Design Realisation

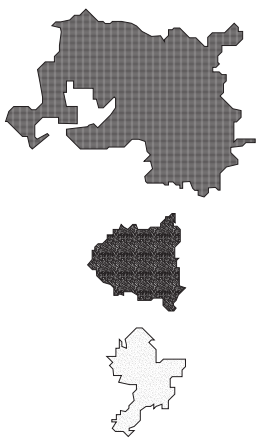
Metropole Aix-Marseille-Provence

A New Political Epicentre for a New Territory

Katherine Scott

Unit 21

BENVGA08



Unit Tutors: Abigail Ashton, Andrew Porter & Tom Holberton

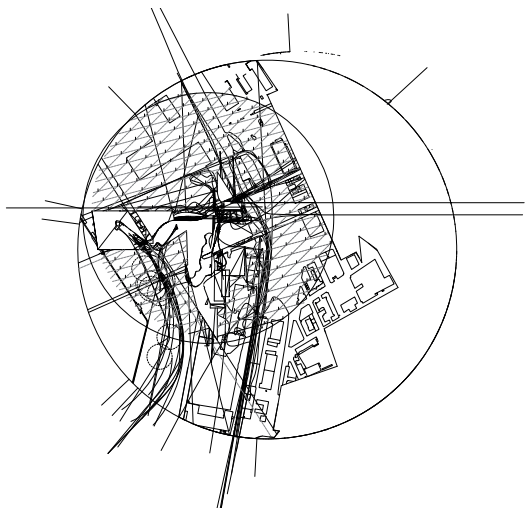
DR Module Leaders: James O'Leary & Dirk Krolikowski

Consultants: Eckersley O'Callaghan & Max Fordham

Contents

Design Realisation, 2016

This project charts the design process of my scheme from masterplan to detail, to prototype. Taking into consideration real-world parameters, the design has become informed by and enhanced by this study; particularly by the construction process.



01

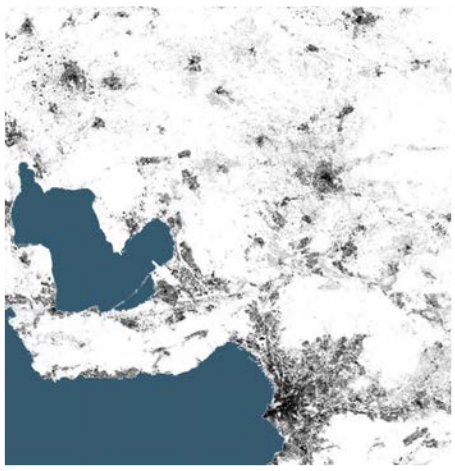
Building form, systems & planning

Project Brief

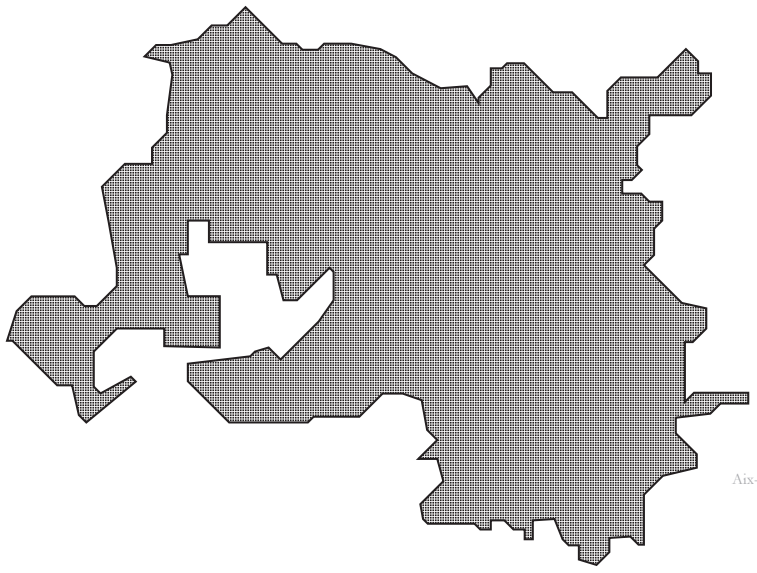
Marseille is not Provençale [1]

On January 1st 2016, a new 'Metropole' called Aix-Marseille-Provence was formed. This region encompasses a network of 92 regions in Provence to form a poly-centric metropolis. This territory change means a massive shift in the role of politics of Marseille nationally.

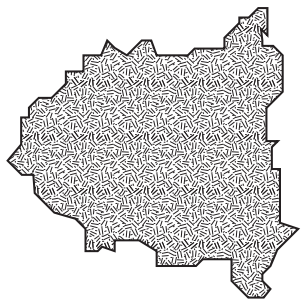
[1]Jean Claude-Izzo, prolific Marseillaise novelist



