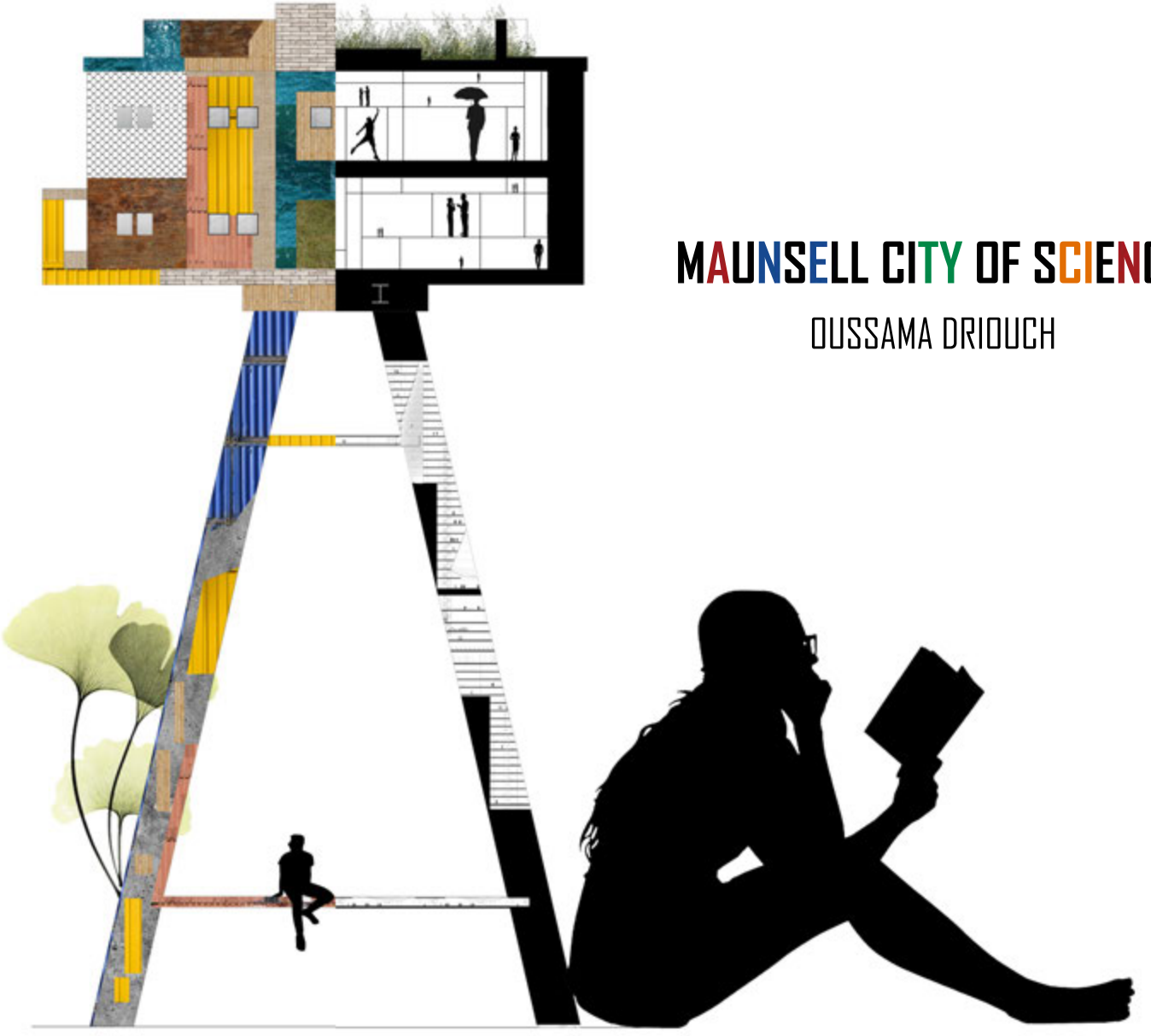
Masterthesis Architektur

Prof. Michel Melenhorst / Prof. Manfred Lux

TH OWL TECHNISCHE HOCHSCHULE OSTWESTFALEN-LIPPE UNIVERSITY OF APPLIED SCIENCES AND ARTS



MAUNSELL CITY OF SCIENCE

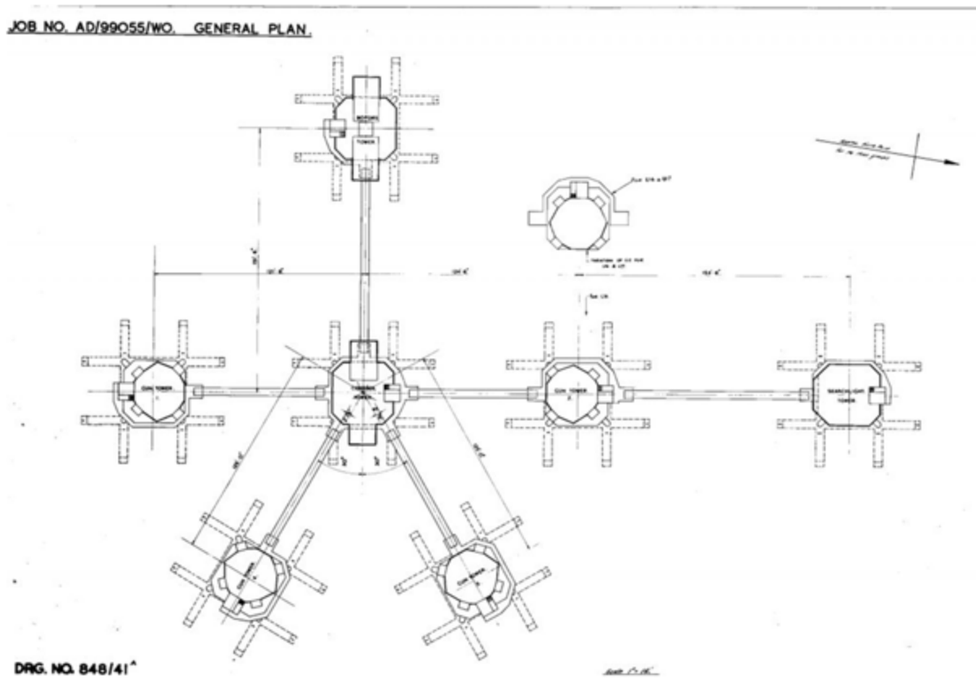
OUSSAMA DRIOUCH

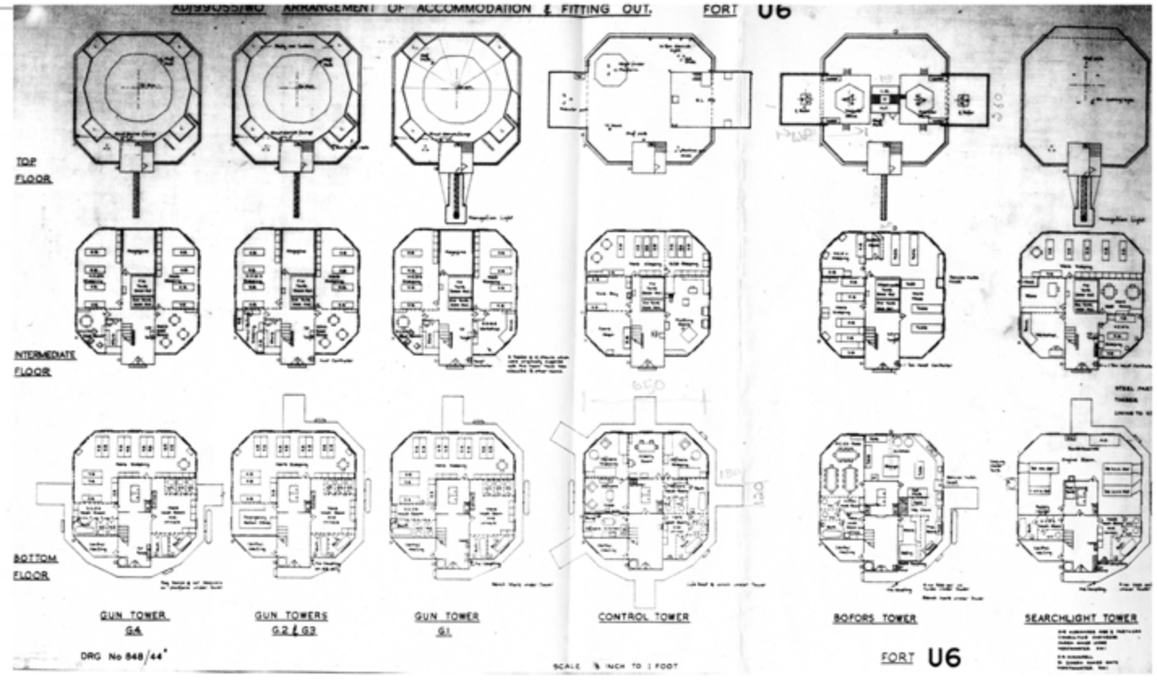
All over Europe, there are monuments to remember World War II, and miles off the coast of the England, there's one that not many know about.
During World War II, London's ports were vulnerable to German bombings by air and by sea. The answer was to build forts out at sea so that foreign planes and boats could be destroyed before reaching the coastline. **Guy Maunsell**, a civil engineer in England, designed forts that could be built on land and then installed out at sea in 1942.
The Army forts consisted of seven towers connected by steel walkways. By the 1950s, the forts were abandoned, but they were given a second life in the '60s as radio head quarters. While some of the forts were destroyed by storms, others still stand in ruin today, as a memorial to World War II.

https://www.insider.com/tour-abandoned-world-war-ii-maunsell-sea-forts/, Frank Olito Dec 16, 2019

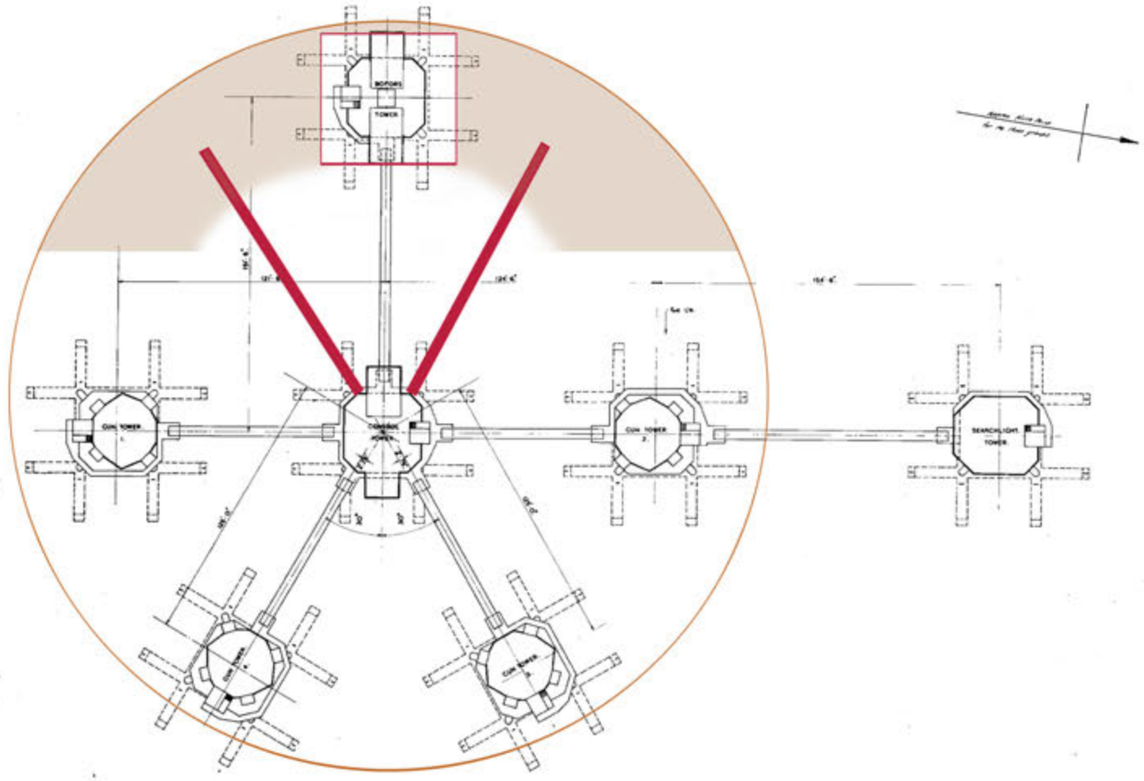
The Army forts consisted of seven towers connected by steel walkways. Each of the towers stood on four concrete legs. The buildings on top of these legs were made of steel, had two floors, and measured 36 feet by 36 feet. Each of these forts housed weaponry and sleeping accommodations for the soldiers (265 men living on each fort). Although you can't go into the forts anymore, it's clear these buildings are in varying states of decay. The walkways that once connected the towers are now dilapidated. Some parts of the steel forts are completely overrun with rust.

https://www.insider.com/tour-abandoned-world-war-ii-maunsell-sea-forts/, Frank Olito Dec 16, 2019

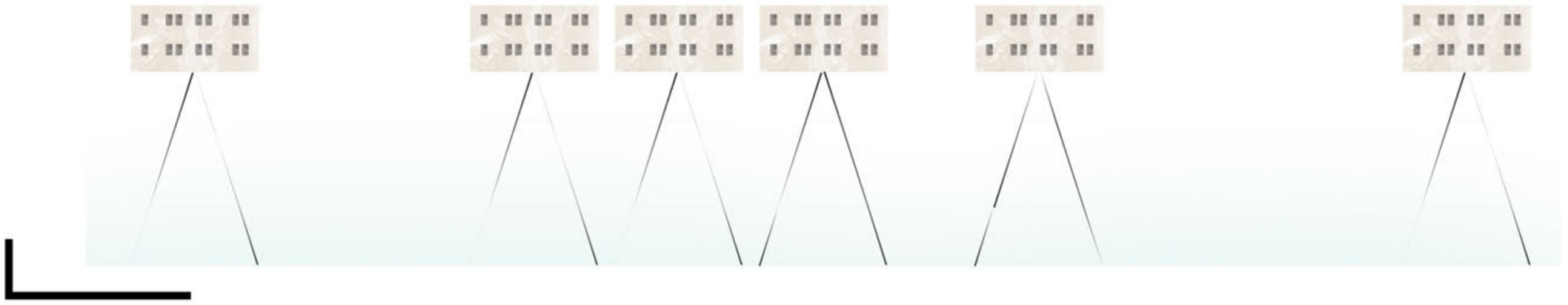




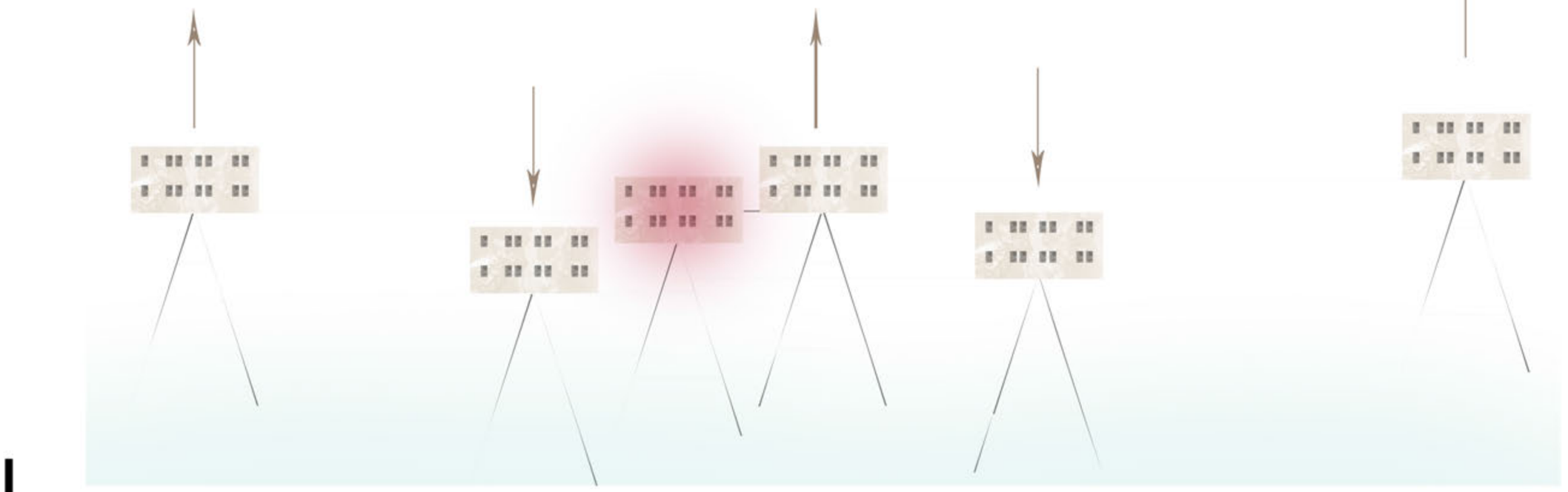
The way Maunsell had decided to present his project, leaves an abstract margin to understand what was really the project for him. Was it the unit (The tower) ? or rather all the towers together? A question which I have decided to explore through this architectural research.



