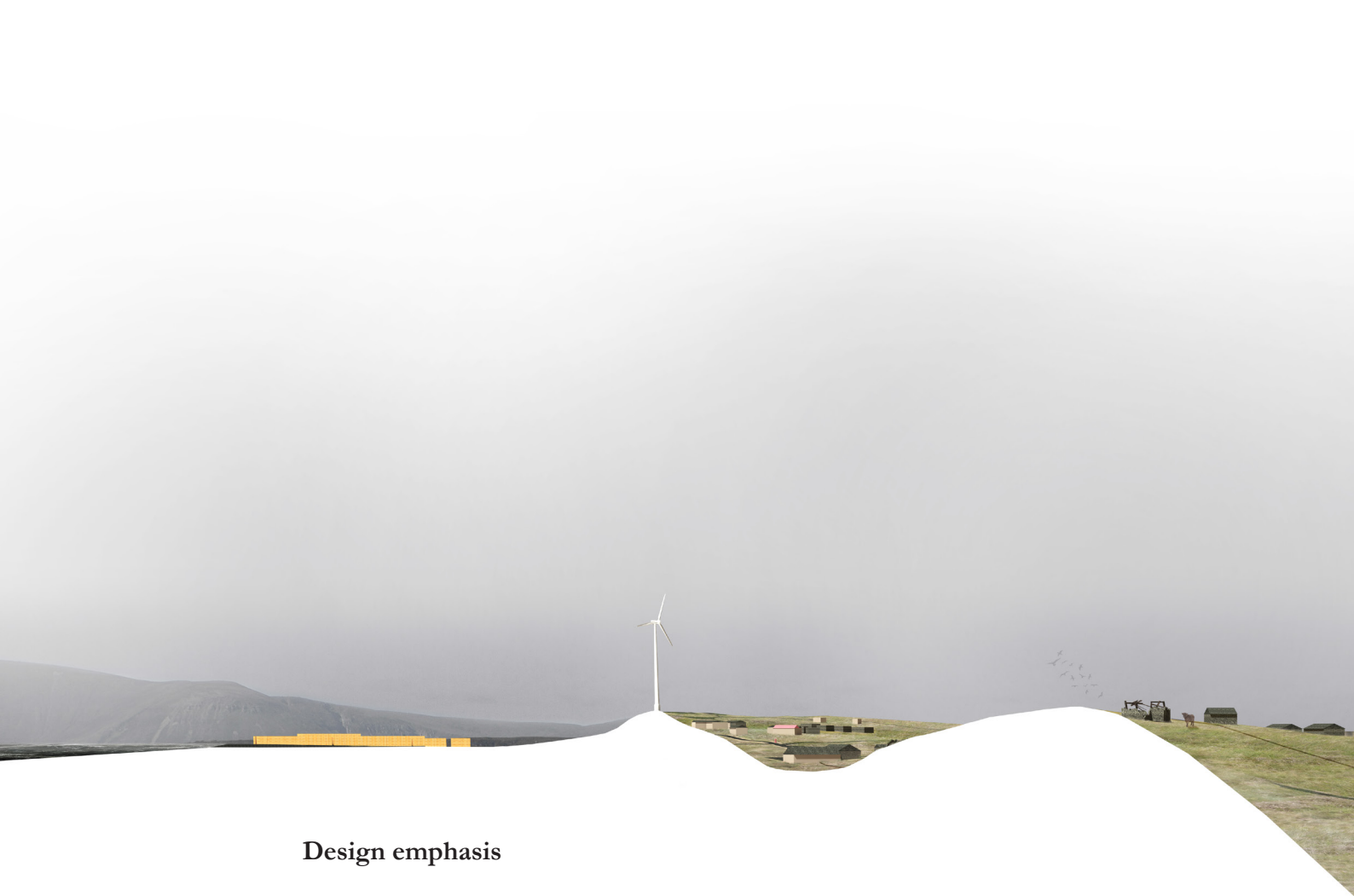


Project

Infrastructural scale bruck mining

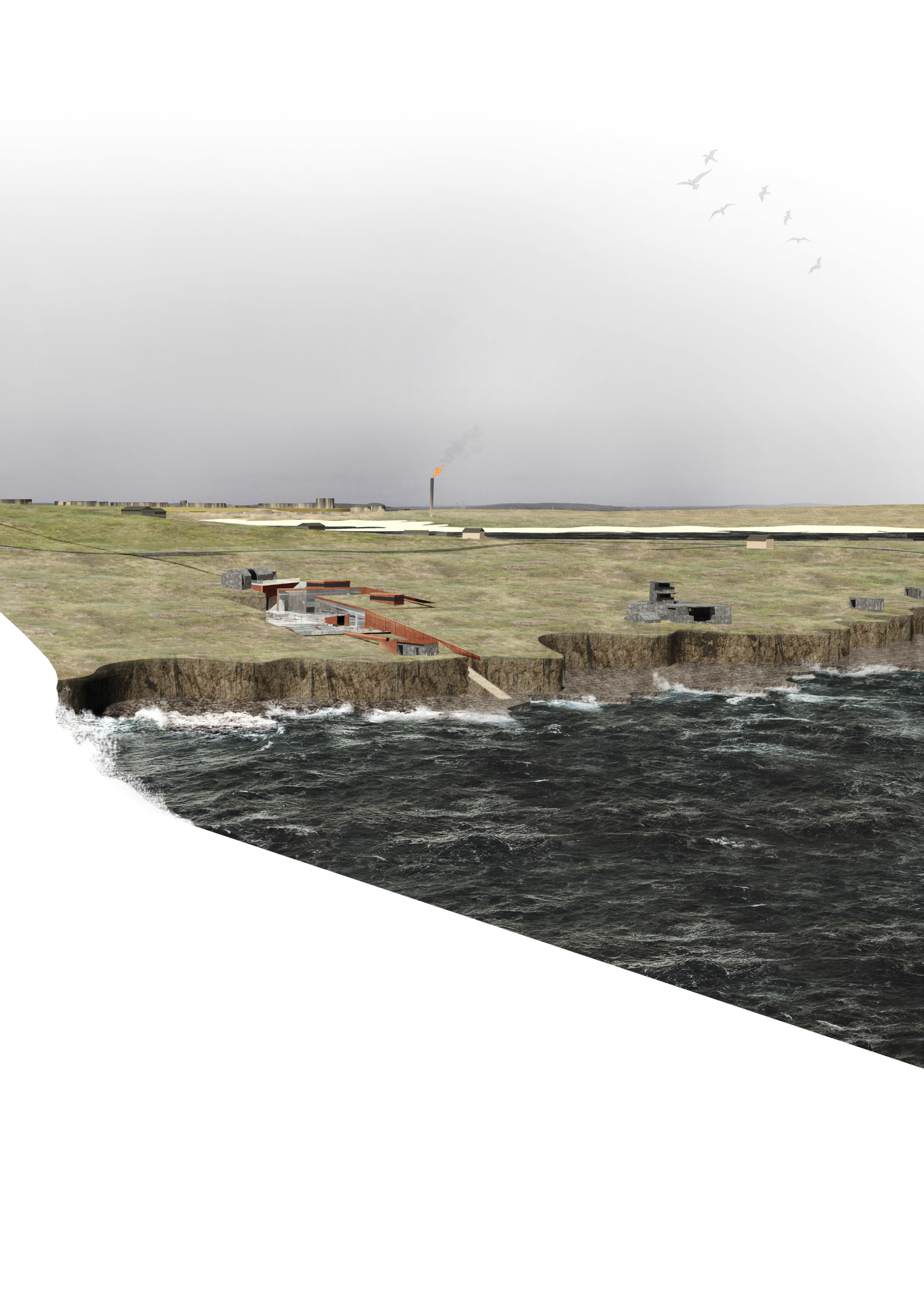
The metal recycling facility occupies the linear brownfield site left by the abandoned airstrip from the early days of the oil terminal. This facilitates a logical, efficient flow of material through the recycling facility.