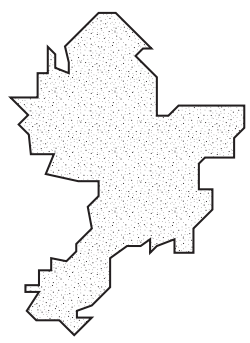
3 largest Metropoles in France, 2016



Aix-Marseille-Provence
3173 km²



Grand-Paris
762 km²



Grand-Lyon
515 km²

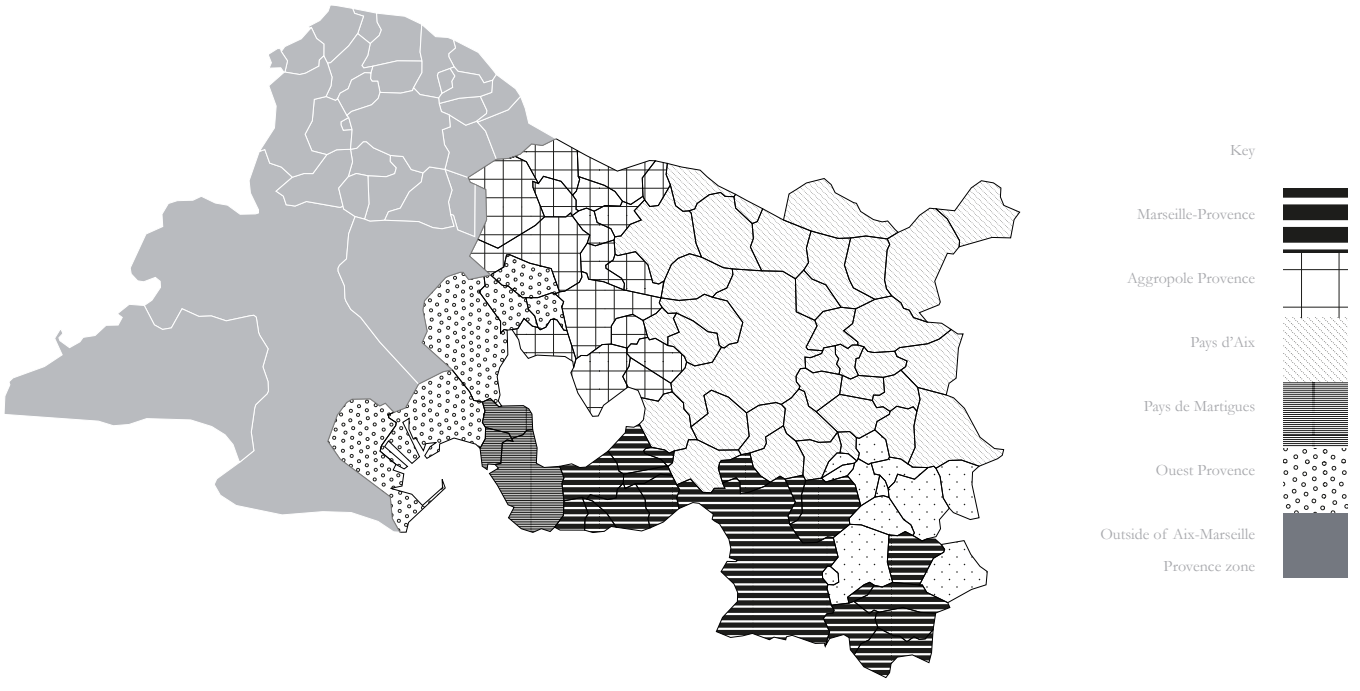
Metropole Aix Marseille Provence
A territory of 92 sub-regions

Territories

The scale of the new zone is vast - forming the largest Metropole in France. Uniquely, this metropole is a constellation of densities, rather than being an equal distribution of built environment across its region, the metropole instead sees a series of clusters of density set within the landscape of Provence

This turning point in French politics will give power to Provence to form its own planning, taxation and investment systems; a local politics is empowered by devolving the French Government's power.

Marseille has never considered itself Provencale, instead turning to face the mediterranean sea and the culture of migration, food and sunshine that this brings. Merging this Mediterranean city with its surrounding Provence region forms the backdrop of this project - how can Marseille become a Capital for a new Metropole? What will be epicentre of this new politics? What built form will this take in the city?



[In]visible politics of Marseille

The Zones Urbaines Sensibles (ZUS) act as a means of prioritising areas in need of investment and strategy in France. It is listed publicly online and acts as a policy making tool. They form political boundaries in the city, whether visible or not.

Finding a site

Marseille is a politically fraught city. With the new Metropole coming into place, a big development scheme called Euroméditerranée, local elections and general anxieties about migrants and their role in Europe all at play at the time of Unit 21's visit to Marseille (Oct 2015), I wanted to investigate the role politics plays visibly, or invisibly in the city.

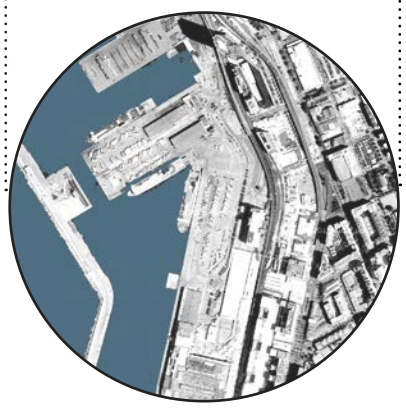
The drawing shows Marseille through data from government and open source websites. This data comprises of locating key political locations in the city and defining the role aspects of CCTV in the street and infrastructure systems.

A large amount of the ZUS zone in Marseille is in the North, taking up the historic heart of the city. The threshold at which zones are defined became the focus of my visit to Marseille. It is remarkable that so much of a city can be considered to be in need of complete regeneration.