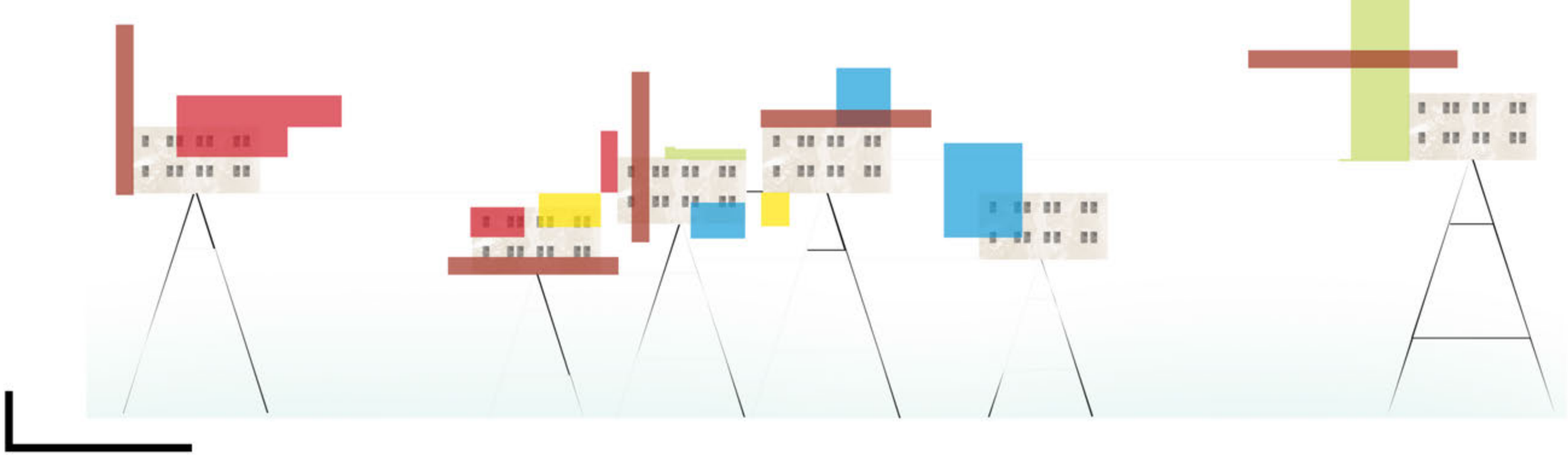
To find answers for my questions, I have decided to back Maunsell concept and to develop it so I can figure out what was his concrete intentions in this project
The first step to develop Maunsell ideas was to materialize the connections between the towers according to the axes he defined.
Defining an entrance was highly needed to proceed with the design of the project, which will be in form of a Arch platform.
The tower that belongs to this platform will be maintained in its original form and be reused as receiving building, which conatins an information point, museum, Cafe...



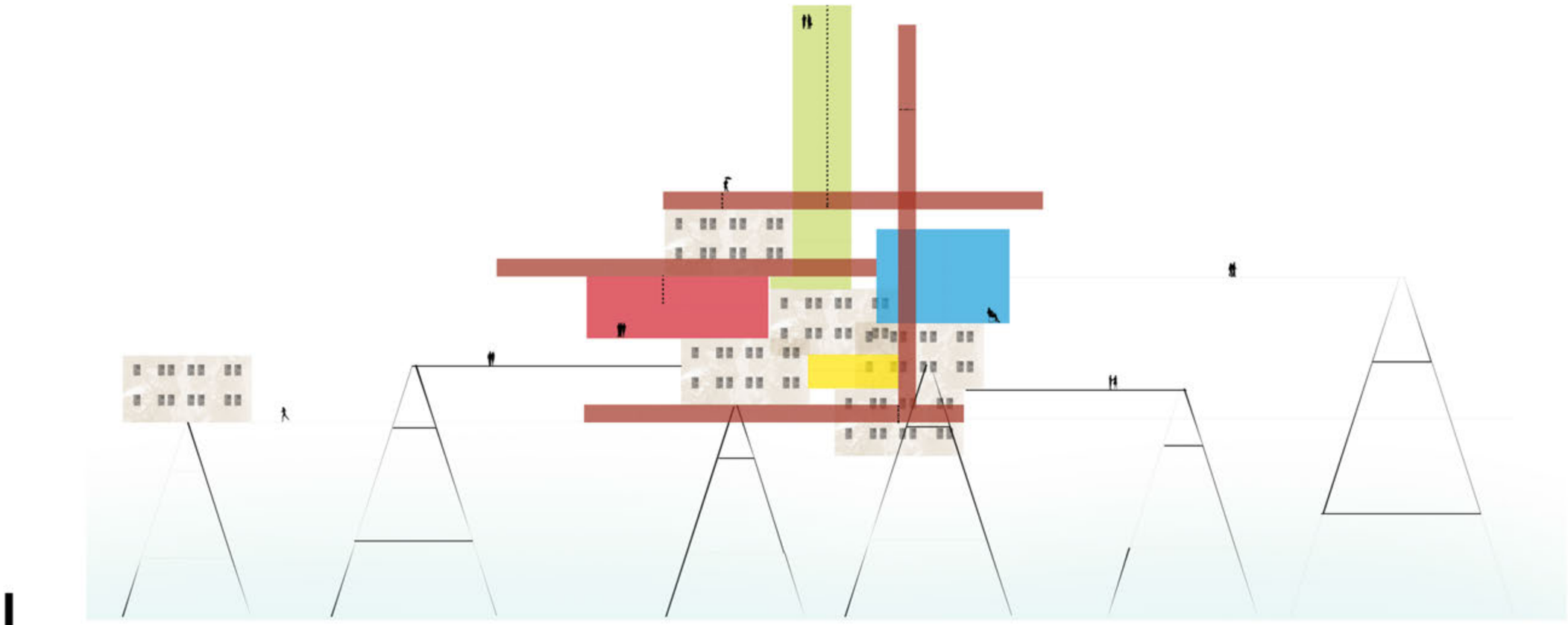
The concept is to further devolop Maunsell concept, by bring all the parts of Maunsell Forts together with concrete physical connections.



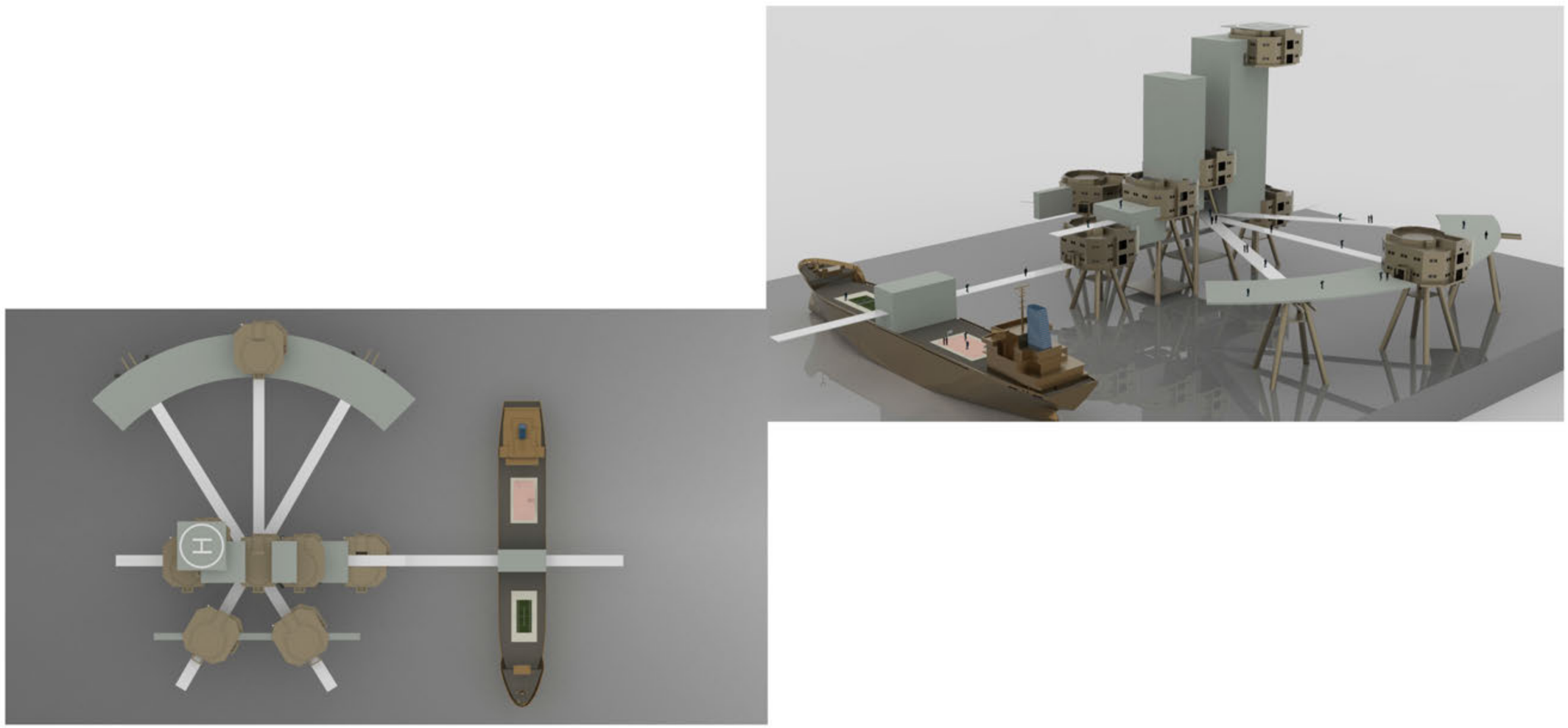
With the exception of two units all units will be played with in changing their position, and placing every unit at a different altitude.



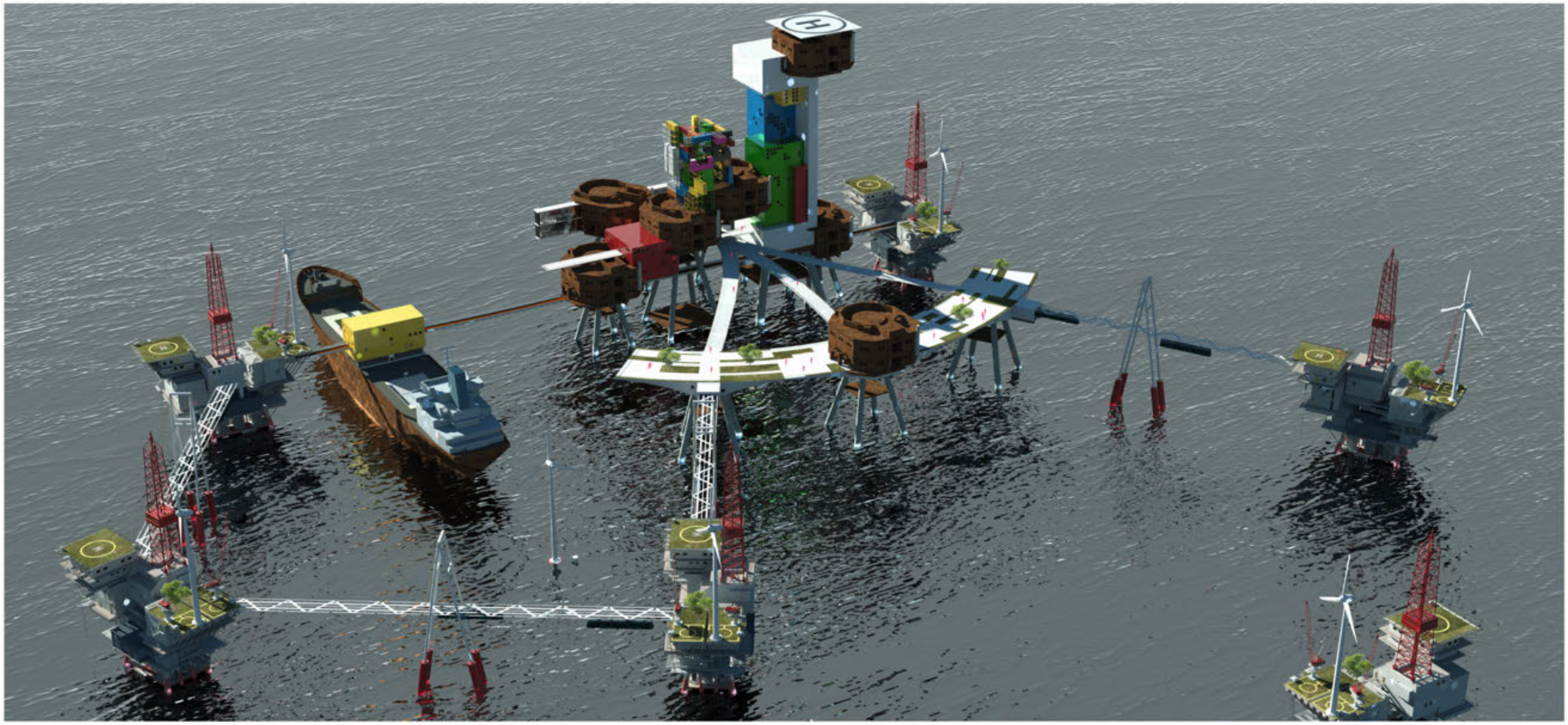
The connections between the towers which Maunsell left abstract, and didn't represent them physically, will be represented by plug-ins forms, that will be attached to each of the towers.