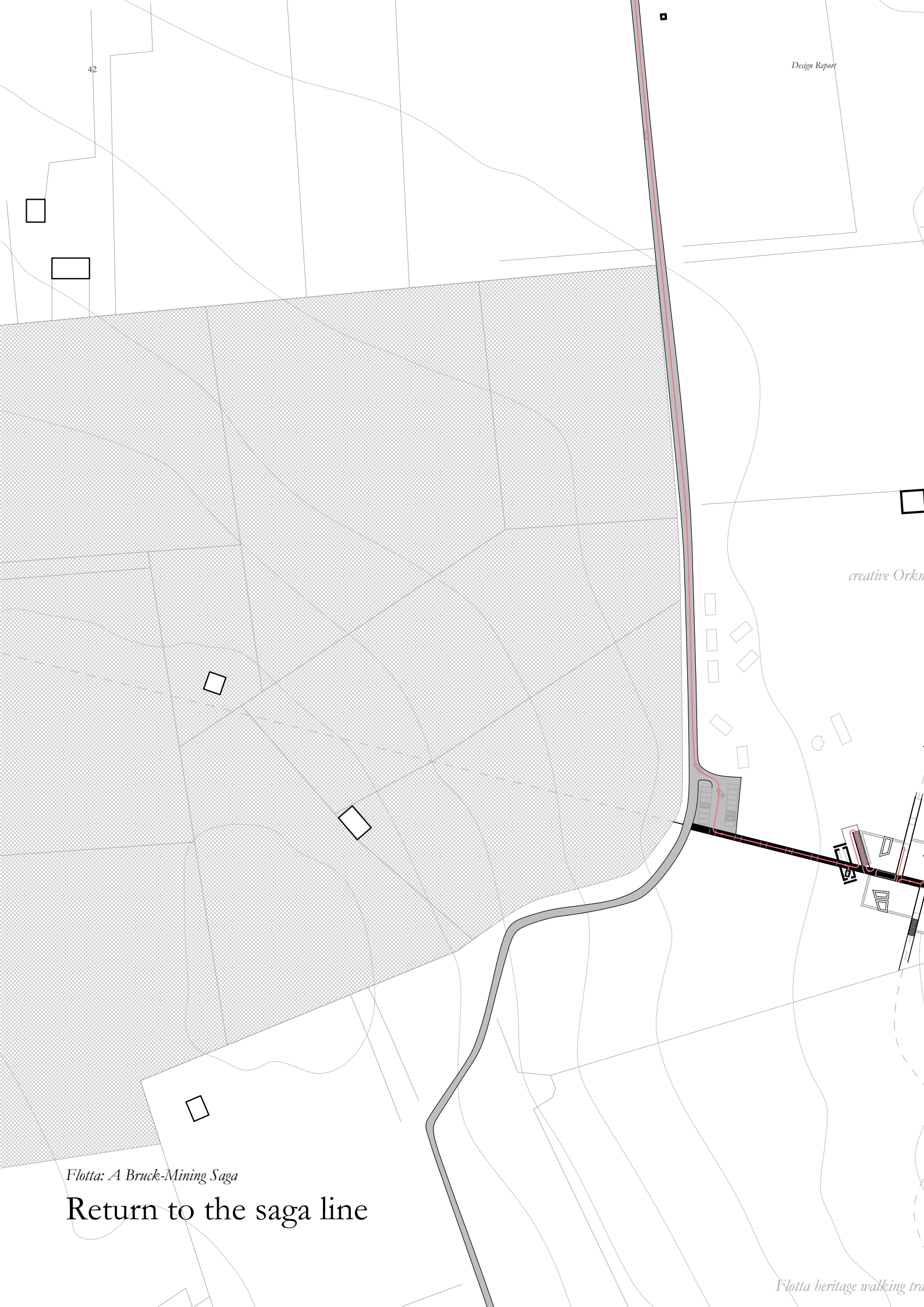




Design emphasis

Emphasis of the design is placed on the remote, eastern side of the island, with the recycling facility receiving less attention. This is indeed reflective of the respective permanences of each part of the project. The repository of stories is intended to persist long into the future; the recycling facility will likely close at some point and be dismantled for parts/ or to be recycled itself. In the background, we see the oil terminal with the flare burning. Indeed, it is just like the recycling facility- a piece of infrastructure whose life is coming to an end- the terminal is due to close in the 2030s.