The new port became fascinating, as it sits on the edge of this territory condition and is partly excluded. I want to address and critique this edge condition by siting my scheme upon and around it.

Site

Proposed site is a 1.5km zone sitting at a strange edge condition of the city. It's size and context as the edge of the Euromed development scheme provokes political tensions for the scheme to investigate.



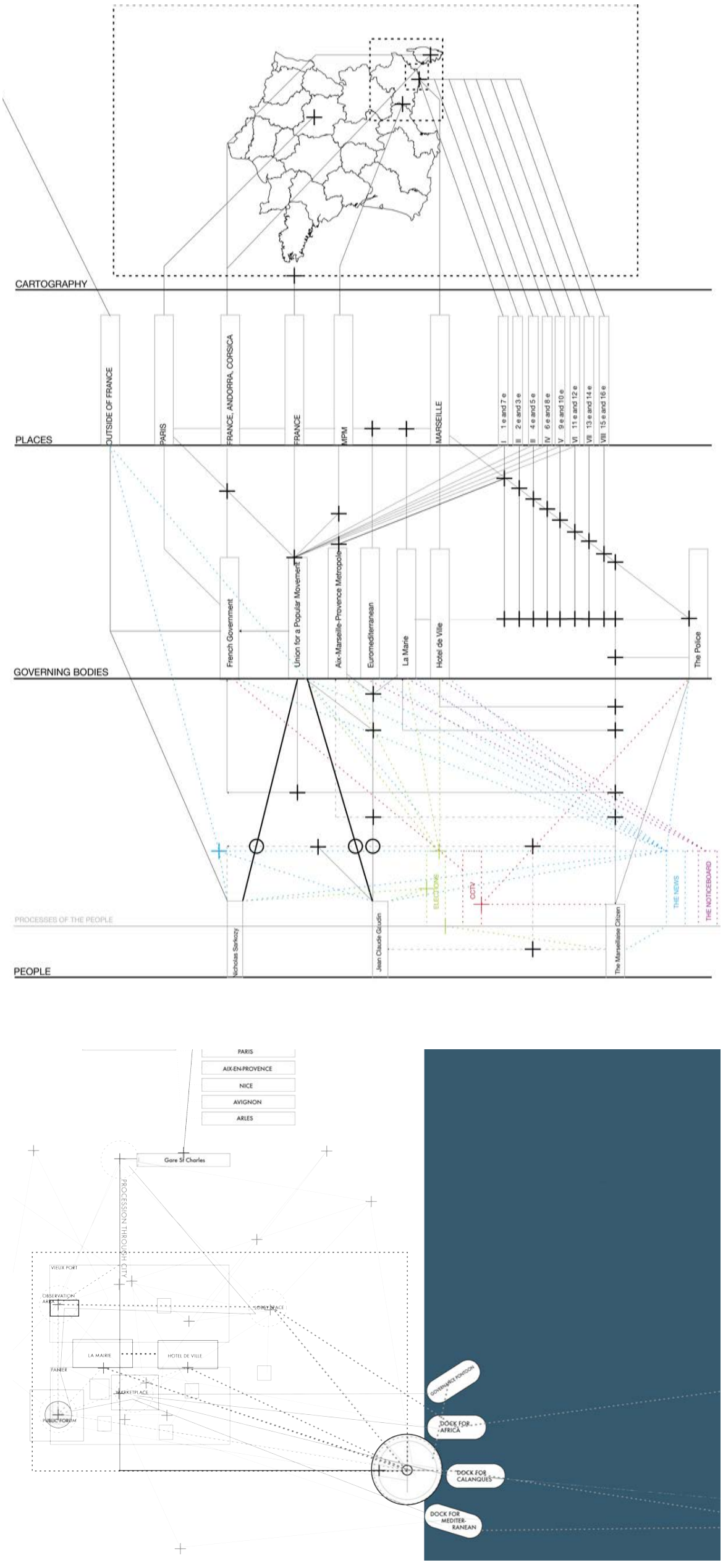
[1] Edge of ZUS [2] Core zone - priority for regeneration [3] CCTV tracking extent [4] Vieux Port [5] Proposed Site

Project Overview

Marseillaise-Provençale Parliament

'If we want an efficient parliament, let's give it a whole efficient building to work . . . replace the present historic monument with an up-to-date structure'

Cedric Price.



Brief overview

As a result the scattered relationship between towns in the Metropole, the brief for this project is to form a new **Metropole Epicentre**. A hub, for main political activities and for citizens of the Metropole to come together in shared identity, comprising of political and social programs to allow this to happen.

A fundamental role of the scheme is to act as a **Marseillaise-Provencale Parliament.** This will be a place for the coming together of the 92 individual local politics of this new territory into one location and a place for the citzens to see their politics happening effectively.

These drawings were my first steps in analysing political networks as hierarchies in the city and nationally.

Priorities

- How can a single site contain all of the aspects of politics?
- How to encourage participation of the Marseillaise public?
- How can the visibility/privacy of Parliament inform an architecture?
- How can the sea be connected to the Parliament
- the flows of people coming in and out of the city - what is their role in local politics?
- How can movements of people translate into an architecture?