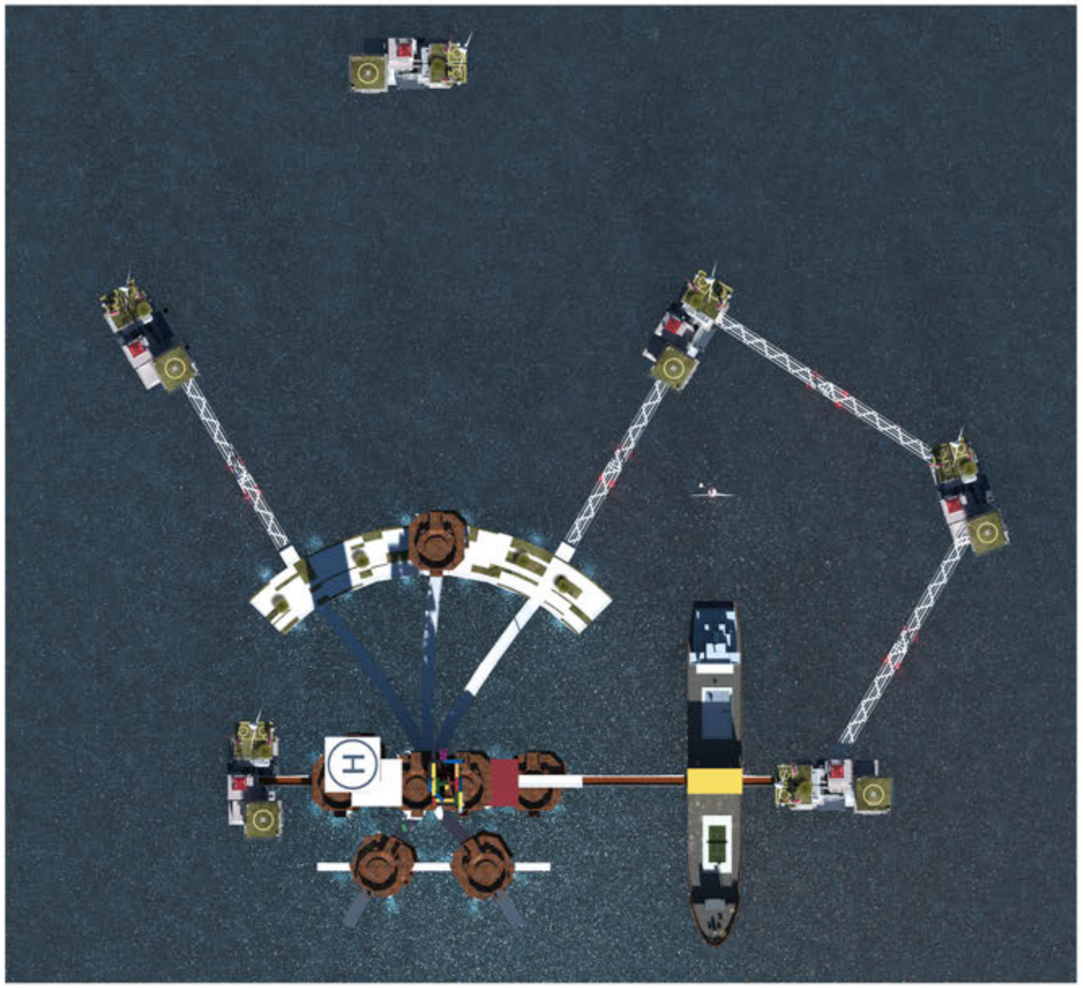
Bringing all the towers with their attached plug-ins together will allow us to create a real city, that will hosts afterwards a new living community in the North sea !

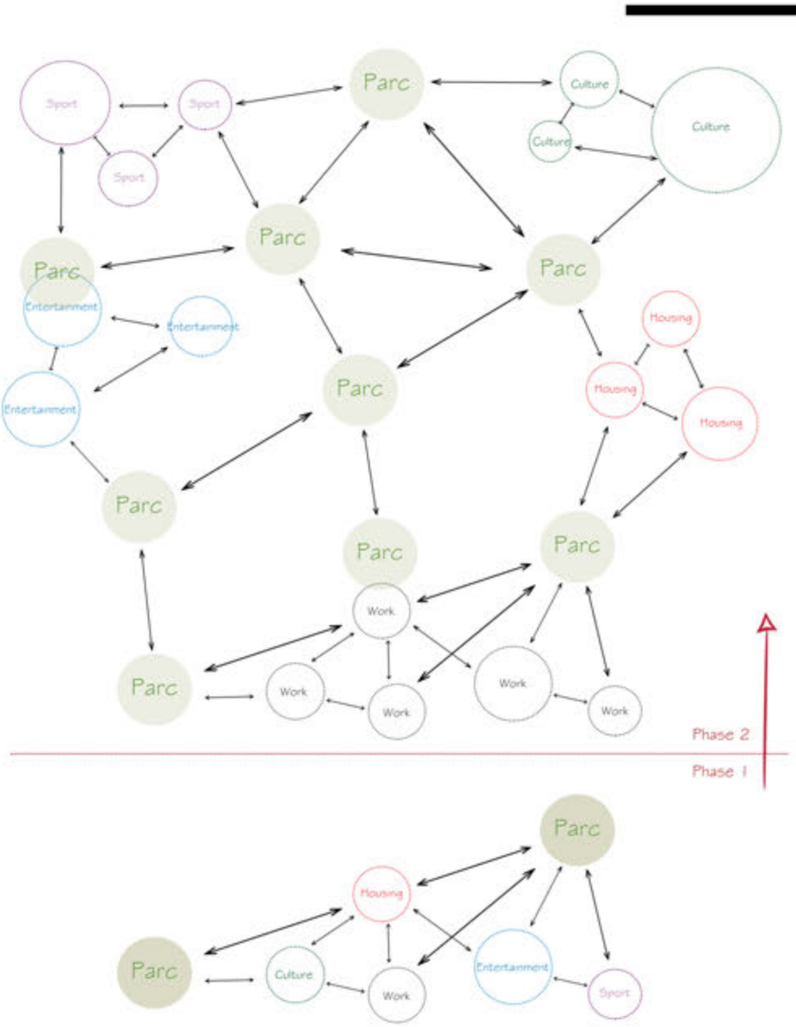


The intermediate phase of the design process was to define the forms and the scale of the plug-ins.
As Maunsell city stands for reusing the abandoned strcutures in the sea, an abandoned ship at the coasts of South Africa was brought to the site to be a part of the project.

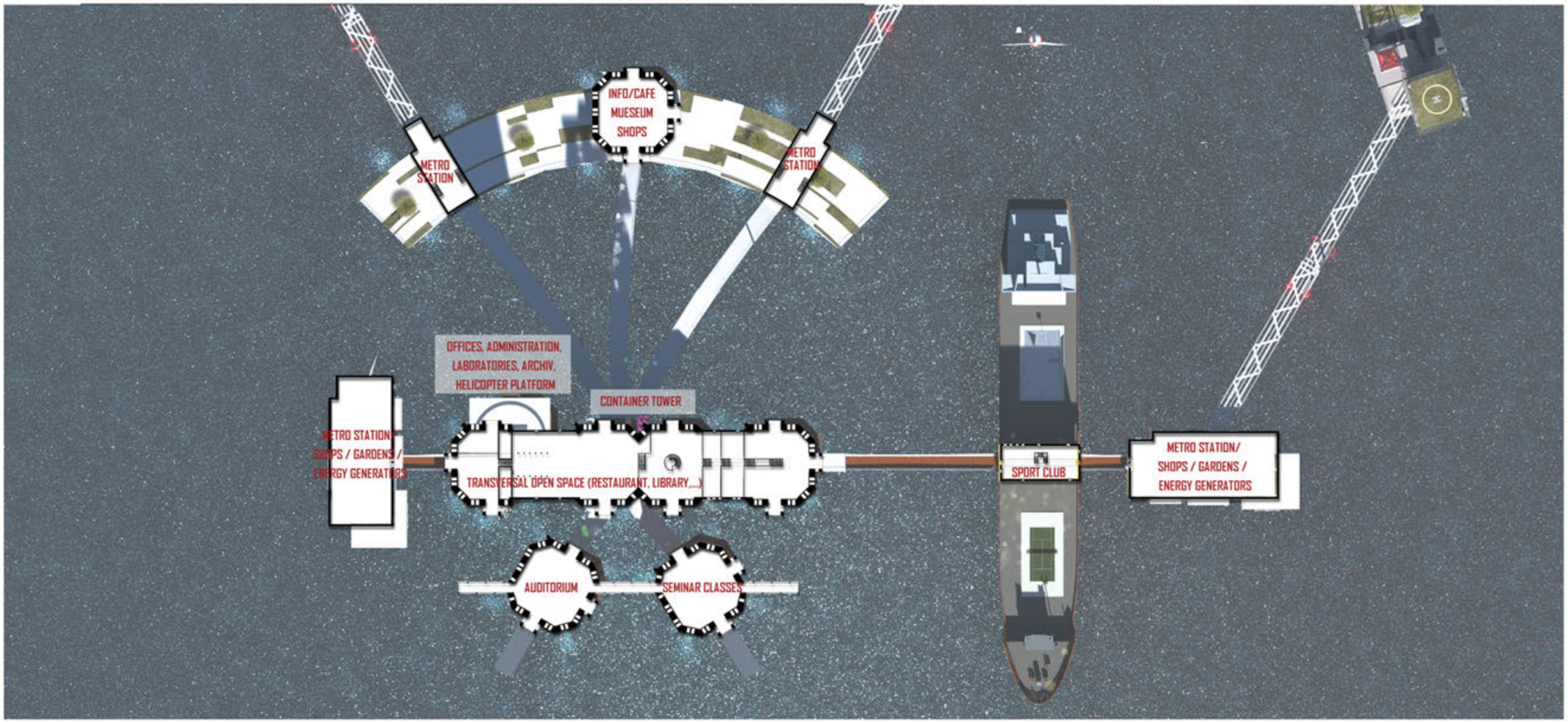


To continue with the re-use primciple of the city, abandoned oil rigs will be brought from all around the world to permit the extension of the city.
Maunsell city of science will be dedicated for scientific researchers providing them a place of work, living place, sport, culture, entertainment, etc...

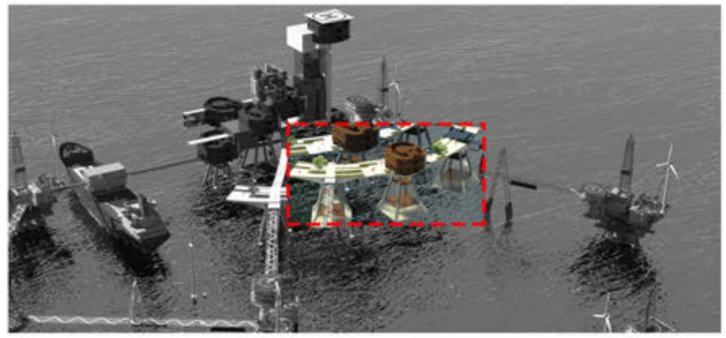




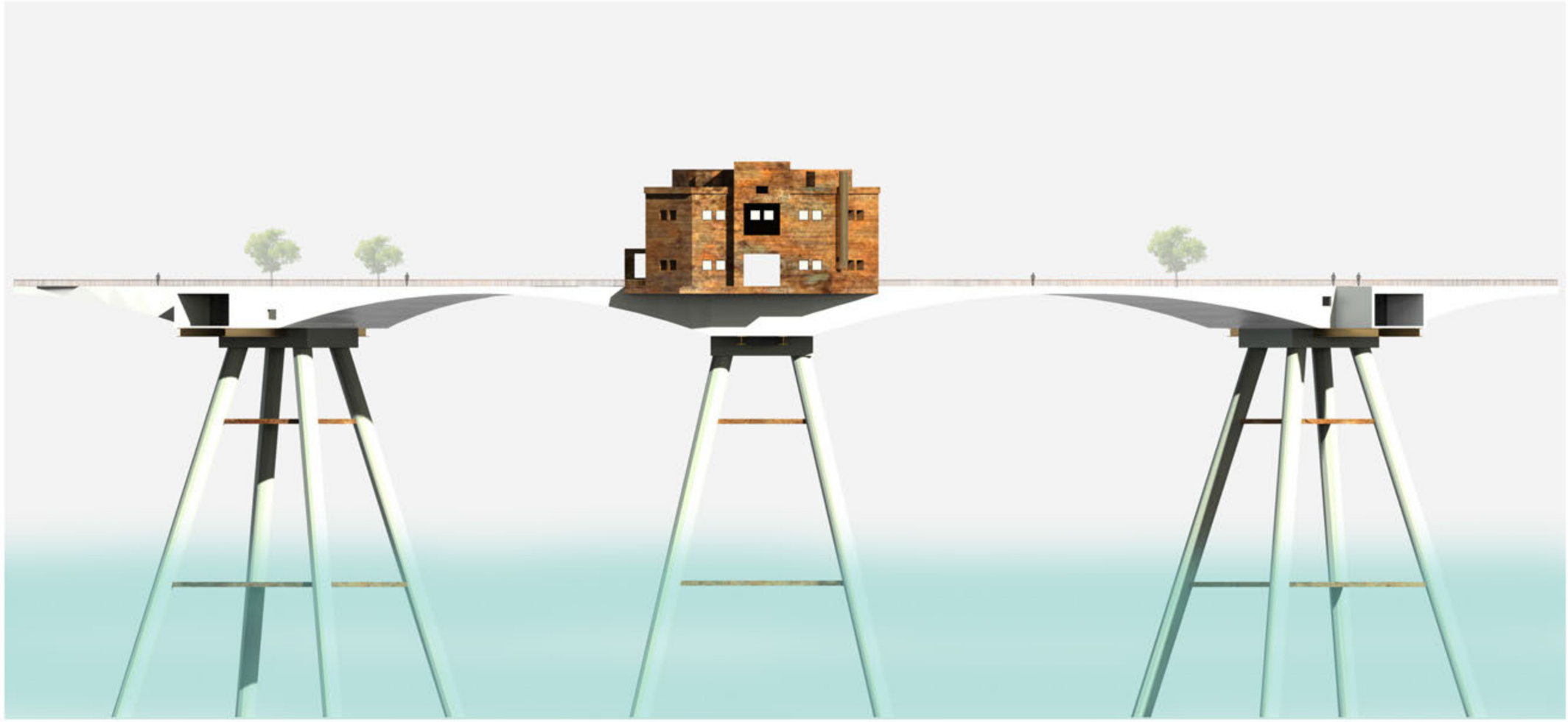
The top view makes the futuristic vision for the extension of the city clear.
The oil rigs, in form of vertical parcs, will enhance the connection between the different parts of the city in the future.



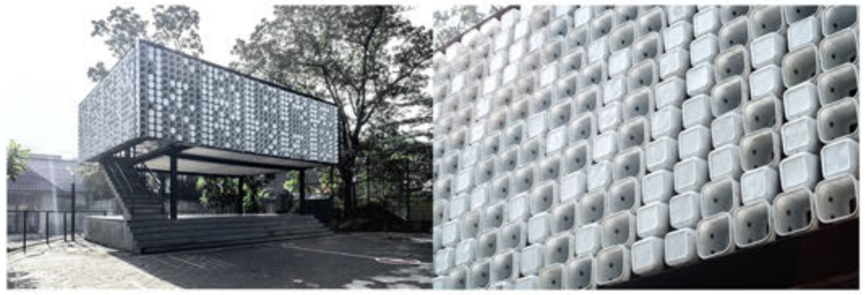
The program this city is proposing is very diversified, not only to fulfill the needs of the scientific community for a period of six months to one year or even beyond, but also to target other kinds of communities in the future and become a real city.



The entrance platform represents the biggest horizontal green parc in the city, and the starting point for a very dynamic journey.
This open space will be the meeting point between the scientists community and the visitnig public.
The museum in form of a tower maintained in its original form and materials is a glimpse of the history and identity of the site.