Flotta: A Bruck-Mining Saga

Return to the saga line

creative Orkney

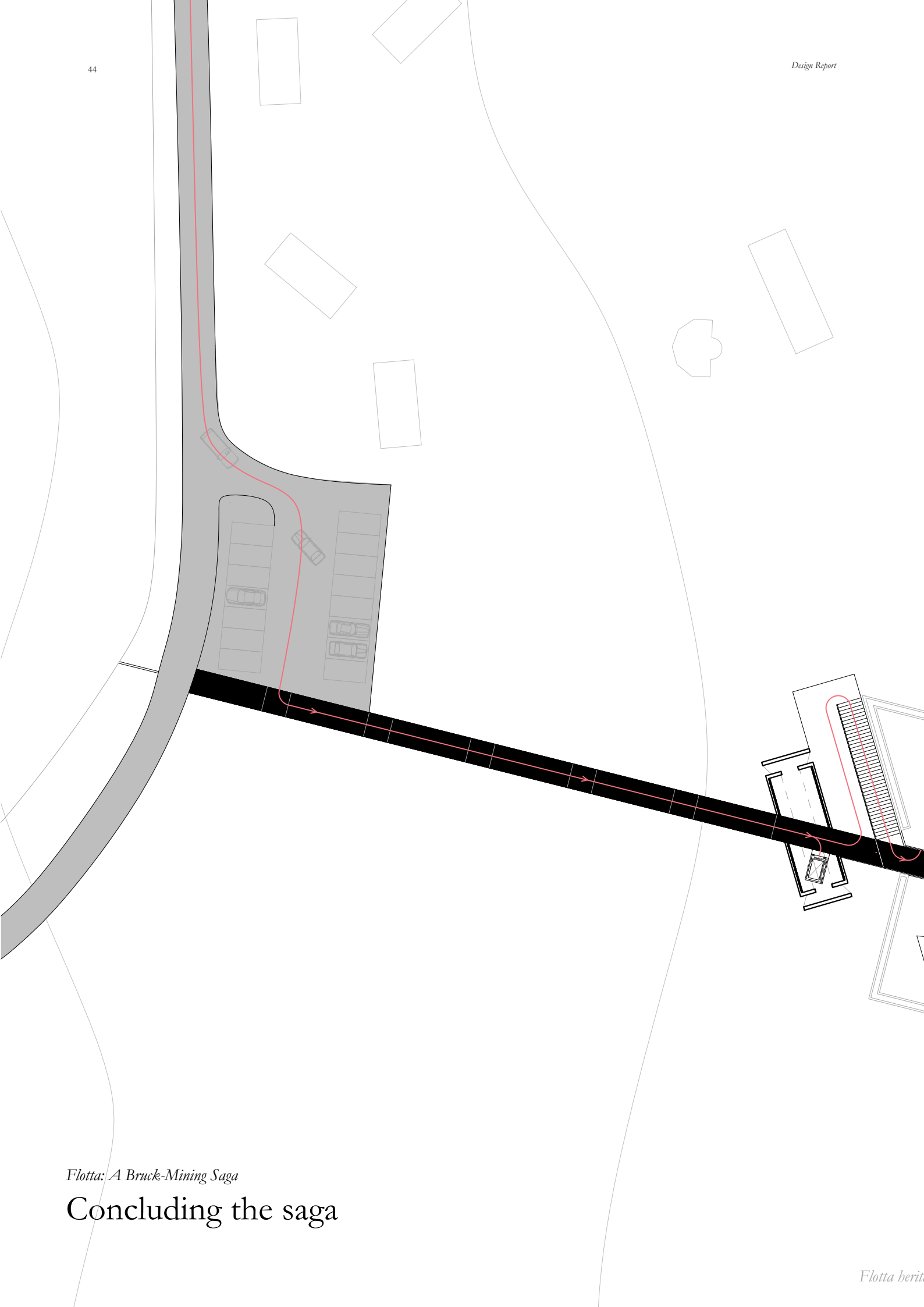
Mean High Water Springs

Mean Low Water Springs



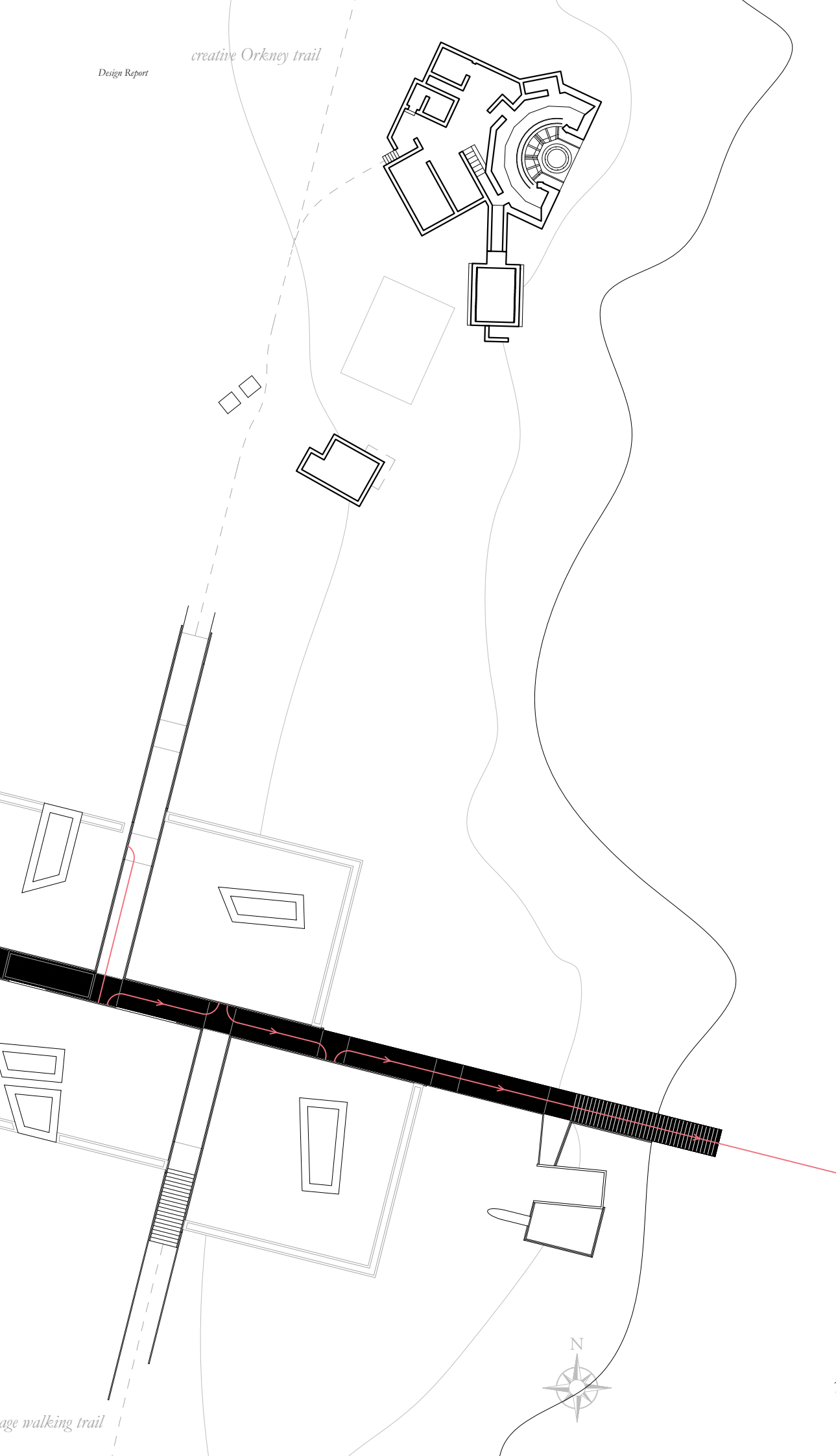
key trail

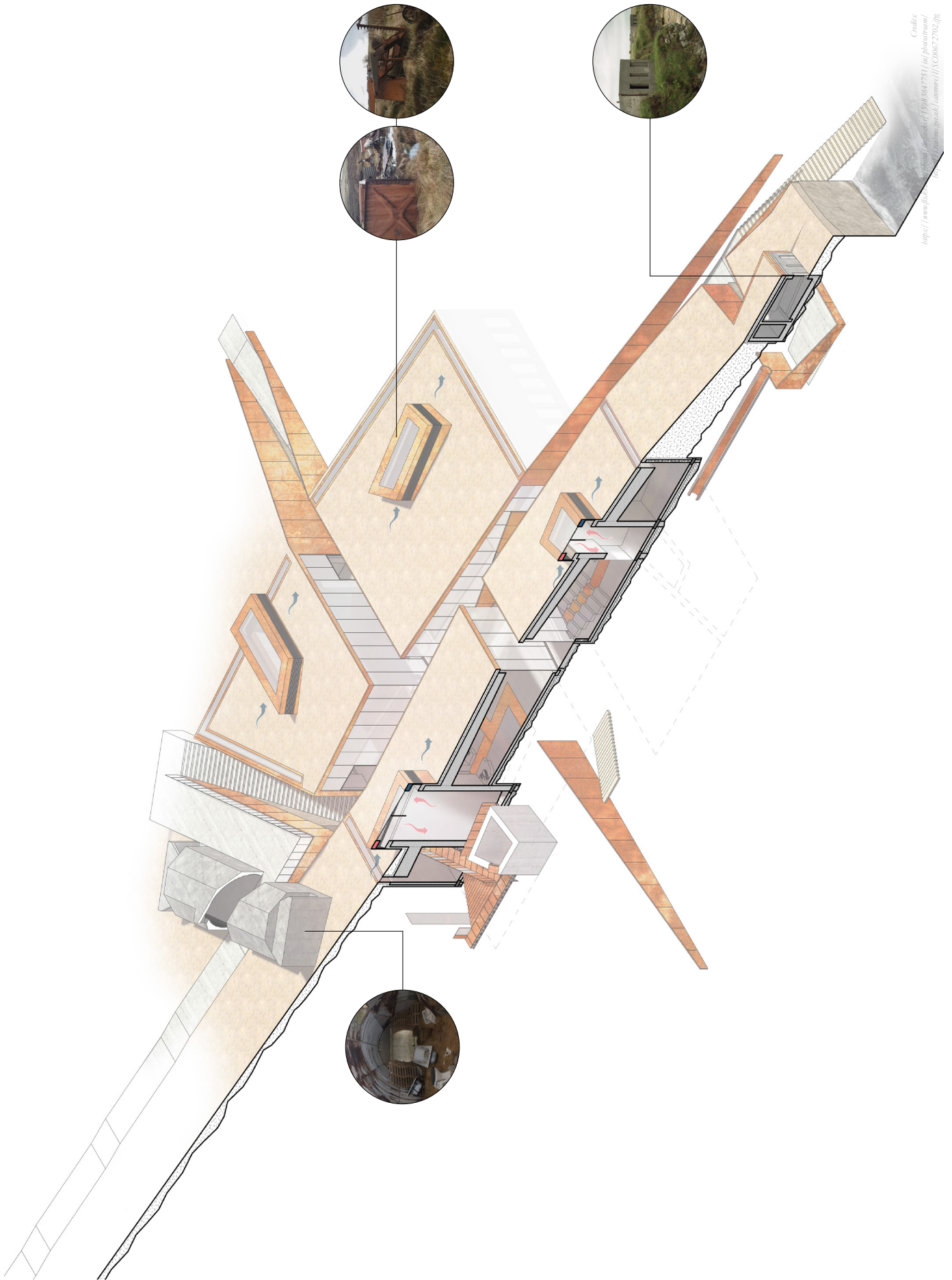




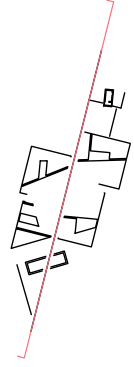
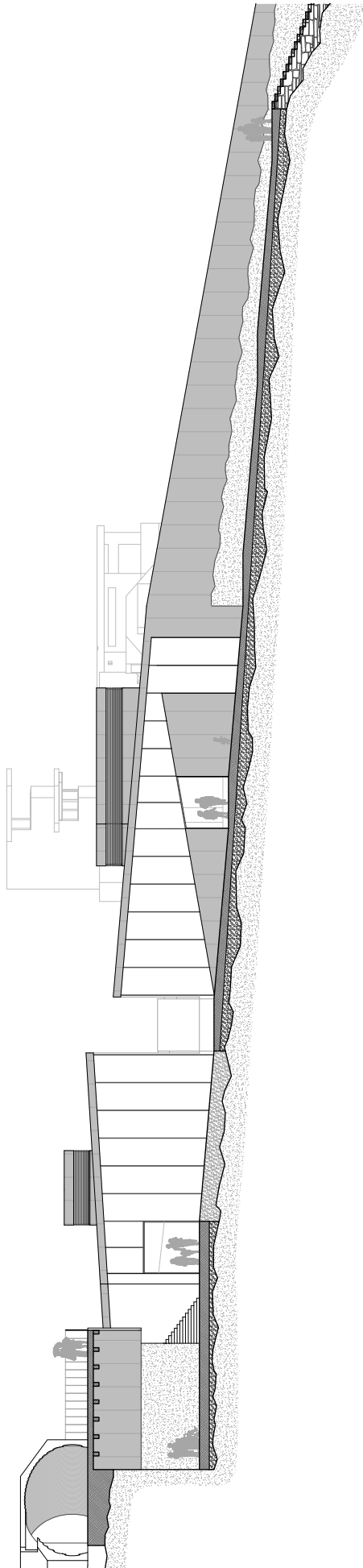
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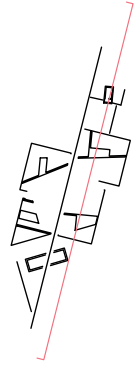
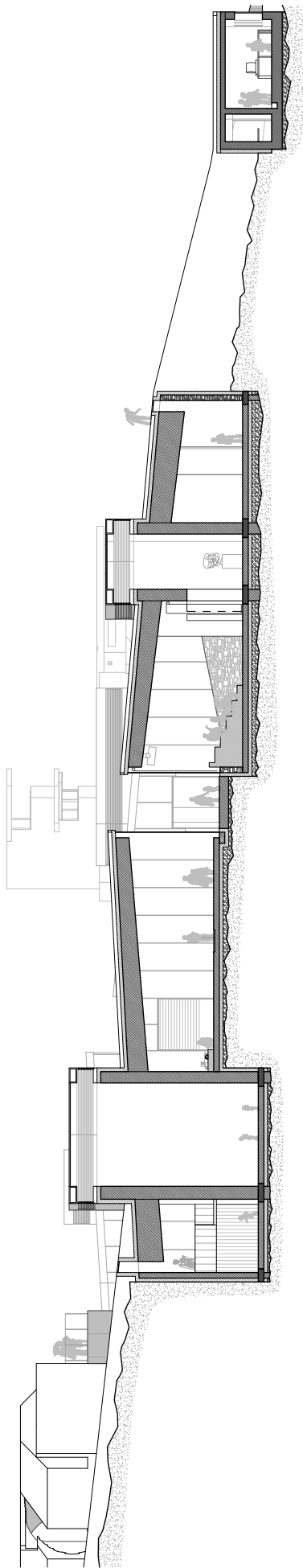
Concluding the saga