Site Context

Situatedness of New Port

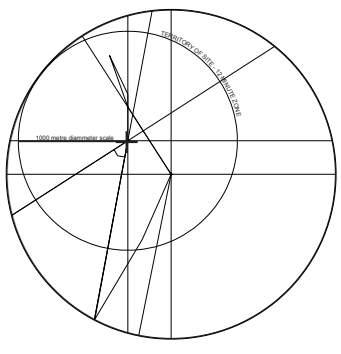
Basin d'Arenc is part of the Euromeditteranean development scheme for Marseille. This part of the port is being dismantled and moved to Fos, North Marseille, rendering an opportunity for this scheme to contribute to the new business district.

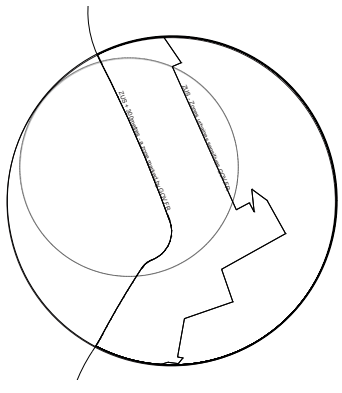
[1] CMA CGM tower, 127m above sea level, [2] Main highway 80kmh, 15m above sea level [3] Passenger ferries dock for cruising to North Africa, the rest of South France, French Islands and Italy [4] New Port: protected by a grande digue [5] Cathedral[6] Museums for Euromed 2013 [7] Vieux Port

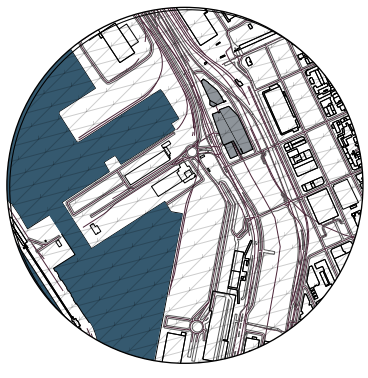
Situation

The site is located in the Arenc Basin, on the New Port of Marseille, across the ZUS zone edge. Geometrically, the site sits at the point where Marseille bends. The North/South divide feels evident here; no beach exists to the North of the Vieux Port, with the natural coastline replaced by an autonomous concrete port. Here is where Euroméditerranée is bedding the 'business district' of Marseille. The new CMA CGM tower and the future location of several more towers are all adjacent to the site.

Therefore this site seems a suitable place to position the new centre of the Metropole; in a place where Marseille is investing in a new identity.



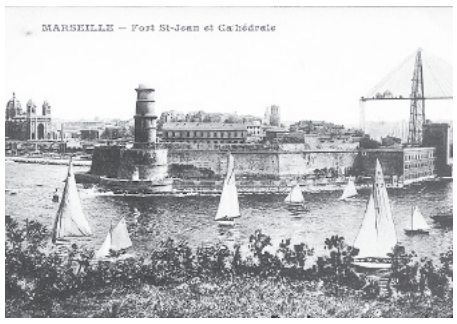




Site History

Transformation: Beach to Port

The site is located in the Arenc Basin. Arenc orginates from the Provençale for beach, 'Areno'. The site orginally was part of the natural beachscape of the city's sea border. Over time, it has been transformed into a concrete, autonomous port.



Timeline of Site

[1] 1675
The city at this stage had been inhabited by the Romans, who built a walled city and port. The coastline remained largely untouched, with beaches.

[2] 1760
The first steps of constructing the vieux port had started to take place. The port wall is constructed to aid docking of larger boats.

[3] 1886
By the 1900s this new port had completely transformed the coastline, removing any evidence of the beachscapes that once were here and removing any relationship between the citizens and the sea in the North, this was now an industrial zone.

1

2

3

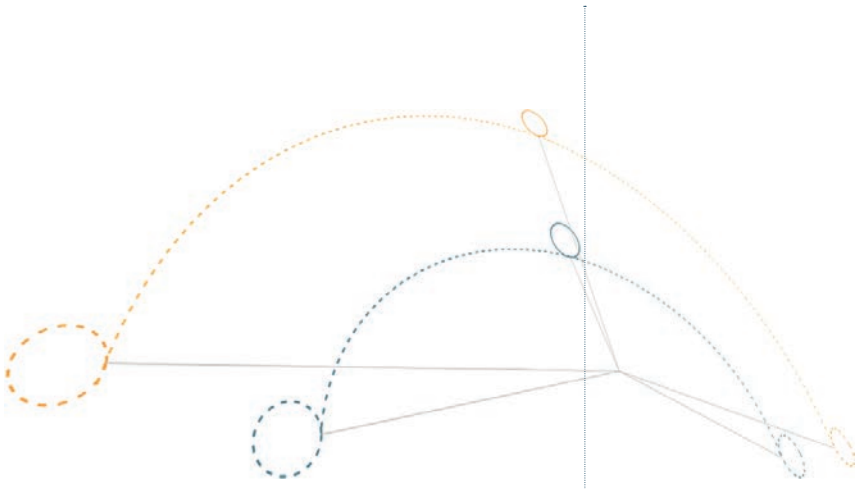
Site Conditions

Mistrale, sunshine & the Med

The mistrale wind is unique to Provence. Made famous by Van Gogh's paintings from Arles, this wind helps keep the skies clear, but is famous for being so persistent with its howling that it can drive people crazy.