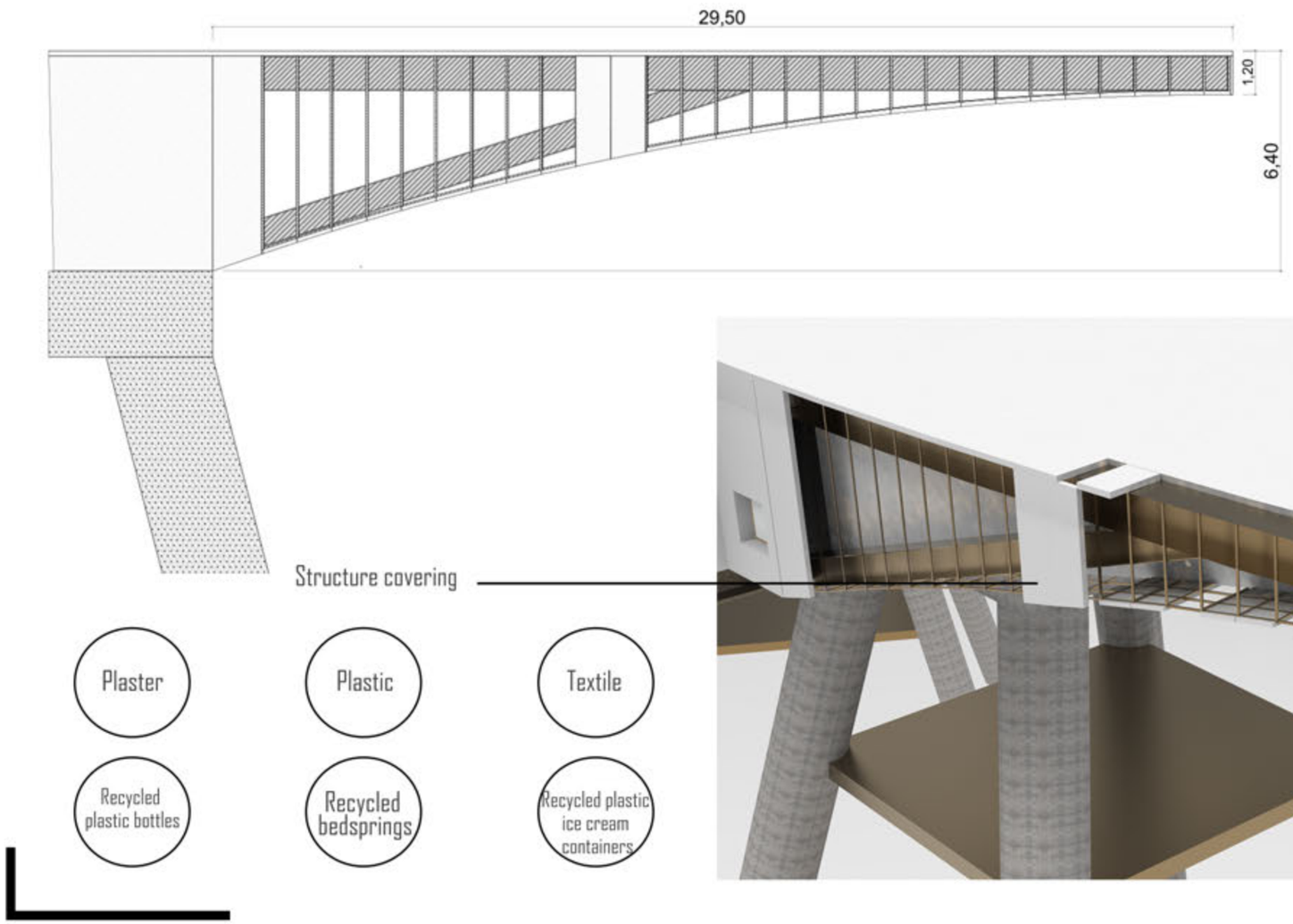
The wavy form of the platform, and besides its structural role to allow cantilivers of 30m, gives a symbolic image of a light form which keeps floating on the water.

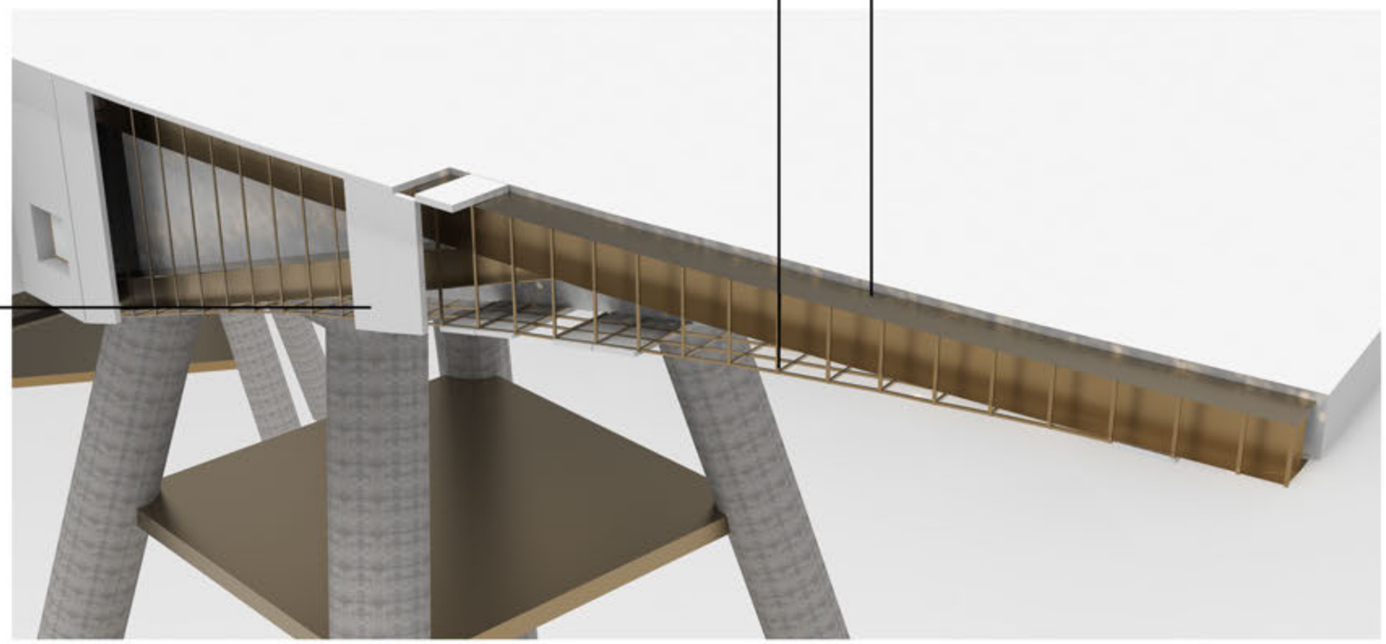


Bima Microlibrary / SHAU Bandung

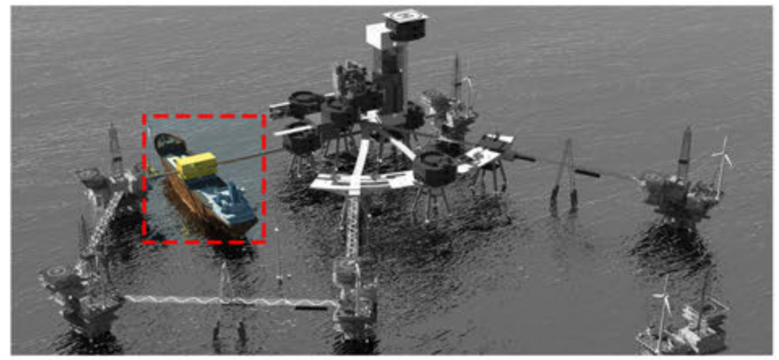
Luxury Pavilion / Fahed + Architects

Head in the Clouds Pavilion / STUDIOKCA

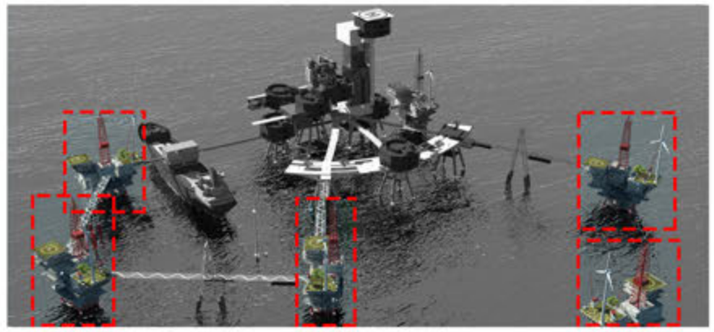


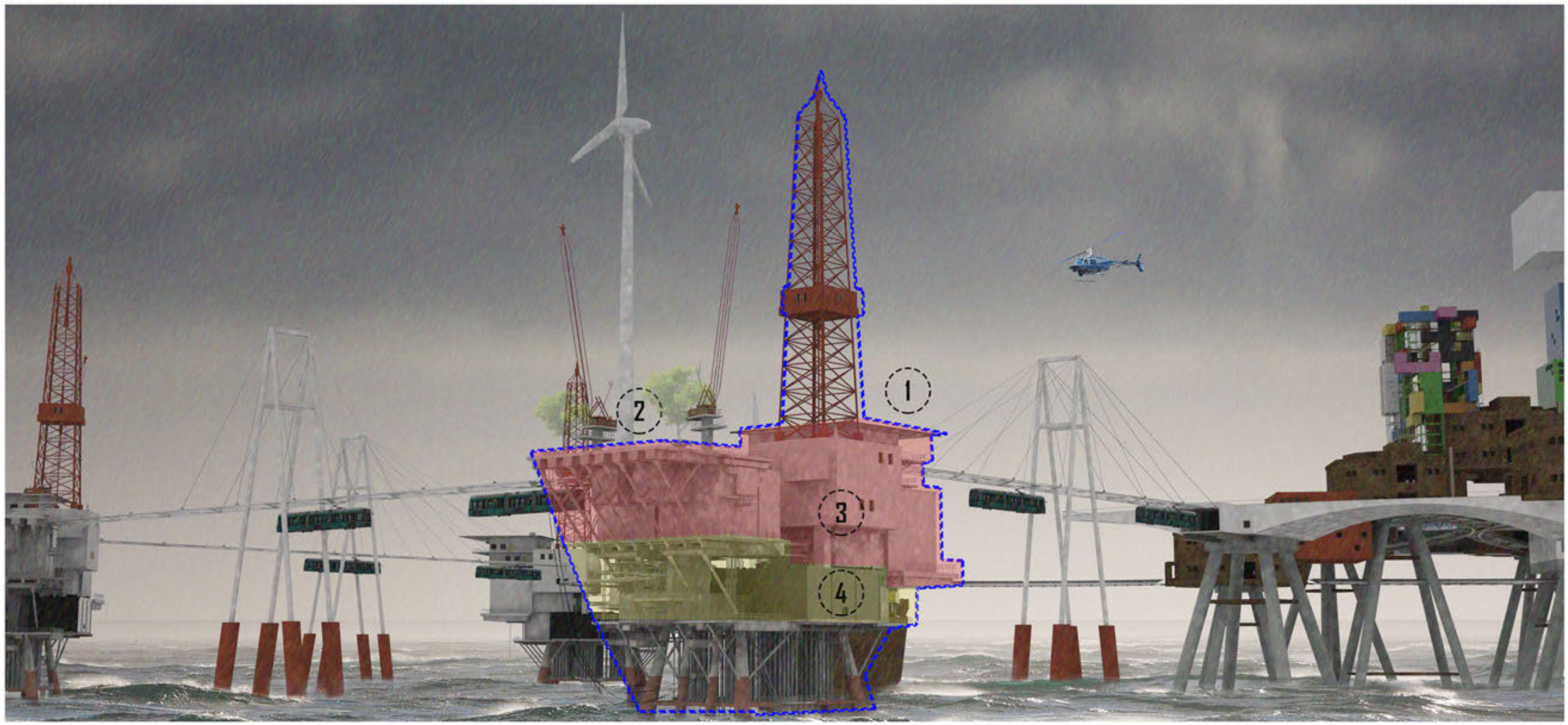


In order to reach cantilivers of 30 m, I have used a fully metallic structure, covered with recycled material. For those two factors were extremely important for the final choice, which are the image this material gives, including the form and the colour, and the weight so it won''t be an overweight for the structure



A sunny day is a good day to practice basketball !





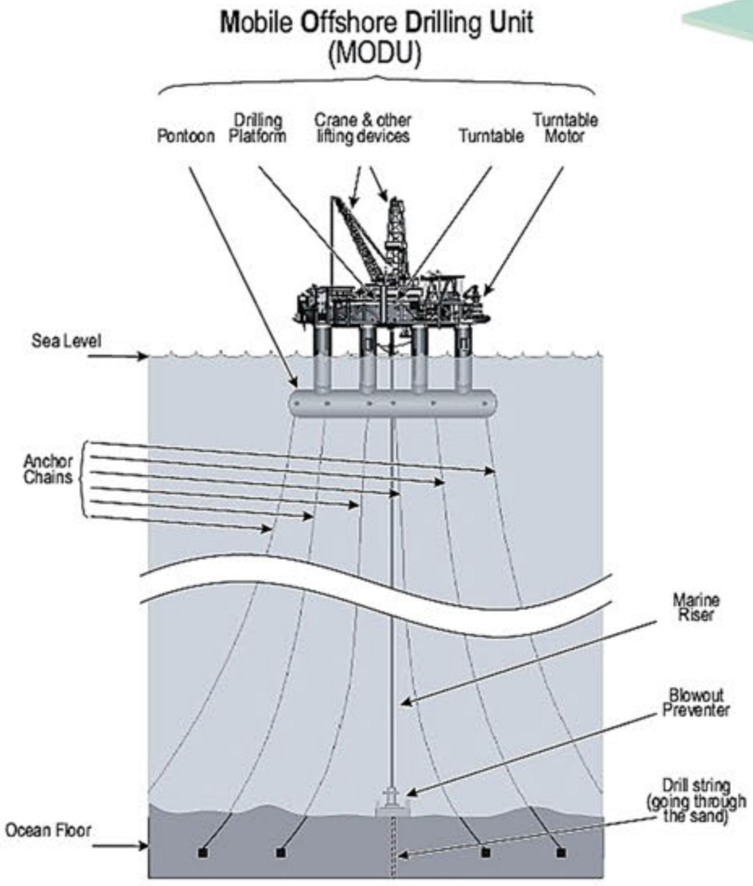
The reuse of the oil rigs consists of attributing 4 new functions to those structure :

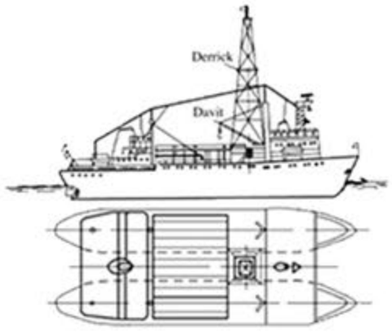
1- Helicopter platform (private and fast transport)

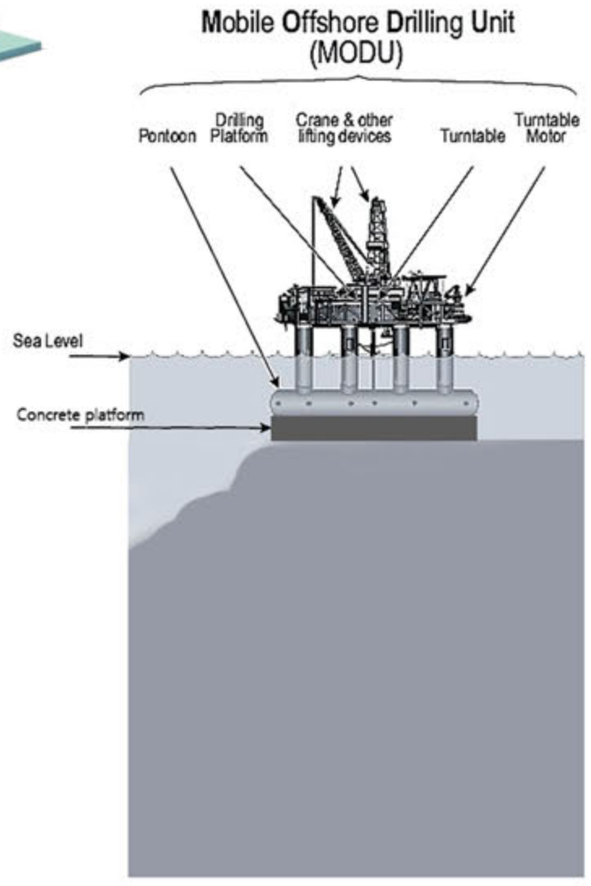
2- Open garden and a host strcuture for the wind turbines