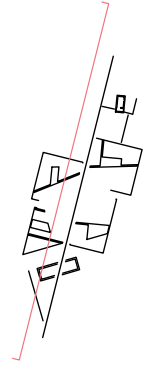
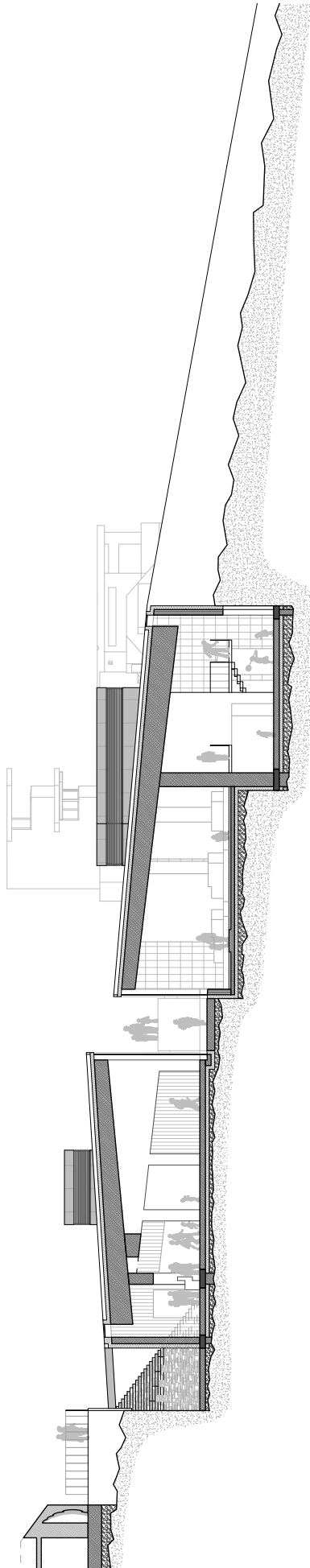


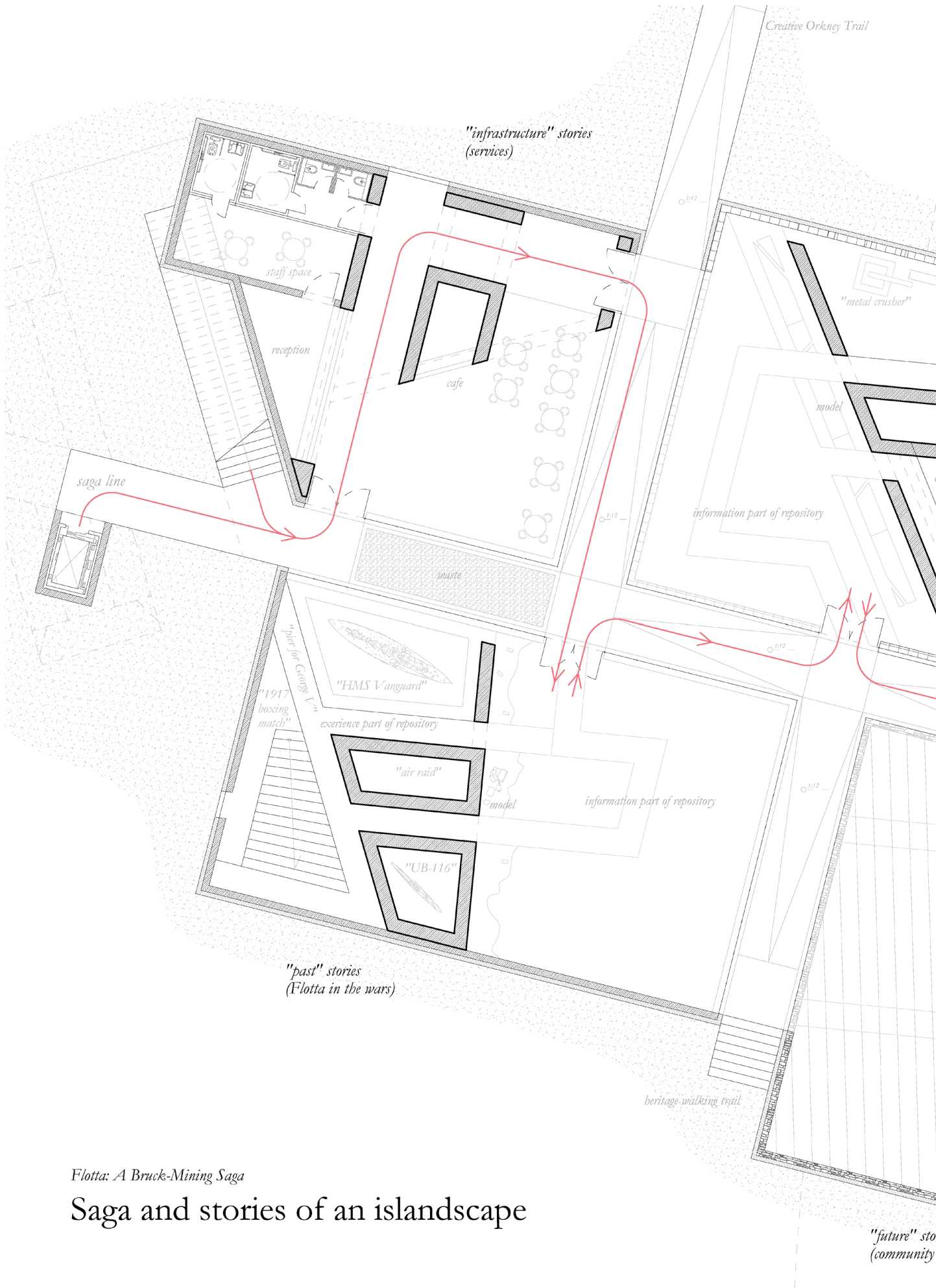


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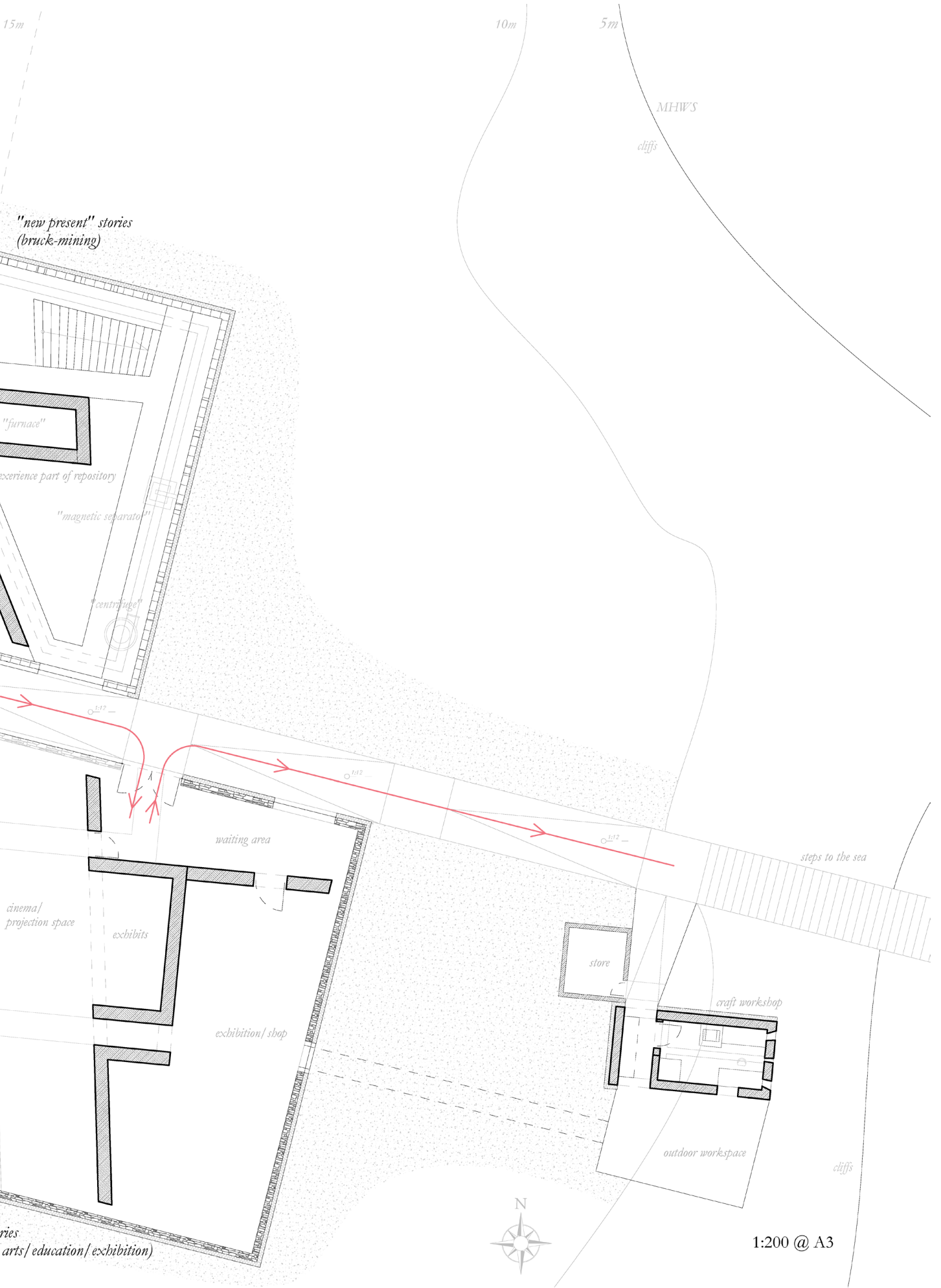