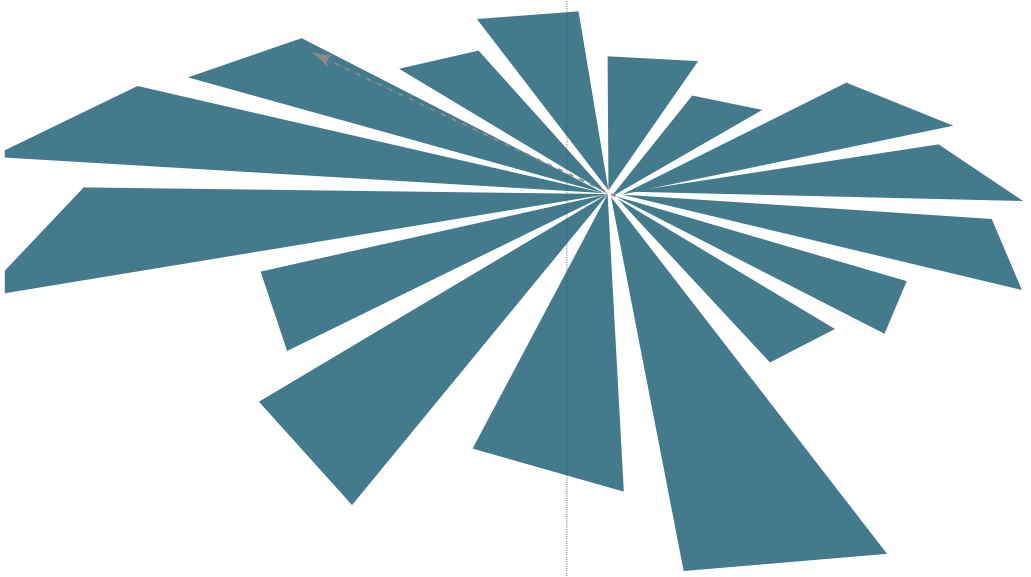
The Mistrale will affect the scheme, also to be considered is the solar orientation - the sea facing site generally will receive good light lunch to evening all year, but the site massings may need to take account of the morning sun in forming them.

The role of the coast within the scheme is vital. It can provide sources of renewable energy, with the sea temperature more stable than that of the air; a range of temperatures between 13-28 degrees celcius. It can also act as a source of coolth by means of evaporation if water is beneath the building. Reflectivity of the water is to be considered in light analysis.



Solar

Sun is at its strongest on site in the afternoon to evening, as it is oriented facing South-West and the sea will reflect the most light at this time. The site is overall largely exposed to sunlight, with no large buildings South of it.

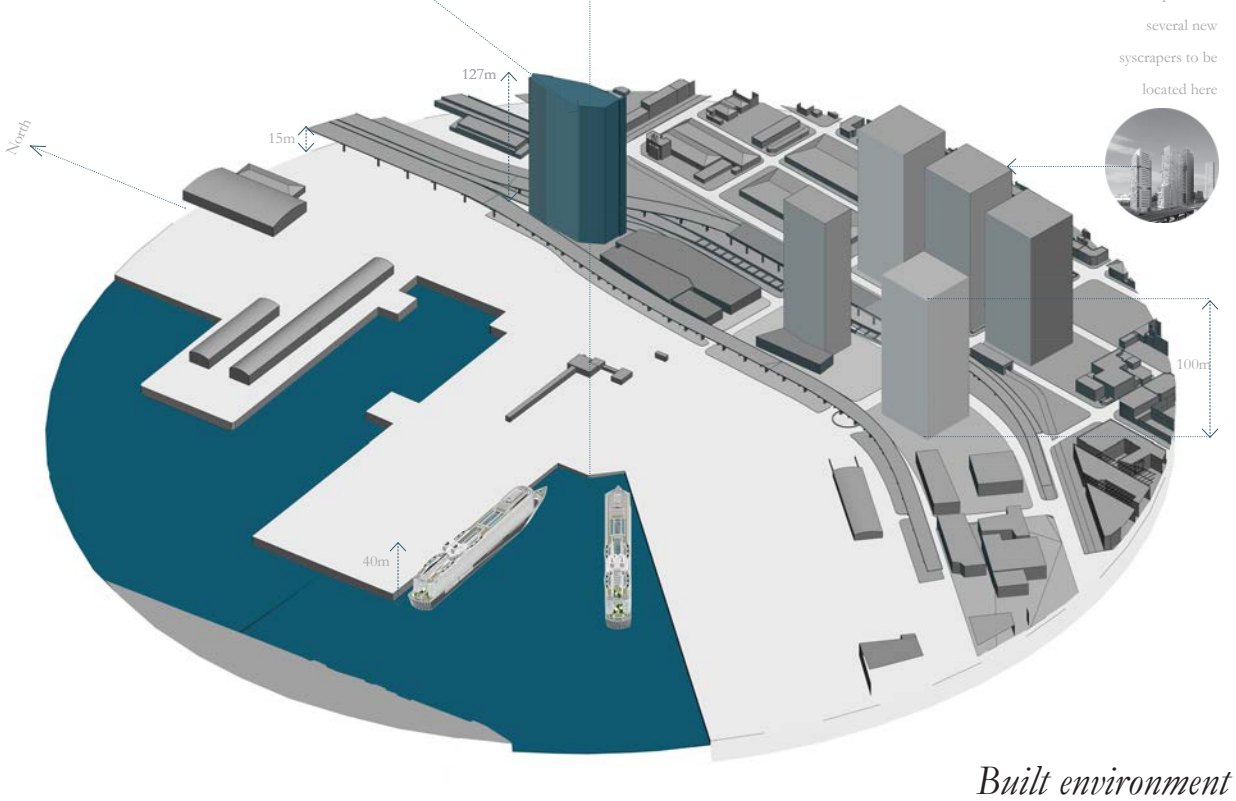


Wind

There are strong winds in Marseille, reaching up to as much as 70mph when the Mistrale blows. The Majority of the large winds are North Westerly, though there are strong South West winds on occaision.