3 - Metro station (Public transport) and small shops

4- Energy generators



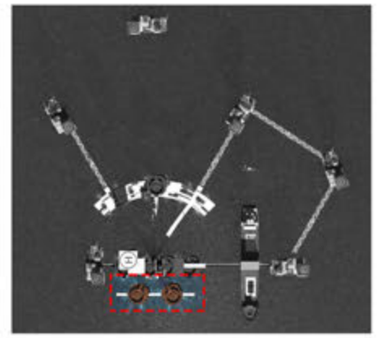


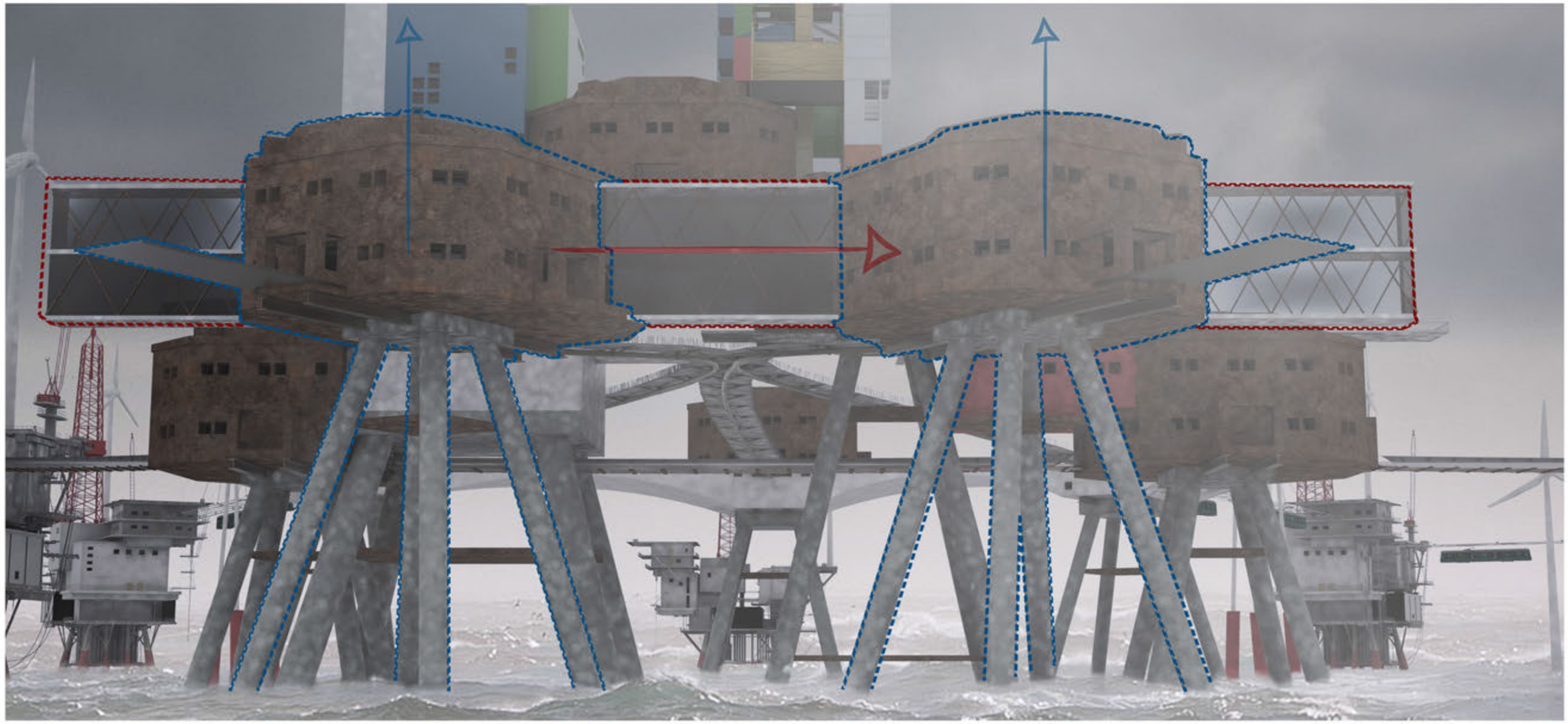


Original location: Depth : 500-3000 m

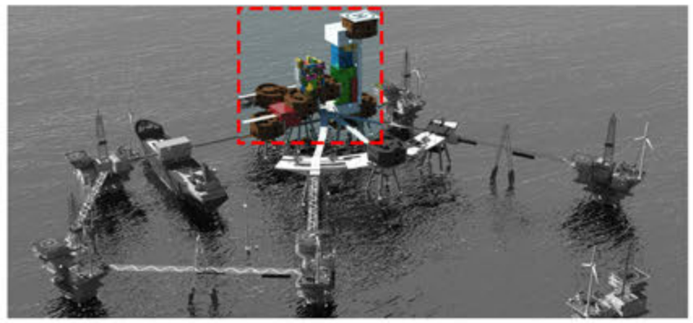
Nord Sea: Depth : 24 m

The oil rigs will be moved to the site with ships as the diagram eplains, then fixed to a concrete platform prepared in the new location, which will keep the strcuture fixed.

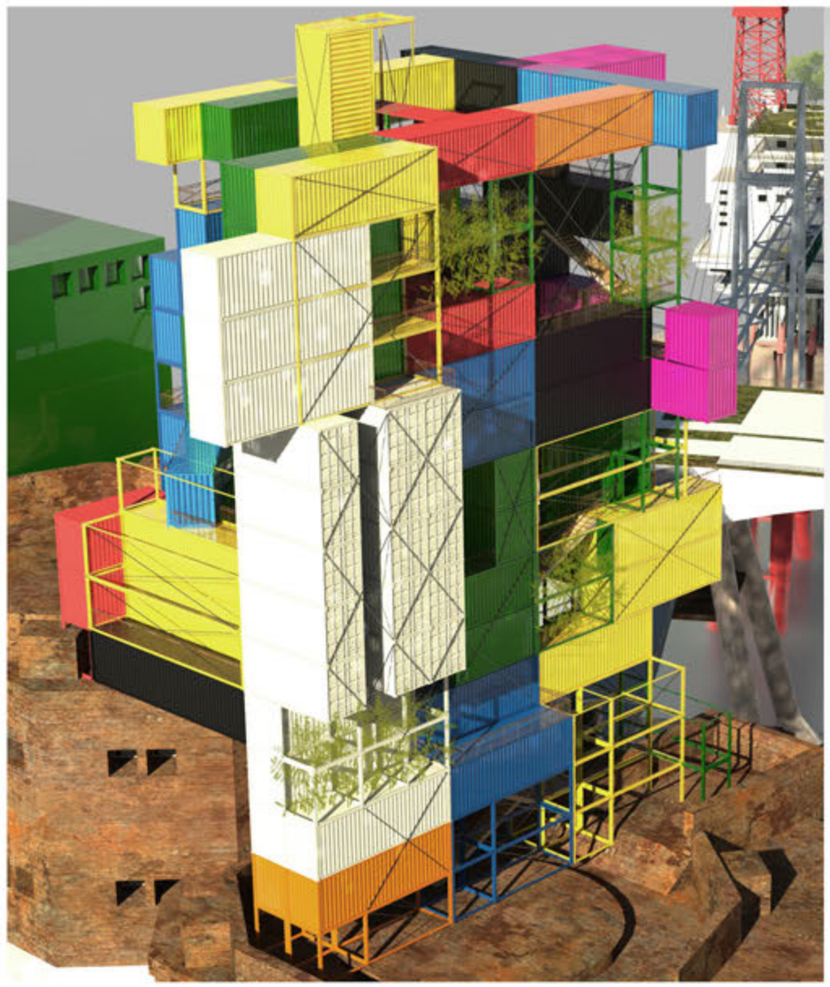




Auditorium and seminar rooms occupy two towers connected by a transversal form. This space is relatively separated from the main space where all the forms are gathering, to assure a comfortable isolated space to host the conferences and the seminar classes.

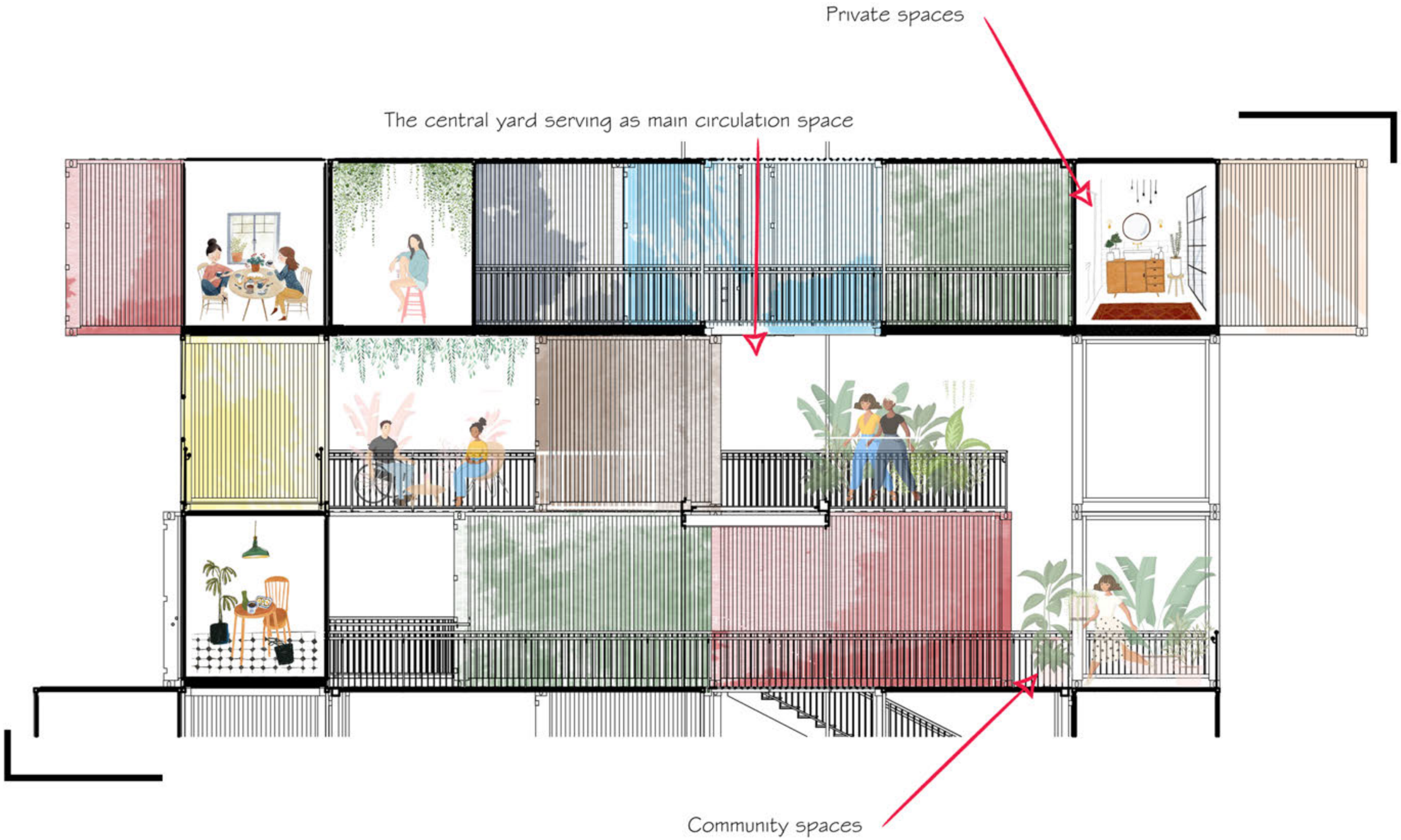


The Science city center, where all the forms are gathering, consists of two towers, one hosts the administration offices and the laboratories, while the other is the living units for the habitants. Through those towers goes a transversal public space assuring a global connection between all the spaces, where we find a restaurant, library, etc.



Freitag Flagship Store spillmann echsle architekten eth sia

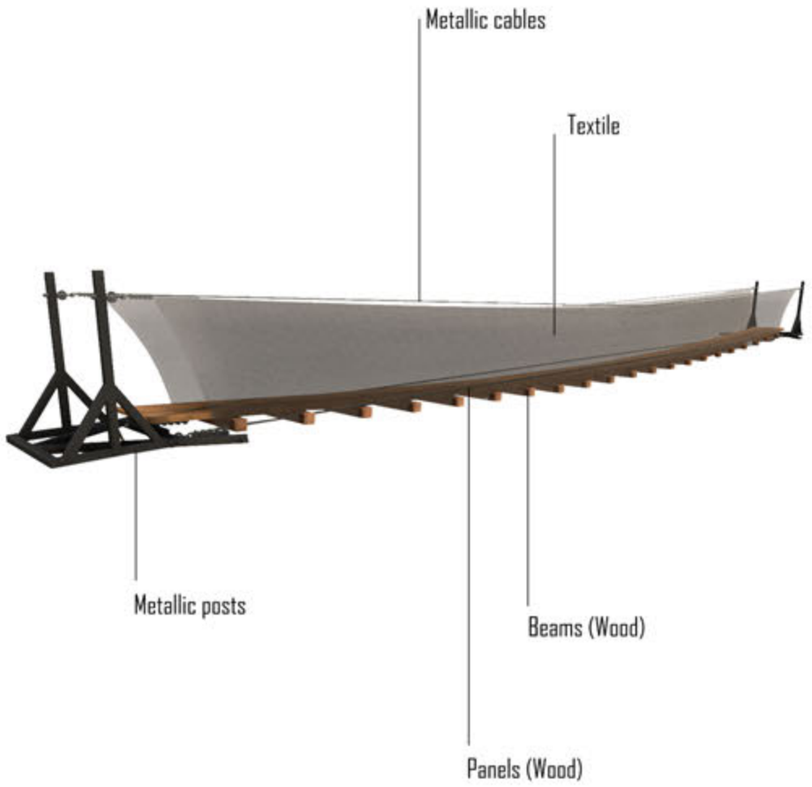
The container tower will be composed ecusively from the containers, that will be at the same time the living units and the structure.
The diagram above shows how containers of nine meters long were used as a structure that reachs fourteen levels, where the four first levels are mainly used as a structure basis which will be slightly larger than the rest.
The Freitag Store is a good example to show how this structure can hold together with few reinforcements (The crosses).
The volume defragmentation will allow the north wind currents to go through, avoiding that way any negative impacts on the stability of the struture system.