Flotta: A Bruck-Mining Saga

Saga and stories of an islandscape

"future" stories
(community)



"new present" stories
(bruck-mining)

"furnace"

experience part of repository

"magnetic separator"

"centrifuge"

waiting area

cinema/
projection space

exhibits

exhibition/shop

store

craft workshop

outdoor workspace

steps to the sea

cliffs



1:200 @ A3

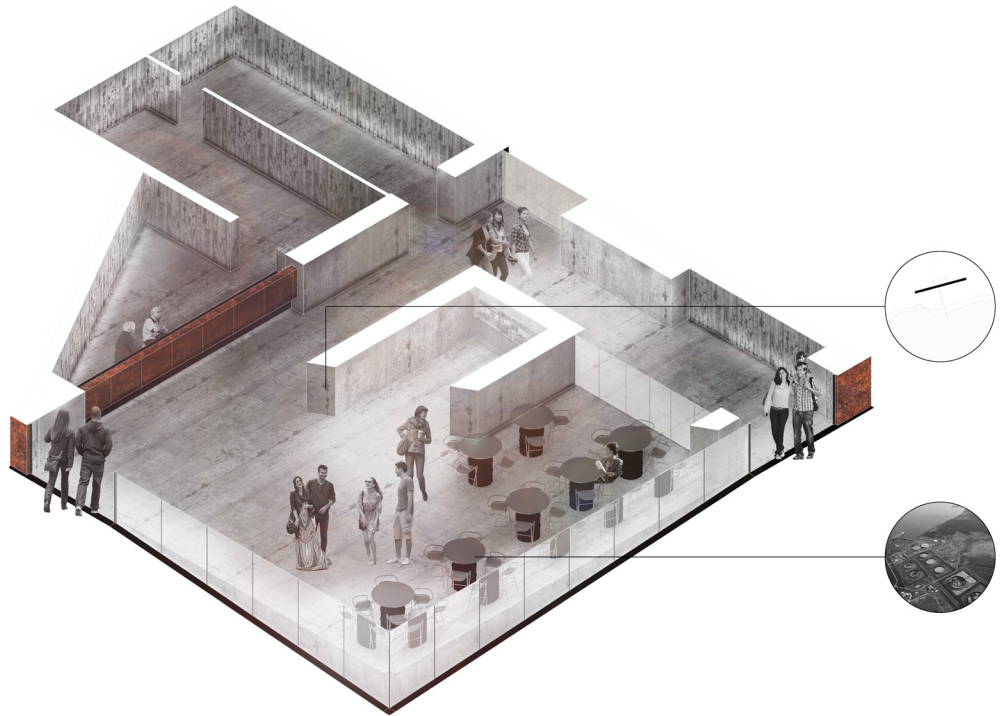
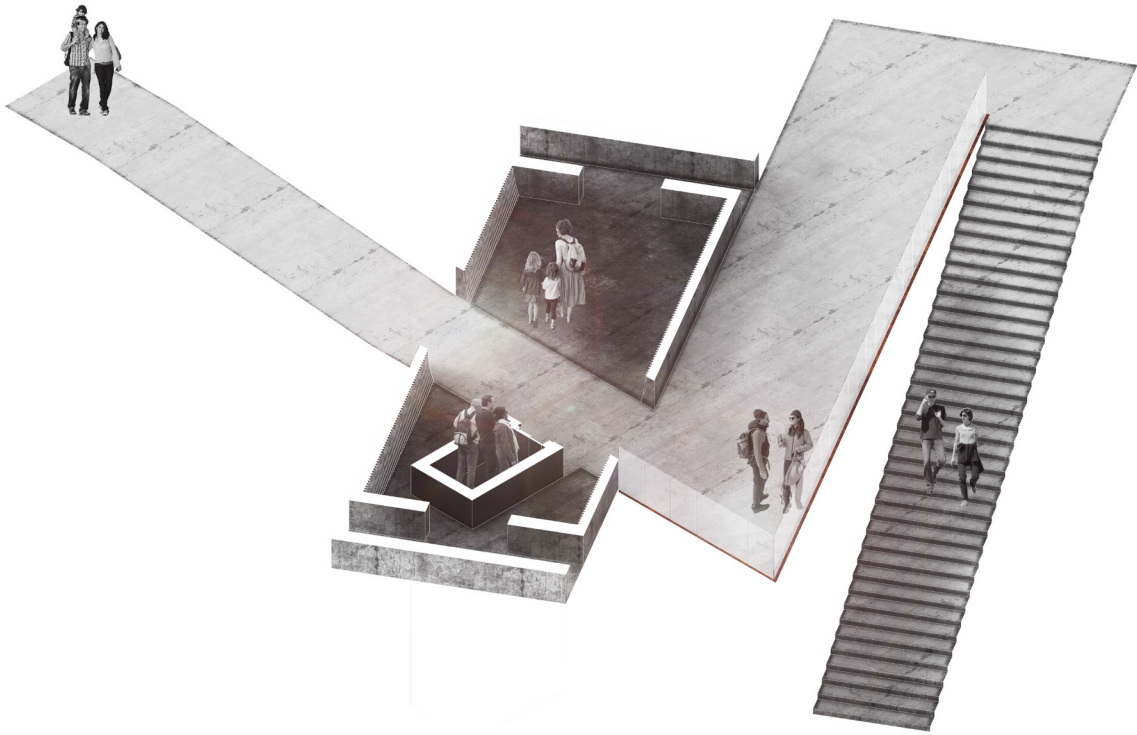
ries
arts/education/exhibition)

Cut

The first ruin is cut through- challenging the idea of permanence and creating a moment of mystique as we are forced to first leave the saga line to descend before being allowed to return to it. A lift is housed within the ruin, providing step-free access to the ramps below.

Reception / cafe

The dividing line is derived from the pier of the oil terminal- the point at which ships from far away dock and thus interact with Flotta. This reference is reinforced through the arrangement of cafe tables, which adopt the layout of the tanks of the oil terminal- a symbol of globalisation and of the mining of the territory. Now, they become a moment of community during which individuals now sit around them for the ritual of eating and drinking. In the reception / cafe, the interaction happens instead through a mixing of occupants- young and old, recycling facility and craft workers, visitors and Flottarians.