CMA CGM headquarters, designed by Zaha Hadid

Proposal for several new syscrapers to be located here



Built environment

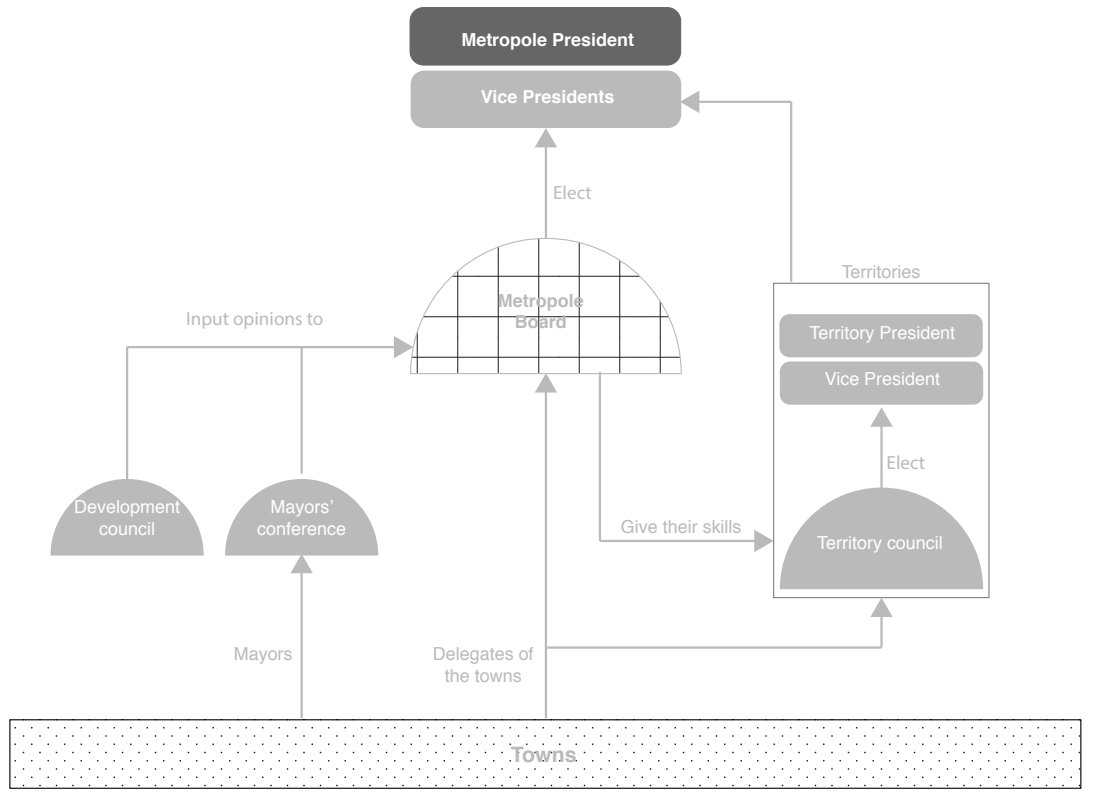
The site is half sea, half land. The surrounding context is massively under change, with a new Skyscraper and 4-5 more proposed in sites as drawn. There is a large, fast dual carriageway adjacent to the site, which is very noisy. This area is largely a business district. The Port itself is large and flat, with some industrial buildings and a passenger terminal. for two cruiseships.

Project Requirements

Multi-use & multi-client

I studied 3 key clients of the Metropole Parliament. These helped to determine programmatic and spatial relationships for the scheme. These then work in parallel with the fundamental requirements for seating the actual functions of the Metropole.

Make-up of the Metropole's overall system



Clients

A: Jean-Claude Gaudin
The President of the Metropole Parliament and previously the Mayor of Marseille for over 20 years. He needs a place for politics and business.