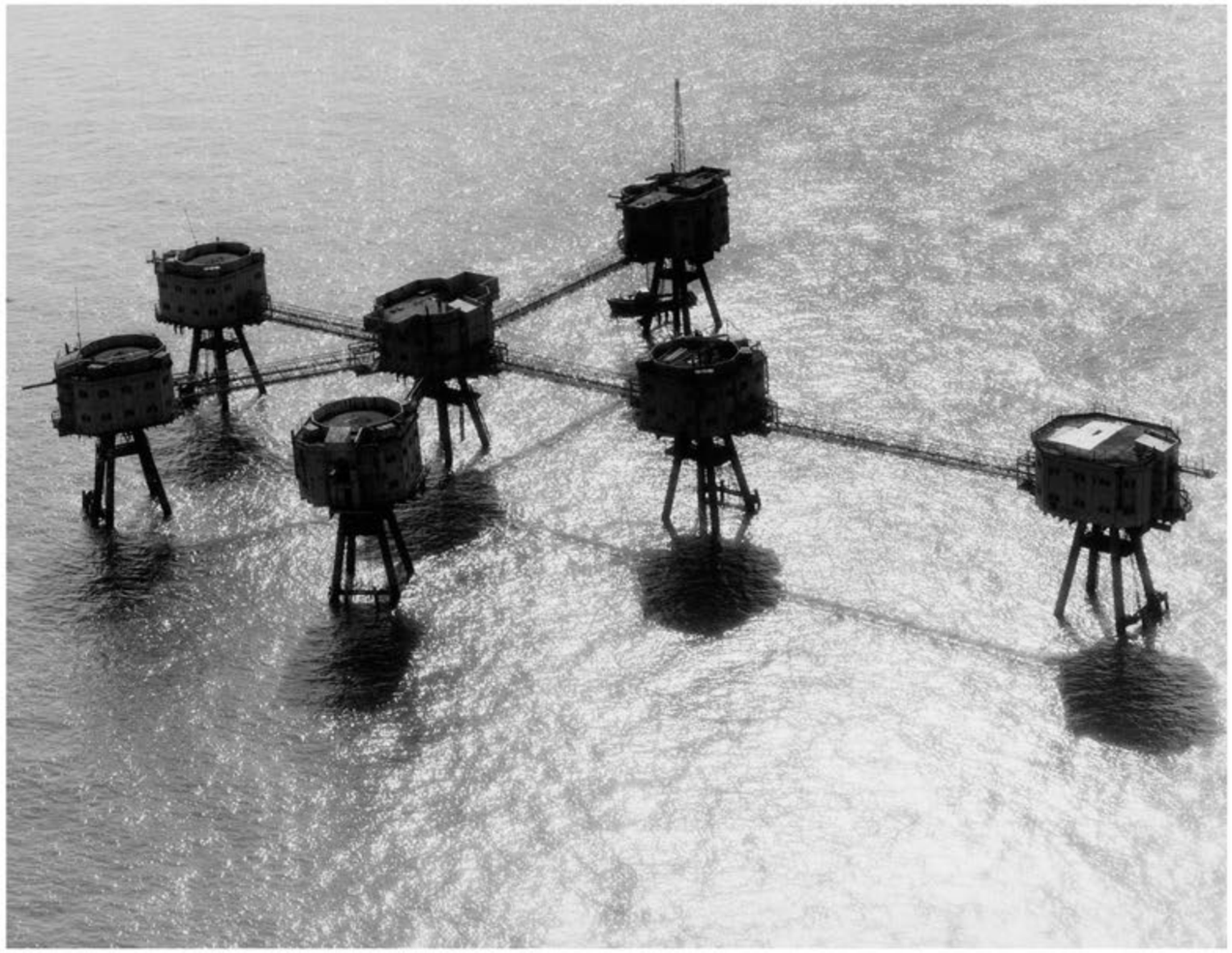


The living mood we are proposing is based on a high quality of life in a minimal architectural space, encouraging the social life and the private spaces to coexist in the same space.

Charles Kuonen Suspension Bridge, Randa, Switzerland : the longest hanging bridge for pedestrian use in the world (494 m)

Geierlay, Germany's longest suspension bridge, 360m long





For the walkways in between, we have decided to keep the historical image of the original ones, but with more performant materials and structure, based mainly on metallic cables, and on textile on the sides to avoid creating visual obstacles which never belonged to the context.

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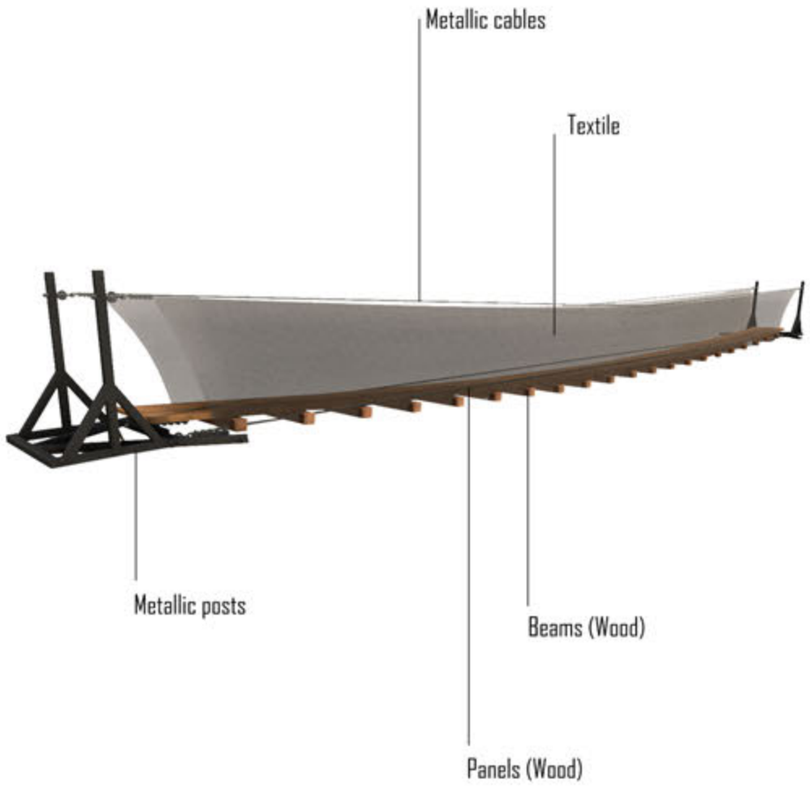

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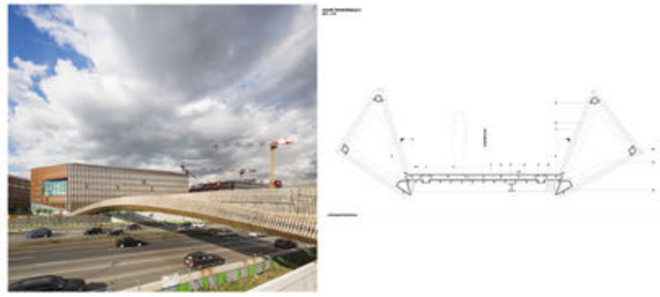
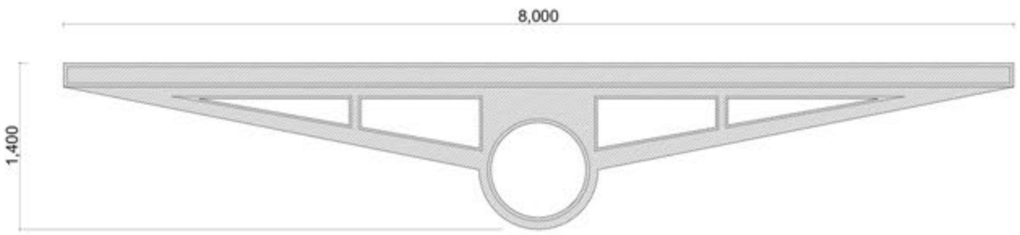
McDowell + Benedetti's Footbridge and Rail Station Underway in Terni (60 metre)



The Claude Bernard Overpass / OVVD Engineers Architects Designers (nearly 100 metres)

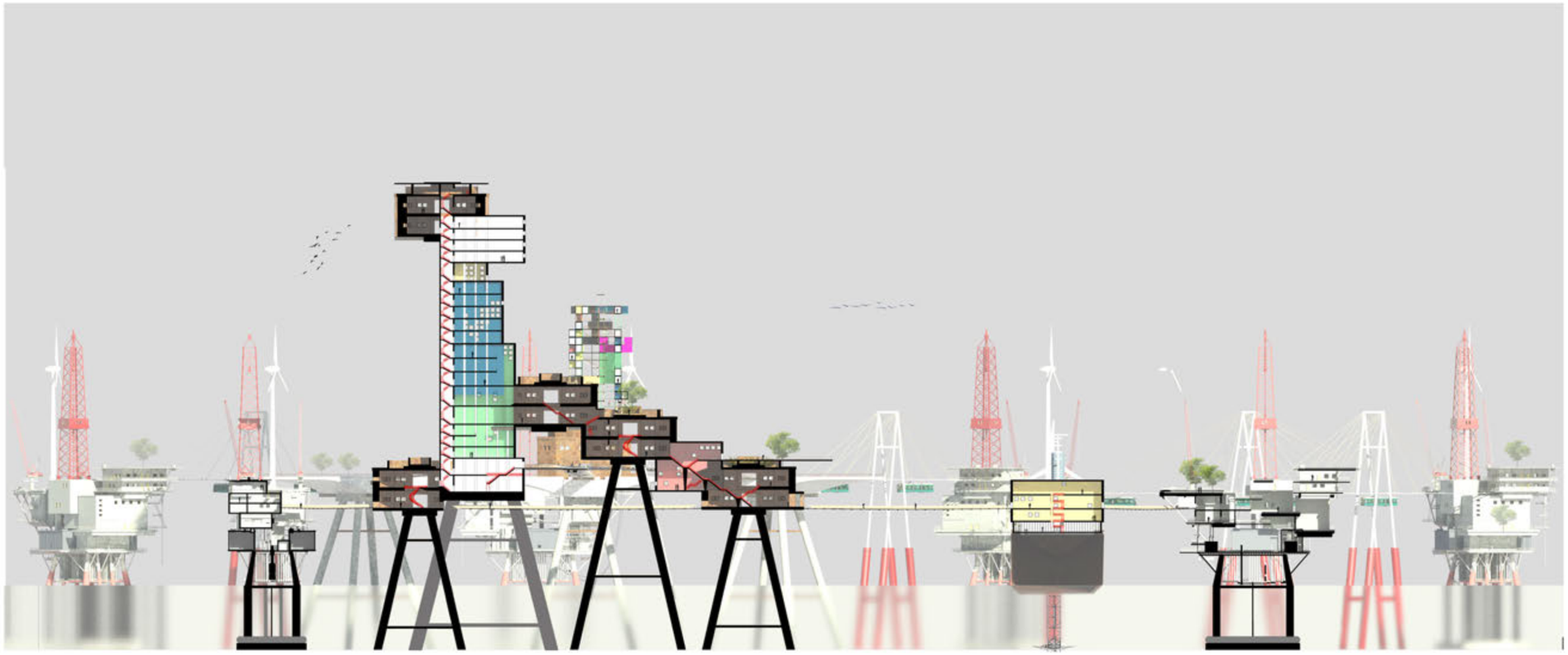
watsonarchitecture+design (30 meter)

Side view

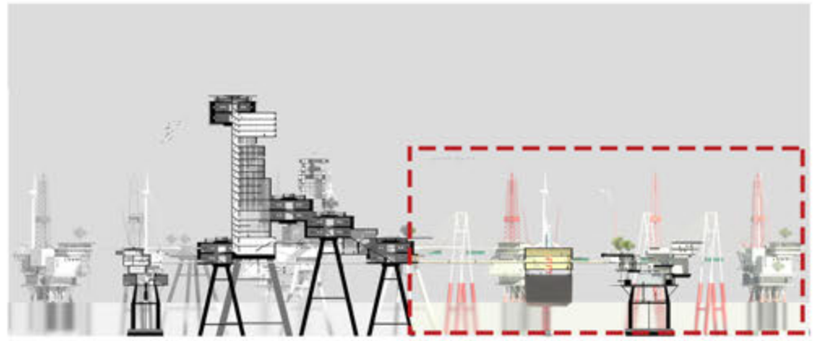


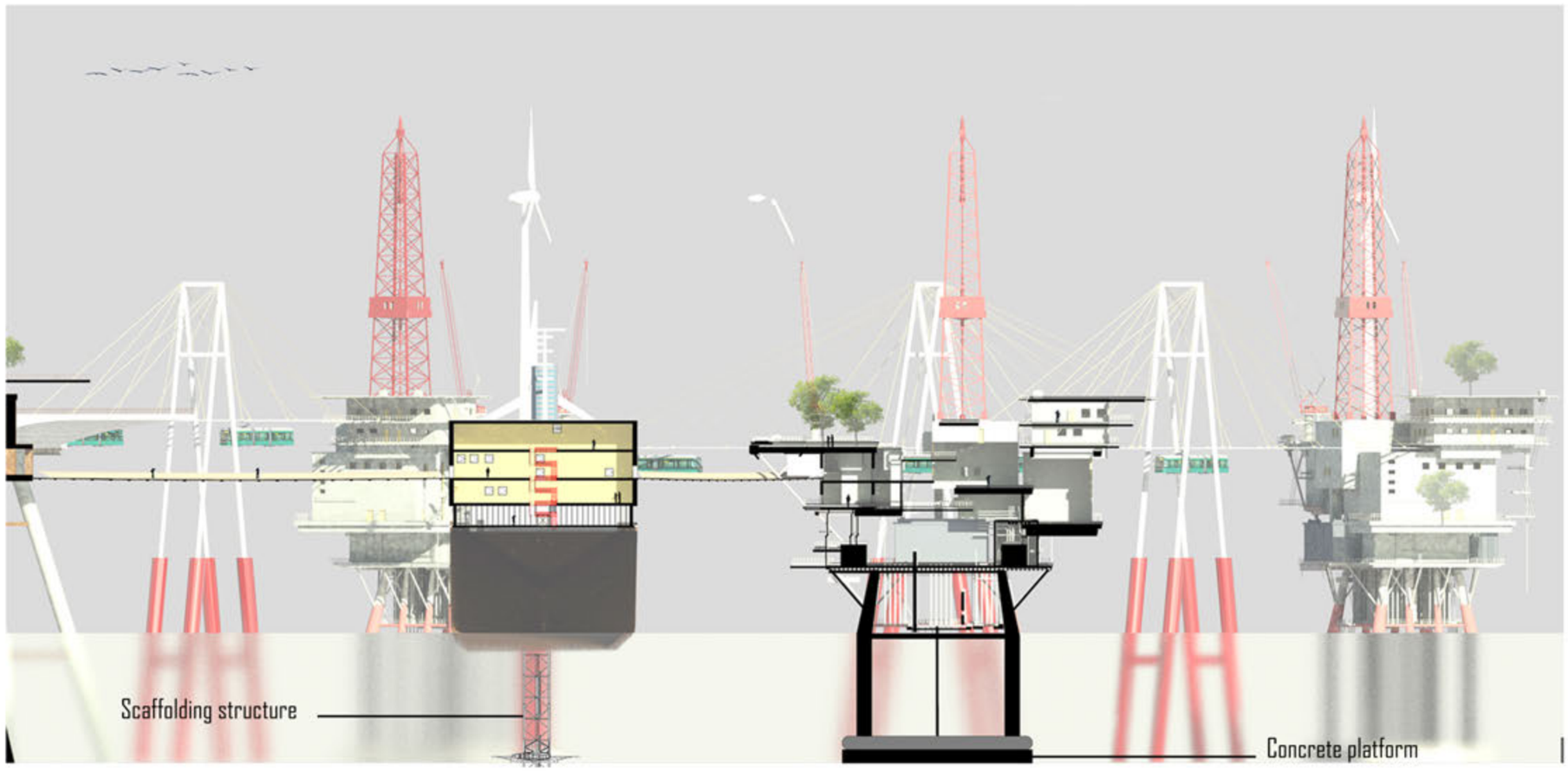
Metallic profile

The three main bridges leading from the entrance platform to the city center wwere designed as one platform, based on 3 pre-stressed metallic beams leaning on each other, to avoid having any kind of support at their intersection point. Metallic profils will be fixed on those beams to support the walkways made of prefabricated concrete elements. The platform go up smoothly to 4 meter high point where the beams meet, then goes down again to the starting hight.



The global section shows how all the different spaces and forms are connected to each other, and how the human scale proportions to the space could differ from one part to another.