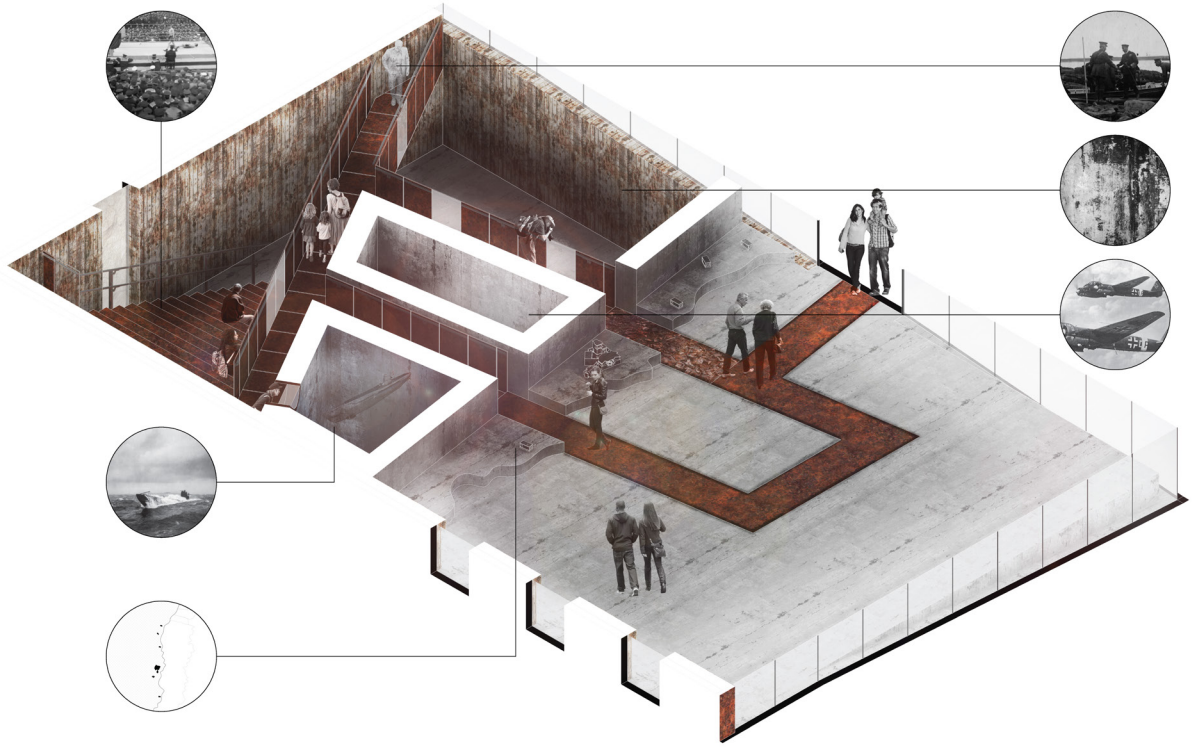


Wartime (past) stories

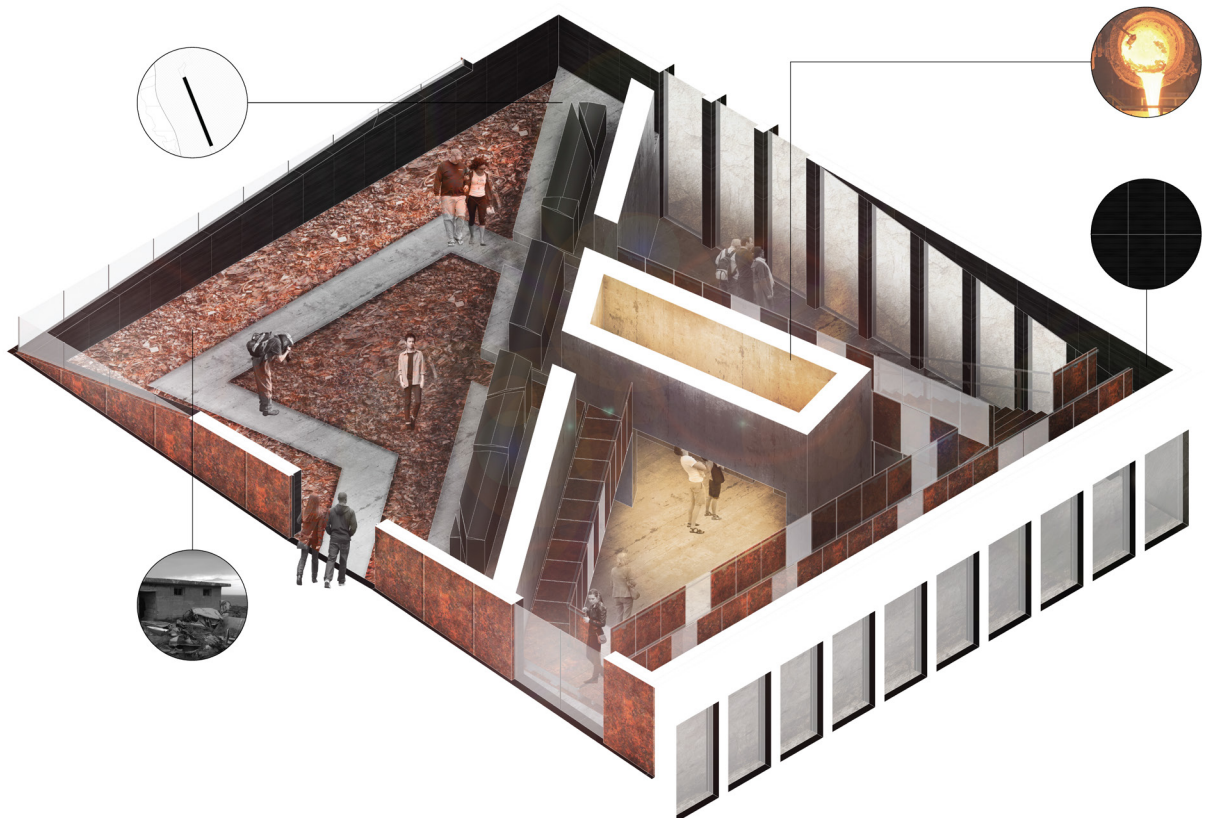
Many features of the landscape shape this part of the plan. The dividing line is derived from the coastline where the wartime ruins are, while the rust-stained shutter concrete references textures from a number of the ruins. The gantry here pays tribute to those of ships, while a further part references 'King's Hard', the pier on which George V landed in WW1. George V is depicted in statue form. The stairs reference a boxing arena, with further statues below commemorating the boxing match of 1917 with 10,000 spectators. The enclosed 'towers' tell stories of the wartime air raids, while another records the submarine warfare that took place just off the Flotta coastline.

Bruck-mining (present) stories

The dividing line is derived from the line of the abandoned airfield (which is to be occupied by the recycling facility). The metal pieces covering the floor record the metal waste scattered around the Flotta landscape at present, but most of which will disappear for recycling. The gantry is composed of long sections which follow an interactive exhibition of the recycling process. The centrepiece of this is the 'furnace', for melting metal. Orange polycarbonate tints the incoming daylight, resulting in a glow from this central space.



Credito:
<https://www.etsy.com/uk/listing/312061932/160x160cm-canvas-art-print-wall-decor-art-3d-art>
https://photoart.com/canvas-art-print/2016/11/world-war-ii-in-photos-art-3d-art/#_ga=2.188870831.1814518812.1783471810.1783471810



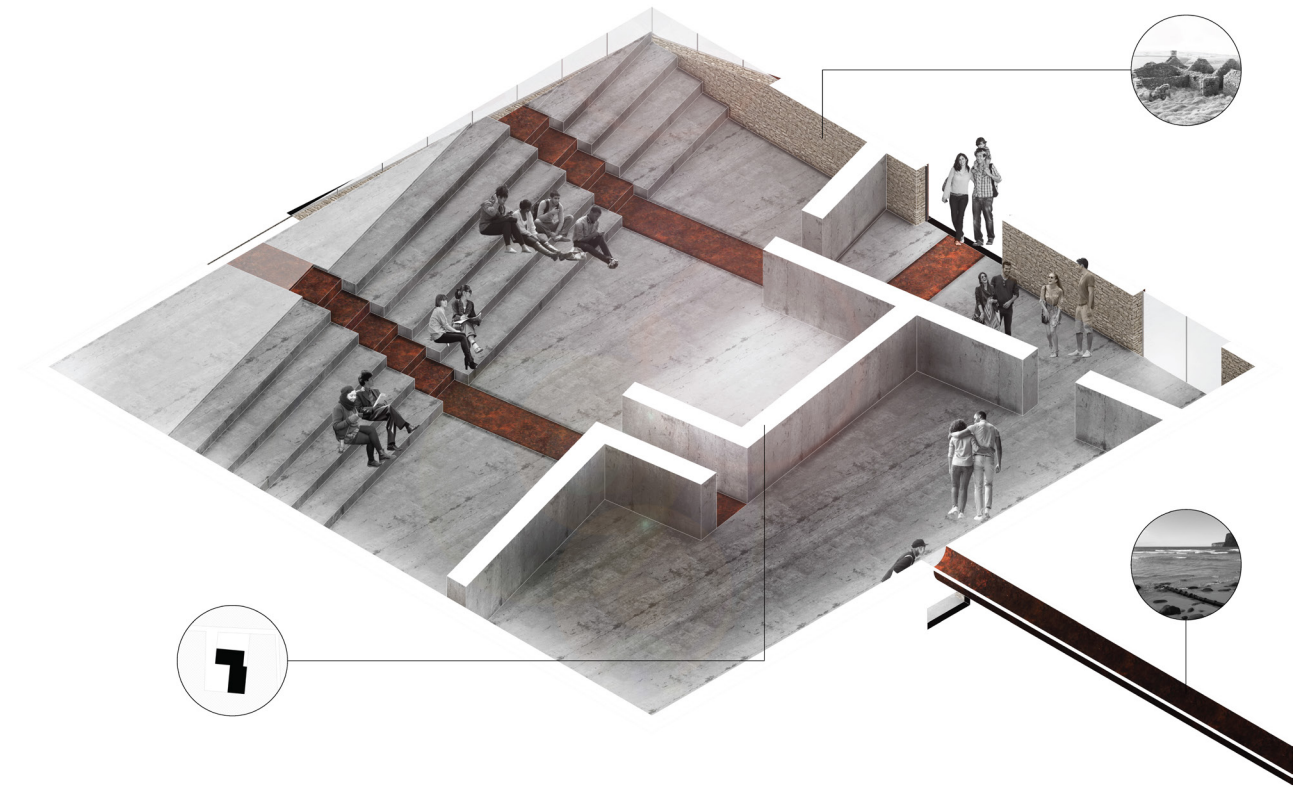
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<https://img.com/oi/7646CYU3dMU,maxorahdand.gy>