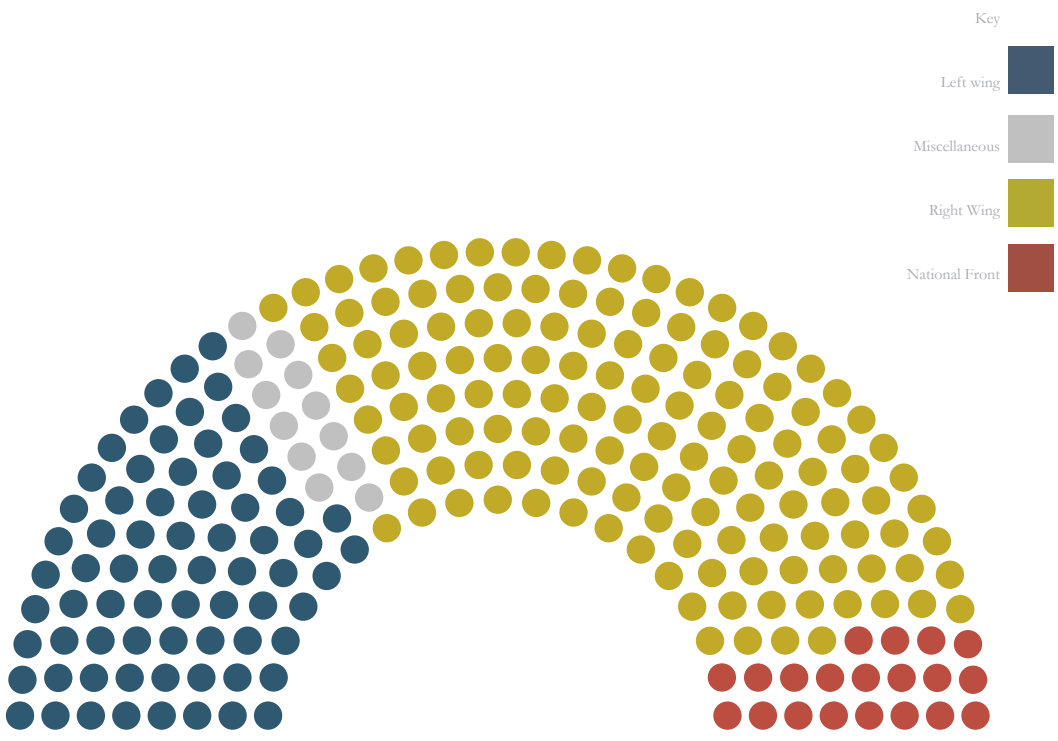
B: Lole Izzo
A worker at the CMA CGM, a citizen of the Metropole. By taking lunches at the scheme, going out at events there and being able to enjoy the beach, she will be more involved in politics.

C: Steve and Jill
A couple who have travelled to the metropole on a Cruise-ship tour. They represent the tourist trade in Marseille, part of the role of the Metropole's duties is to expand this further. They want to find a landmark, entertainment, food and leisure all within a short distance of their cruise ship.

Pragmatic Program

The scheme must accomodate the structure of the Aix-Marseille-Metropole council's 240 Members and its wider network. The scheme will accomodate for the meeting of all of these members, as well as offering workspaces for all visiting members of the Metropole network. It is of a Parliamentary scale.

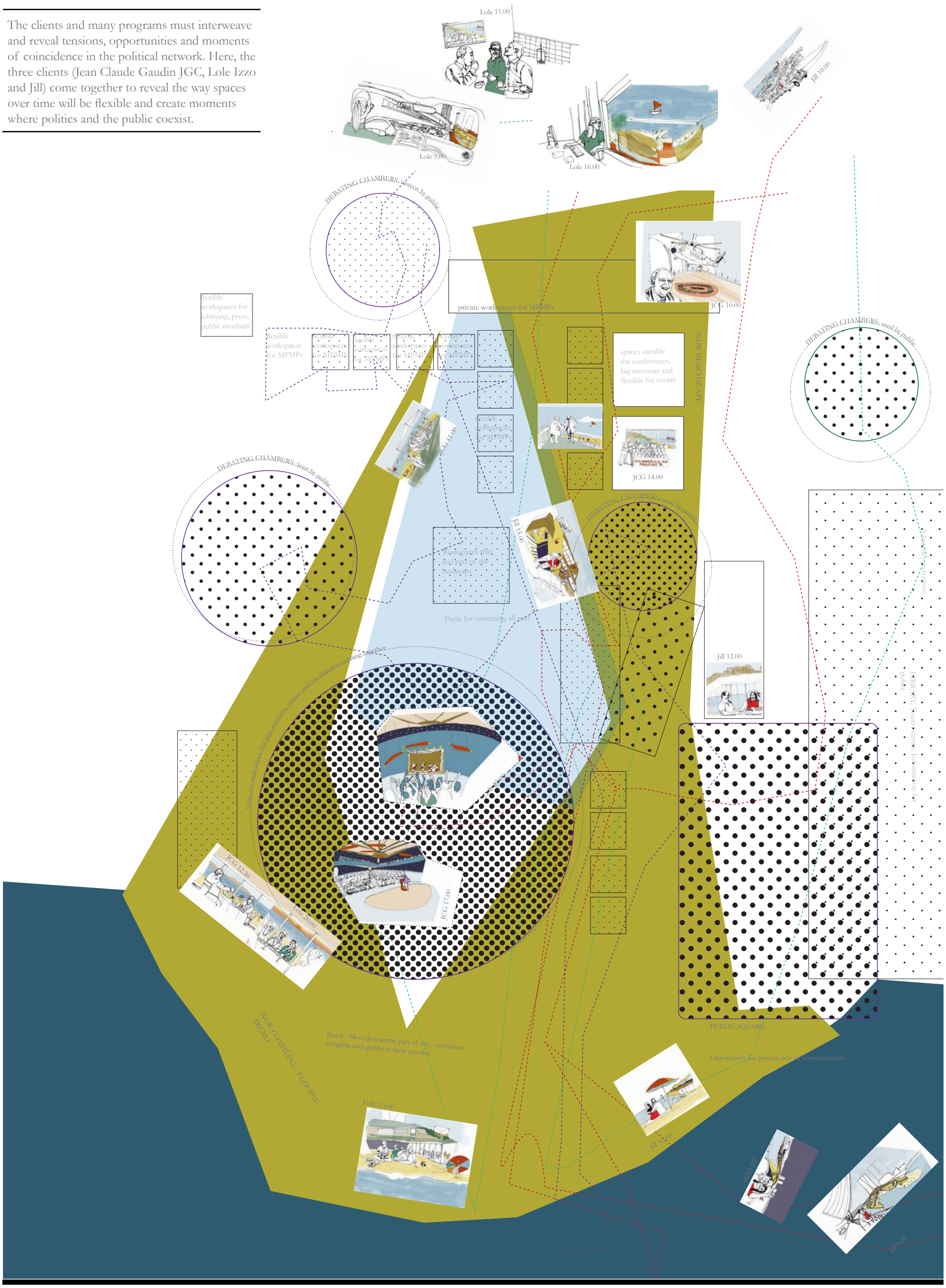
Probable political structure of the House of the Metropole
240 Members of Metropole Parliament