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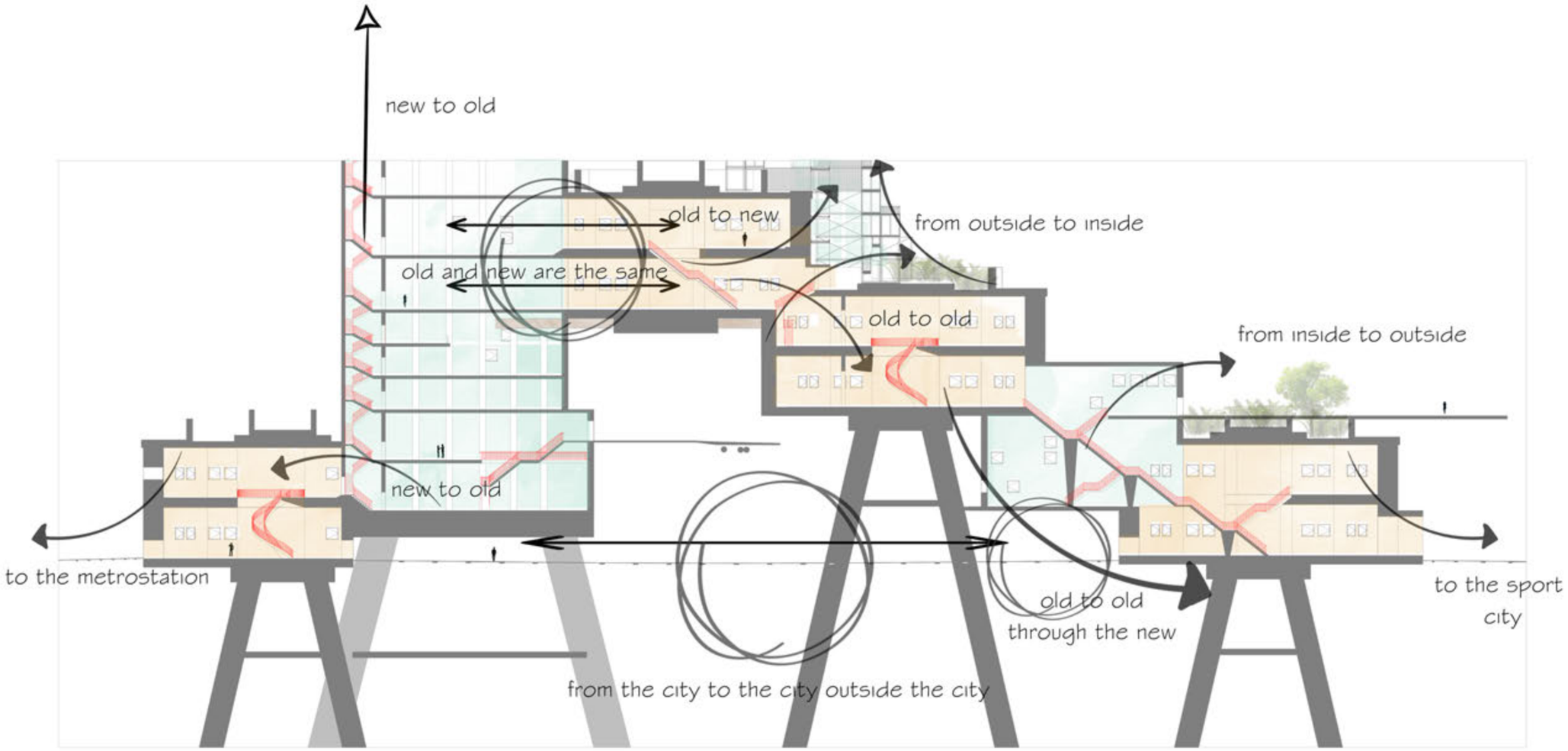

The transversal connection is based on three principles :

1- Blurring the boundaries between the old and the new.

2 -Blurring the boundarries between outside and inside.

3- A city shall provide options : there should be more than one way to go from point A to point B.

Maunsell Forts

The time dimension : From Maunsell Forts to Maunsell city of Science.
The journey of a city collecting its parts and taking shape within the time.

Gathering the Towers, two kept aside

The time dimension : From Maunsell Forts to Maunsell city of Science.
The journey of a city collecting its parts and taking shape within the time.

Adding the plug-ins, and the Platform

The time dimension : From Maunsell Forts to Maunsell city of Science.
The journey of a city collecting its parts and taking shape within the time.

Adding the towers left aside

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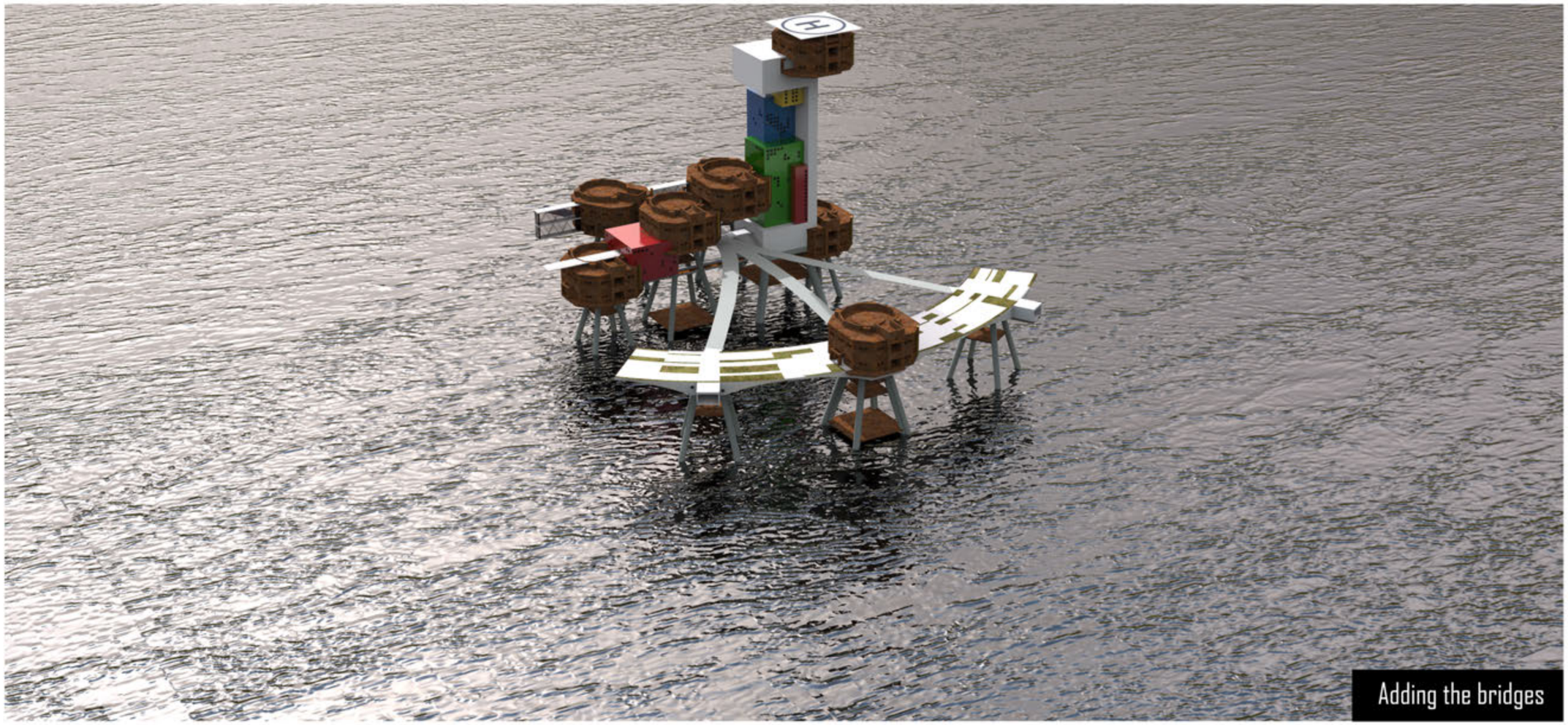

Adding the bridges

The time dimension : From Maunsell Forts to Maunsell city of Science.
The journey of a city collecting its parts and taking shape within the time.

Placing the containers : Living units

The time dimension : From Maunsell Forts to Maunsell city of Science.
The journey of a city collecting its parts and taking shape within the time.

Placing the ship

The time dimension : From Maunsell Forts to Maunsell city of Science.
The journey of a city collecting its parts and taking shape within the time.

Adding the sport club, and connection to the city

The time dimension : From Maunsell Forts to Maunsell city of Science.
The journey of a city collecting its parts and taking shape within the time.

Placing the oil rigs (vertical parcs)

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Placing the oil rigs (vertical parcs)

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Placing the oil rigs (vertical parcs)

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Adding the metro lines in between

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Placing the oil rigs (vertical parcs)

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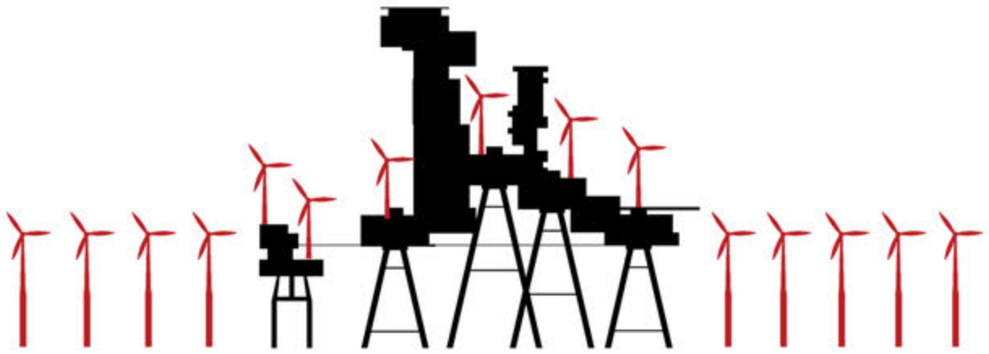
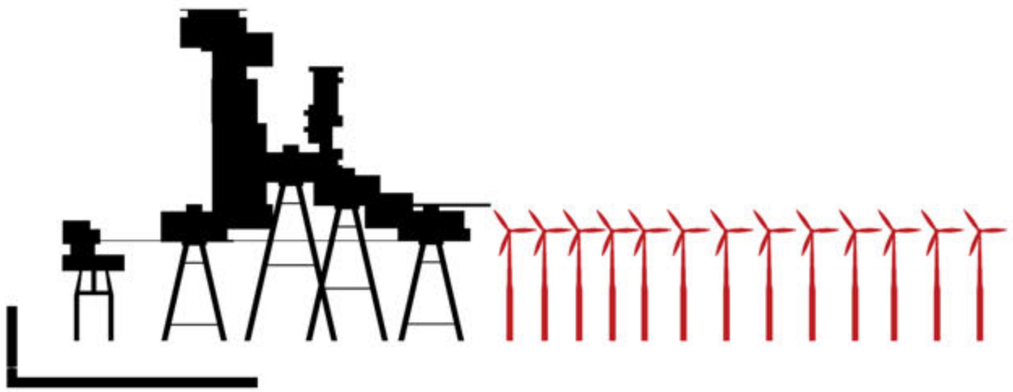
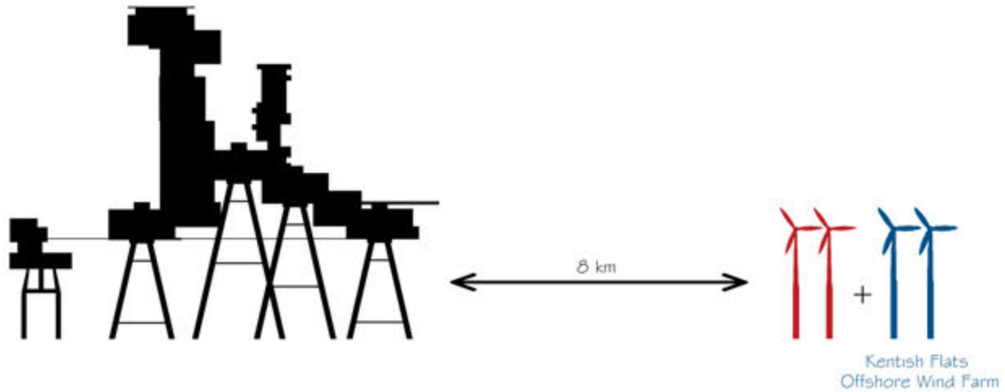
1 - Wind turbines all over the city