Future stories

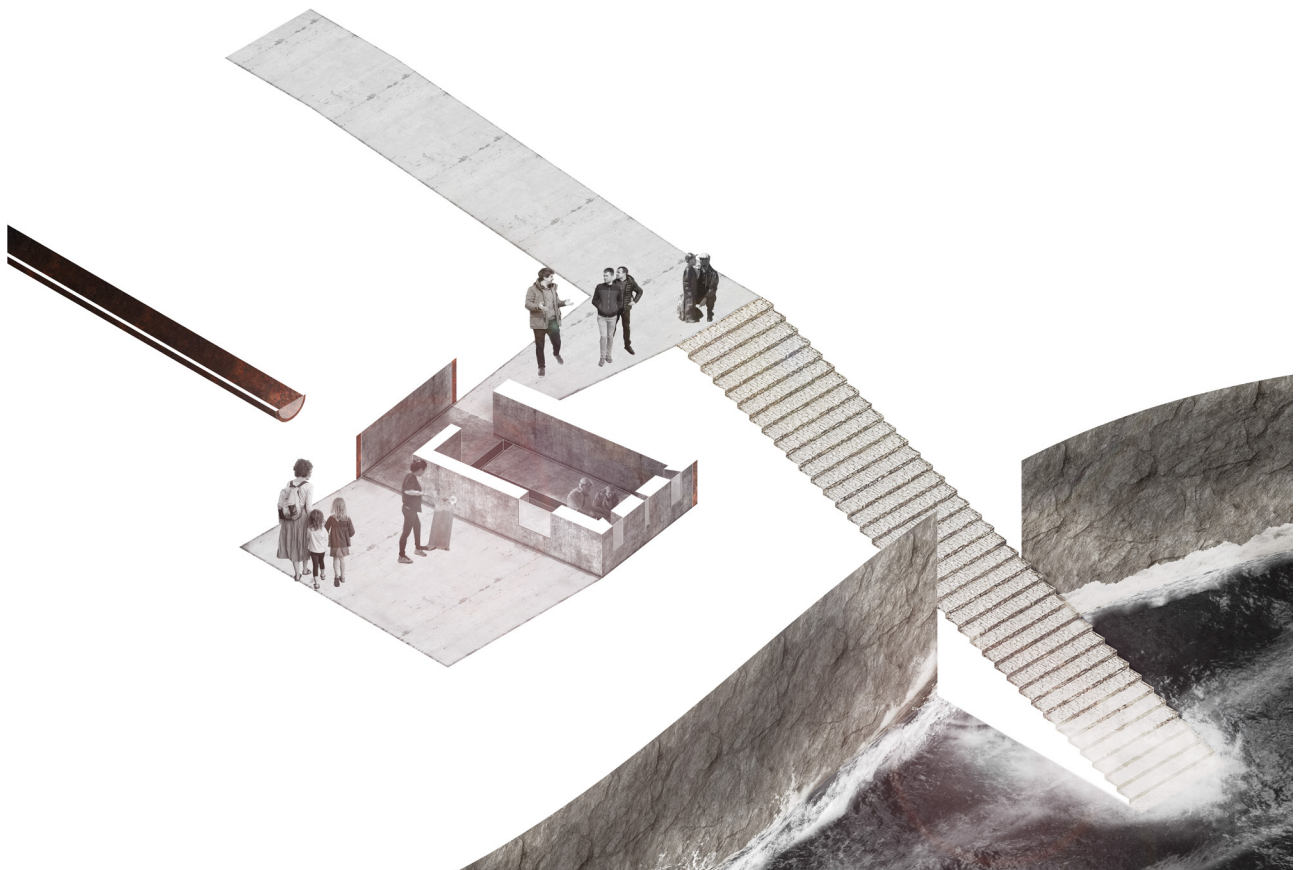
The dividing line is derived from the orientation of the school (now mothballed)- a traditional heart of the community. This spatial connection to education is complimented by the sometimes use of the space as lecture room- most likely relating to the craft metal working. The stone walls reflect the traditional construction of the Flotta houses, built using the local stone. This in turn reflects future aspirations for a part of humanity to be once again more connected to the territory. The pipe references the cable coming ashore, facing out to sea at the opposite side of the island as the cable that actually comes ashore. Upon looking through, we 'see' like an electron and perceive the claustrophobia and constraints of networks.

Making stories

The craft workshops are hidden away from the cut within wartime ruins- the first of which lies close to the cut. Indoor and outdoor spaces are created for the workshops, and their hiddenness makes them a surprise- like a plot twist to a story. Indeed, their true character is at first obscured by being clad in corten steel on the side facing the cut. From here, we can descend to the sea- which lashes the bottom of the steps at high tide, but which retreats at low tide to allow us to cross the beach to the edge- where water meets.



Credit:
Luna Watt



Experience

Infrastructure

The saga line begins at the point where the cable comes ashore- a symbol of centralised networks and indeed their limitations. Directly adjacent is the recycling facility, occupying the brownfield (spatial bruck) site of the abandoned airstrip. This tectonic facility is linear, arranged for efficient flow of material





Hiking path

A hiking path connects the recycling facility with the community arts space and workshops. Beneath the path also runs the district heating network, where waste heat from the facility heats the homes of the community.





Cut

The cut bisects the first ruin, creating a moment of mystique/anticipation which draws us onwards. In bad weather, it serves as a sort of signposting as we rush in the harsh rain.





Indirect descent

Descent requires us to depart the saga line briefly, which then obscures the framed view of the sea. Instead, the materials that make up the exterior of the project are juxtaposed into a single framed view- an architecture of the Flotta landscape.





Realignment

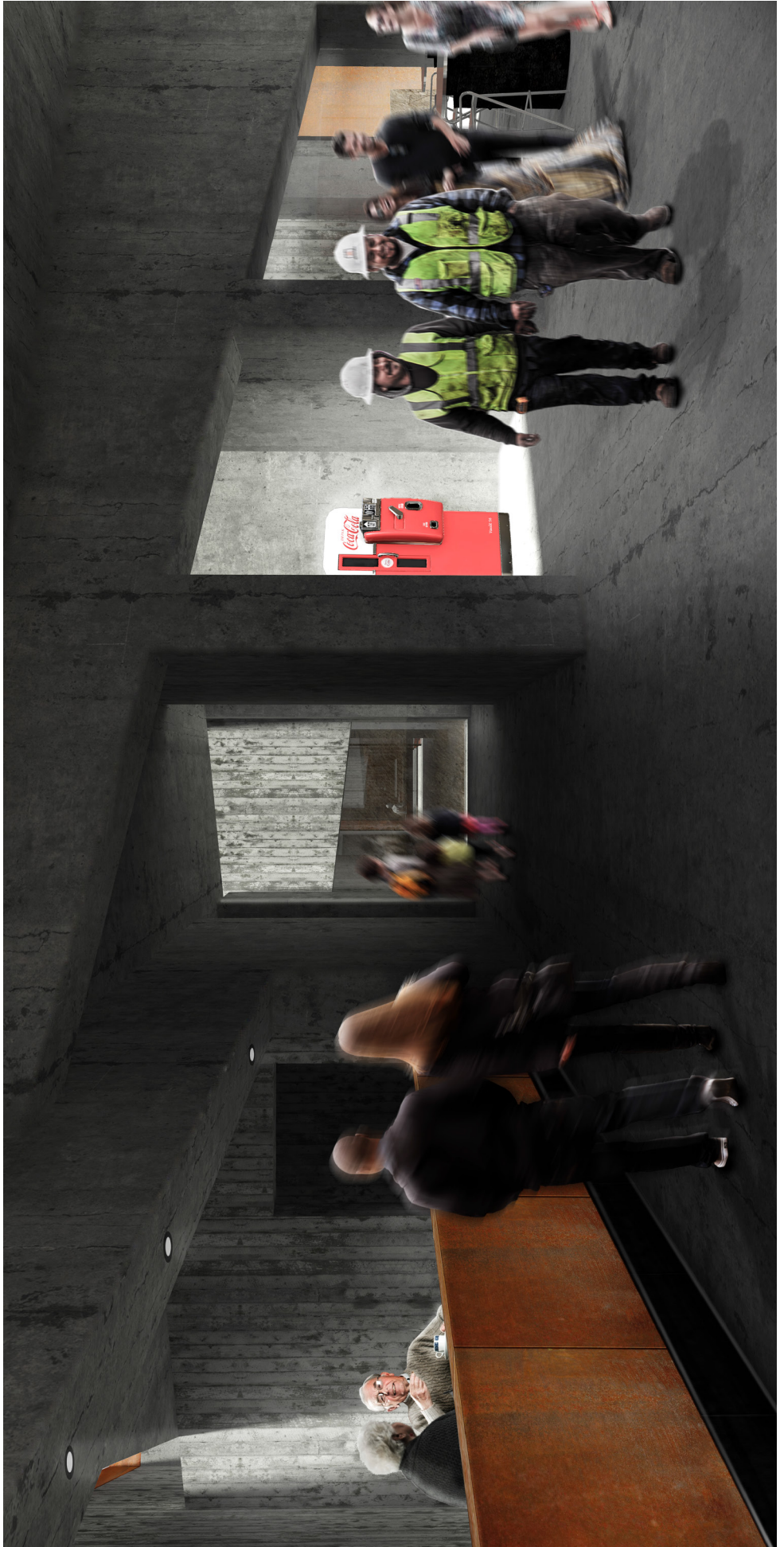
Upon descending, the way is blocked by the rusted remnants of farm machinery- bruck from the island's past. This directs us into the reception/cafe space to the left. Sometimes, this is a moment for pause, sometimes not...