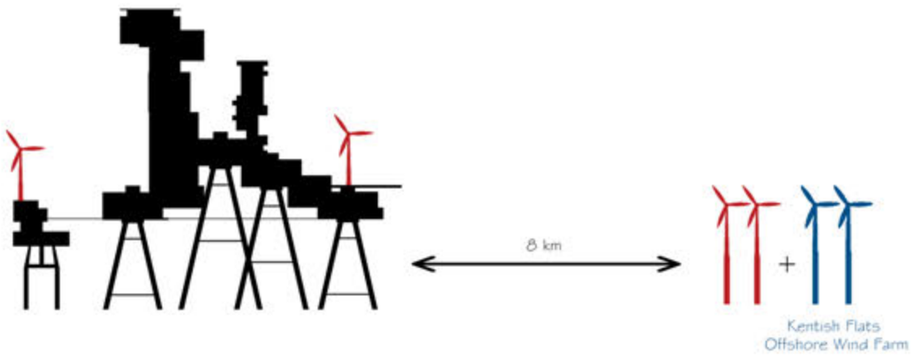
2- Wind Farm next to the city



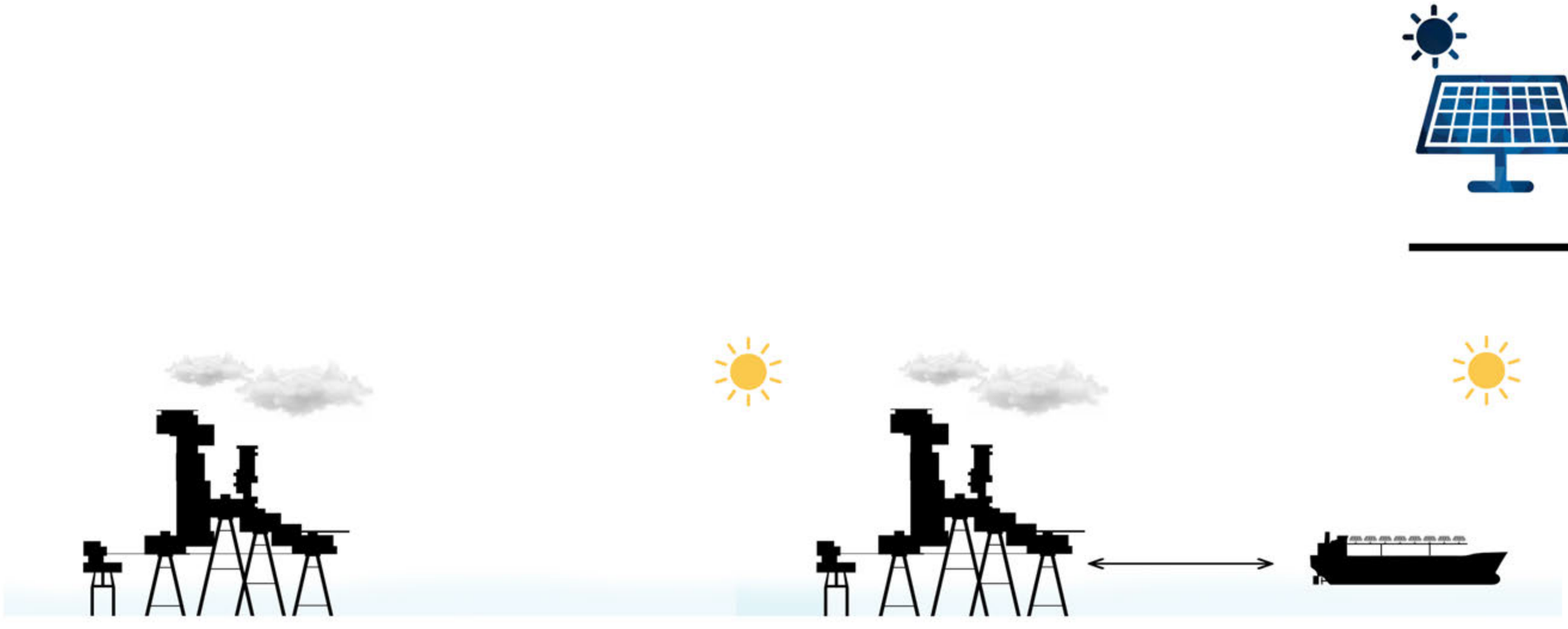
3- Extension of Kentish Wind Farm

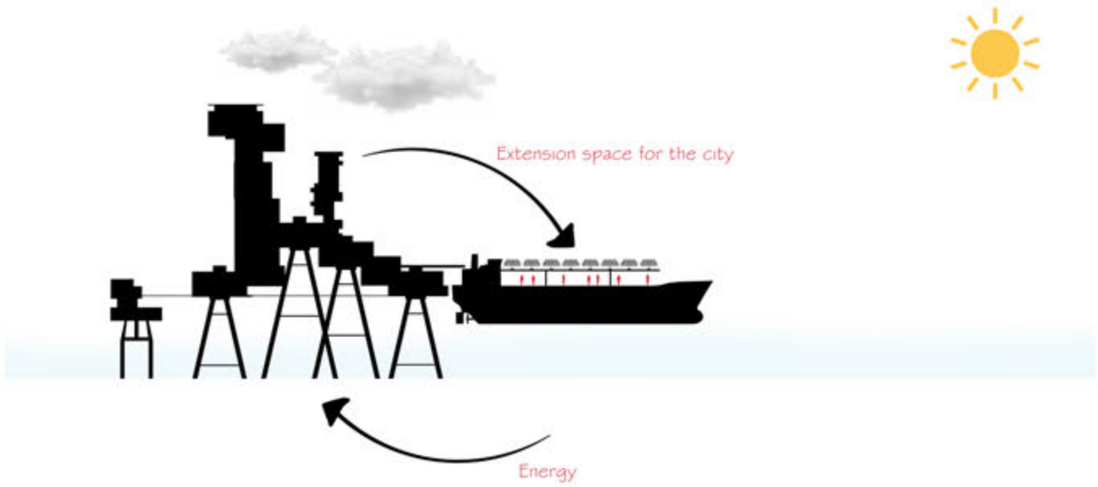


4- Extension of Kentish Wind Farm + Symbolic wind turbines in the city



Wind energy will be the main energy ressource of the city, as it's located in a region of strong wind currents coming from the North, which push us to think how could we profit the most of this renewable energy. The diagram above explores the possibilities of placing those wind turbines in the city.





If the city finds itself in shortage of energy, the solar energy could also be a rescue, even if there is no sun in place and it's always foggy.
If there is no sun, we shall simply go look for it, and that's exactly what the city will do by sending some of its parts to look for the sun. After coming back and while loading the energy to the city, those parts could be used as temporal extension spaces of the city, to host temporal events as concerts, party, whatever!!

Acer pseudoplatanus

Alnus glutinosa

Carpinus betulus

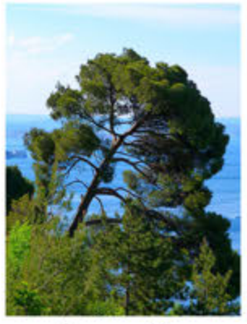
Crataegus (hawthorn)

Pinus mugo
(dwarf mountain pine)

Fraxinus angustifolia

Juniperus scopulorum

Bonsaï



Pinus serotina

P. radiata (Monterey pine)

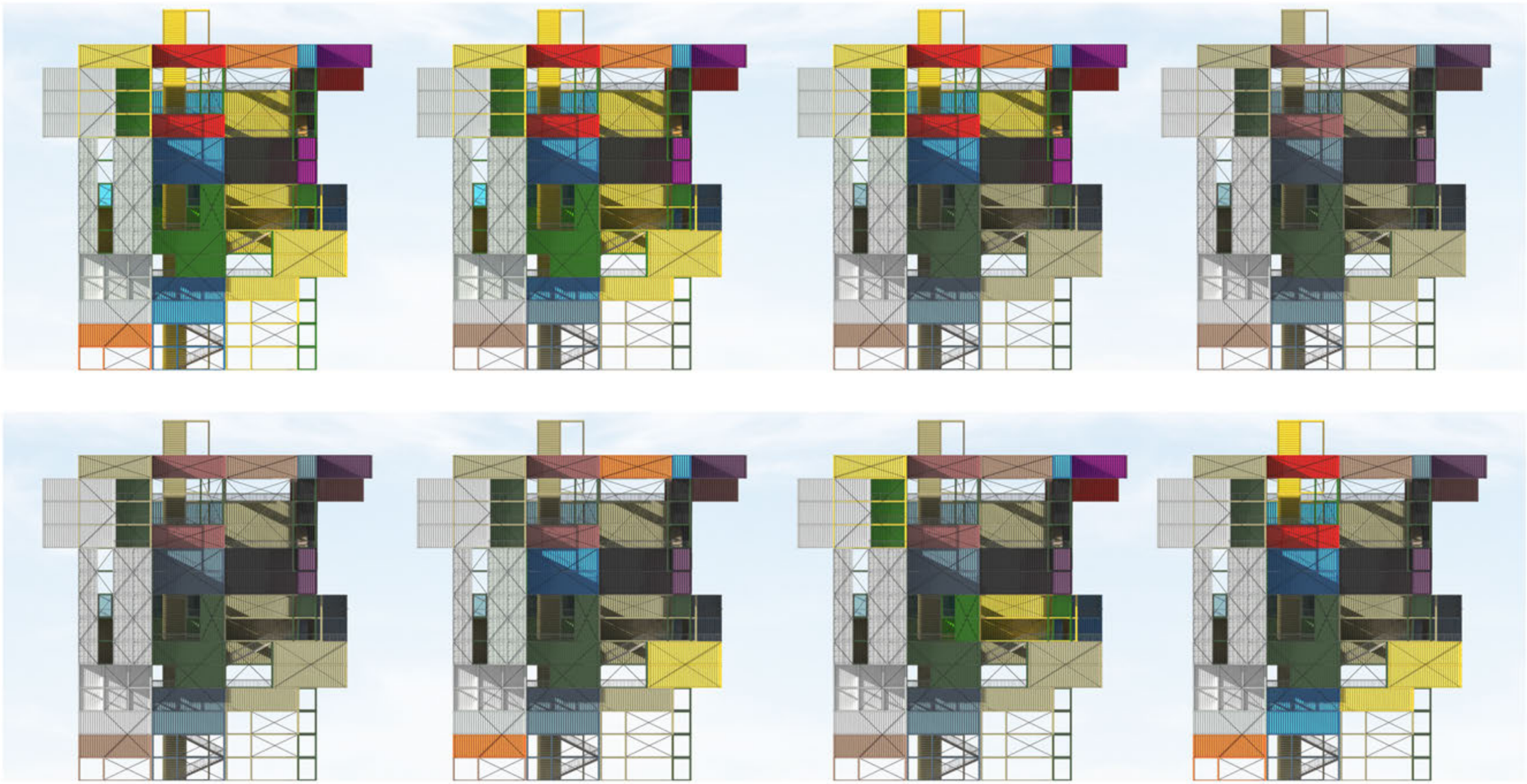
Berberis

Short selection of trees and plants that would resist to the salty weather of the sea, its humidity and its wind.

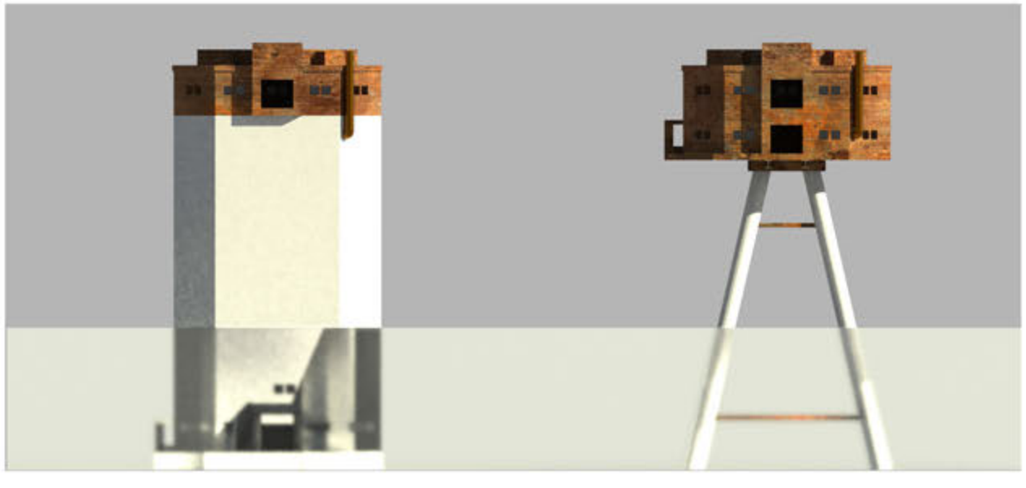
Singing Hotel California - Eagles

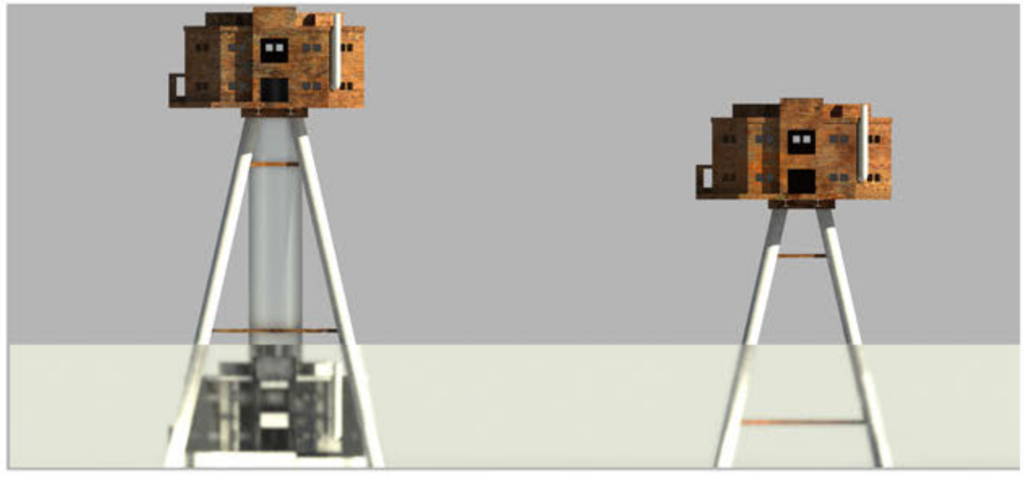
The view from the museum
The materials used change their vibrance according to the weather : when it's sunny the rusted metal looks more pale while the containers metal looks more shiny !

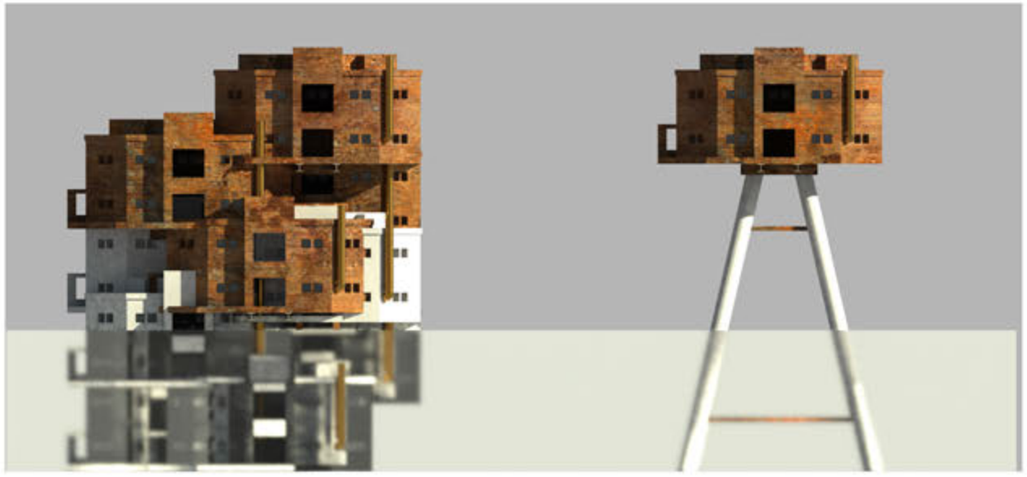
When it's foggy or rainy the rusted metal looks more dark and nass while the containers metal looks more pale !
This game of colours vibrance keeps changing the architectural atmosphere of the project.

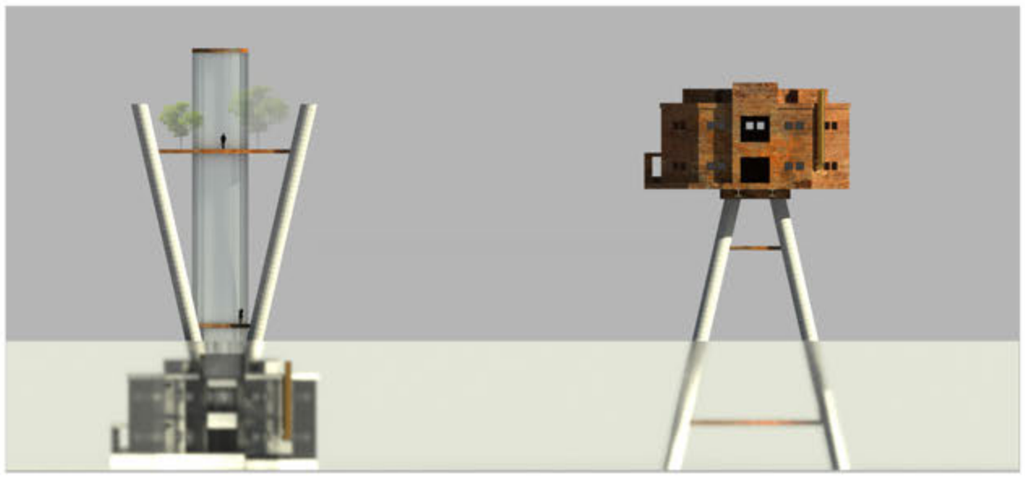


An architecture which keeps changing its colours !
The sea weather, the salty wind and its humidity will make the shiny colours of the used metal get pale with time starting from old ones to last ones in the top. (Row 1)
The interesting part of the story is that we could paint from time to time some containers, or totally change the panels (not the structure) / (Row 2). and therefore the project colours will keep changing throughout the time !









The possibilities to conquer the water in the future.
The project we designed focuses on the first phase of making the city. Yet, and at some point the city could be too dense and its not practical to keep extending in a horizontal direction in the middle of the sea. Therfore right above are some possibilities to conquer the water in the futur, at the scale of the unit (The tower).

To summarize my work ...

The real project I want to underline isn't the shape or the form itself, which is nothing but one possibility of many, but rather the principles for what stands the project::

- Bringing the history and identity of the site on the front plane / Backing Maunsell concept and developing it.
- Reusing the abandoned structures in the sea and turnin them to real living places / Using recycled materials for the new forms.
- Adopting an experimental approach : forms, materials, colours, composition, scale and proportions...
- Sustainbility, and adopting a prospective approach in the design.
- Creating a real living place ready to host communities from different backgrounds.