Reception/cafe

This space brings together the varied parts of the community and indeed juxtaposes them with visitors- particularly during the summer months. Young and old, recycling facility and craft workers, visitors and Flottarians all come together here, either during community events or in the tourist season.



Wartime stories

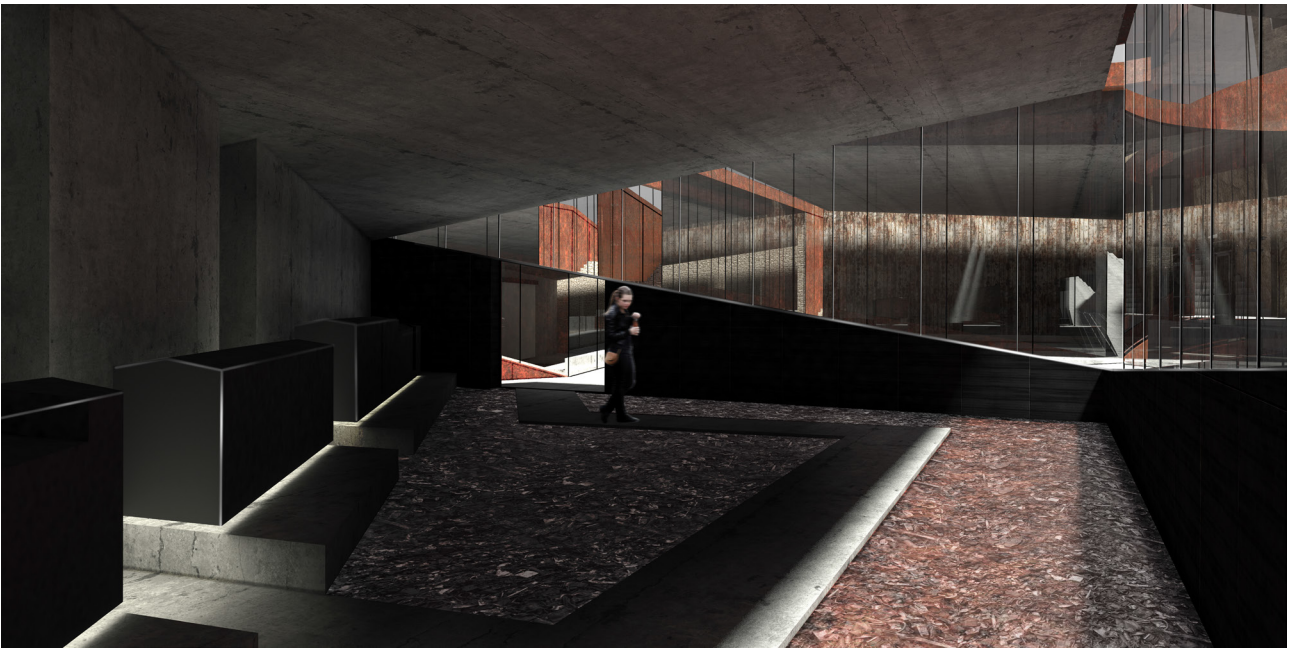
Flotta's wartime past is central to its identity. This space consequently preserves fixed stories (such as the visit of the King George V at 'Kind's Hard', or the boxing match with 10,000 spectators. It also houses more ephemeral stories.





Bruck-mining stories

This space records the present (and indeed new present)- from the impacts of waste, to the transformative possibilities of bruck as a new infrastructural raison d'être.





Future stories

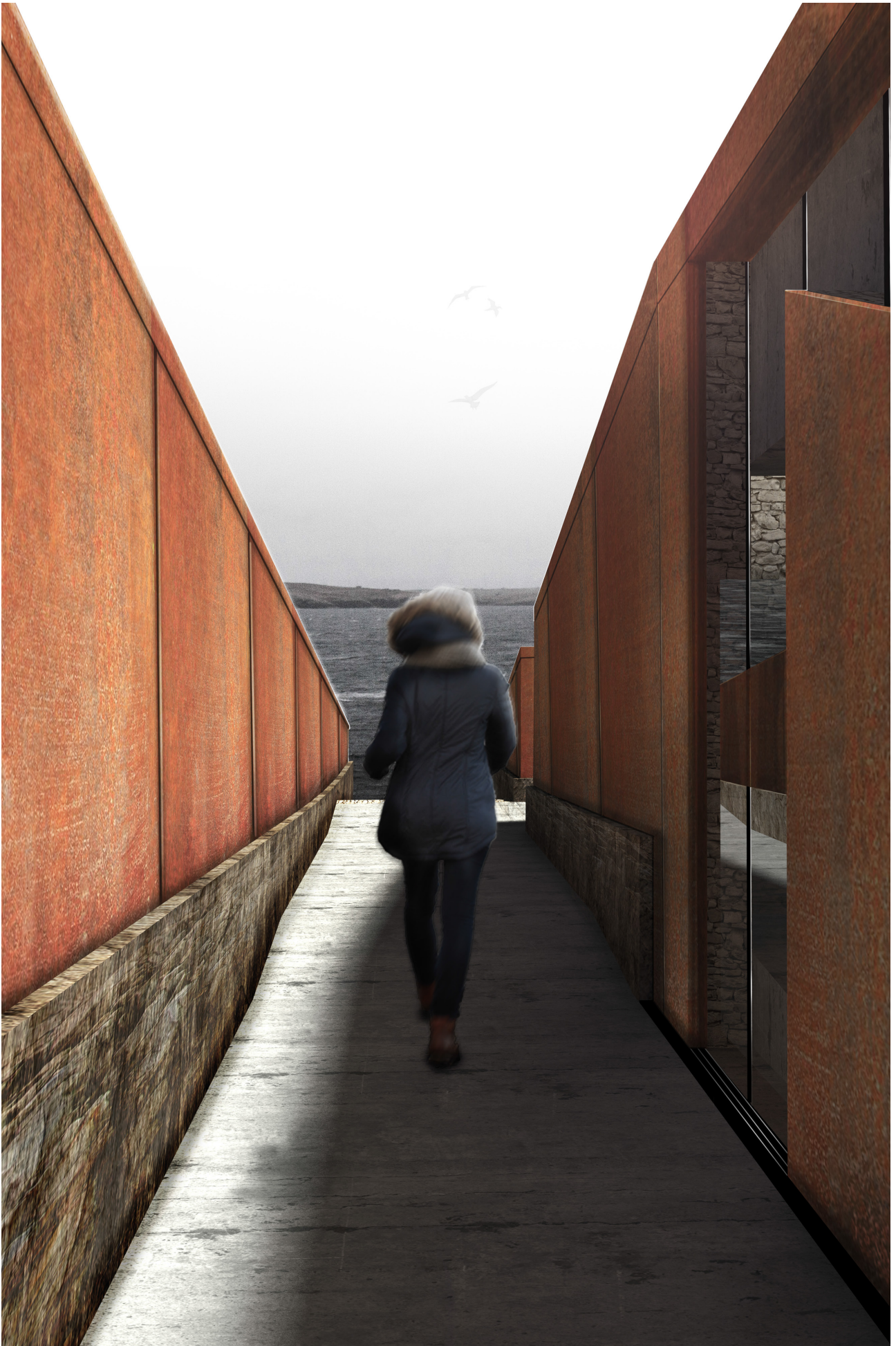
This space transforms from cinema/lecture room to exhibition space of craft metal work for display and sale. It also exhibits a view to the sea through a long pipe- seeing stories like an electron.





Cut

Departure from each space returns the individual each time to the elements, with gradual progression down towards the sea.



Making stories

Craft metal work from recycled metal (material bruck), within a wartime ruin (architectural bruck), thus bringing new stories to the past ones. The space of conflict and memory becomes a space of creation and the future. These material stories have the potential to travel beyond Flotta's shores, adorning the body.





We're still here

Descending to the beach juxtaposes the vastness and remoteness of the sea with the collection of human stories from which we've just emerged. The project is passed regularly by tankers, and also by the ferry sailing between mainland Scotland and Orkney. The monumental lighting of the project replaces the glow of the oil terminal and serves as a new Orcadian landmark. Marking the remote territory, it says—we're still here.