Programmatic Relationships

Moments within a network

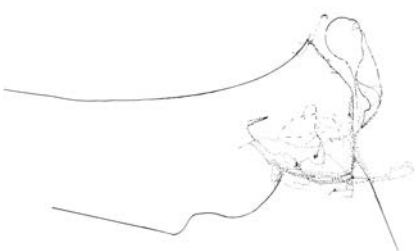
The clients and many programs must interweave and reveal tensions, opportunities and moments of coincidence in the political network. Here, the three clients (Jean Claude Gaudin JGC, Lole Izzo and Jill) come together to reveal the way spaces over time will be flexible and create moments where politics and the public coexist.



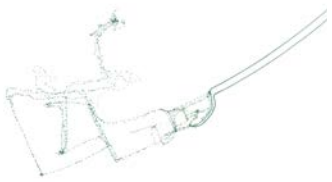
Programme

Multi-use, multi-client

There are a number of different activities that may occur within the scheme at any time. These are categorised into particular typologies to be considered as the programme as shown here. The relationships between these proximities and crossings over of programmes became a driving force for design.

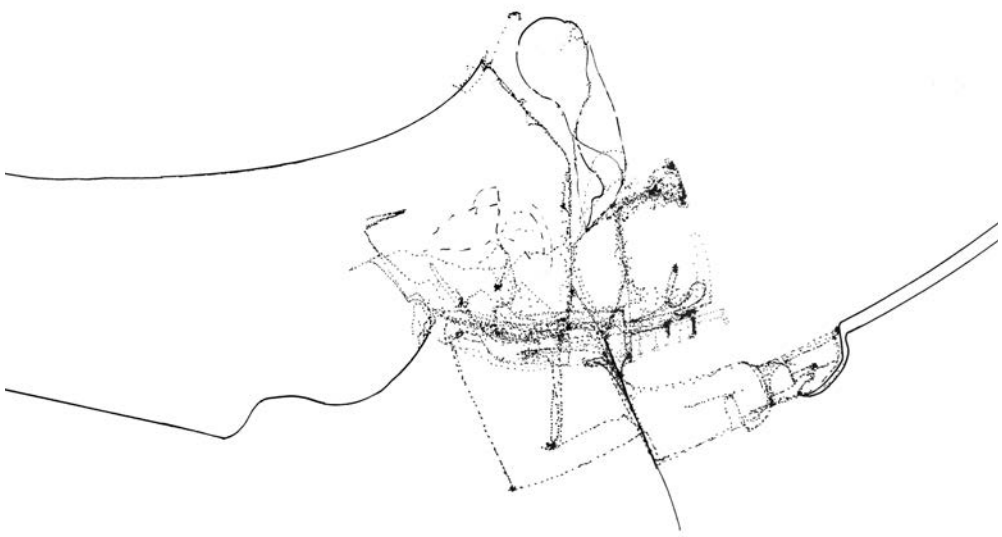


Lole's movement through spaces



Jill and Steve's movement through spaces

Jean-Claude's movement through spaces



Mapping program network further

Movement of different clients through spaces create moments of cross over : these are vital to the success of the building. Interweaving programs is important to the scheme in plan and section

Beachscape

A democratic space: open for all citizens of Aix-Marseille-Provence, tourists and politicians alike. A linking element throughout the scheme, bringing an element of fun to politics, attracting more people to become involved.

Main Auditorium/ Theatre

A multi-use space for large gatherings, of upwards of 1000 people. This can be used for cultural events, such as plays and gigs, as well as being an event space for large-scale political events, such as congress of the Aix-Marseille-Provence and

Smaller Auditoriums/ Chambers

Smaller, more intimate chambers. For public and MPM only debates, for smaller issues and for less important debates. Can also be booked for events such as public speakers, lectures and so on.

Restaurants\bars

Important networking and meeting spaces off the grid of official meetings. These become the melting pot for off radar political working and can provide the public an insight into this.

Circulation

Should be a place for bumping into people, political interactions and for stopping and observing overall scheme. Here chance encounters are vital

Workspaces

Of varying types - from meeting spaces for a team to individual work spaces. The looseness of the term "workspace" currently will inform this category: with power points and break out spaces throughout the scheme as supplement to traditional offices. Capacity for flux in this

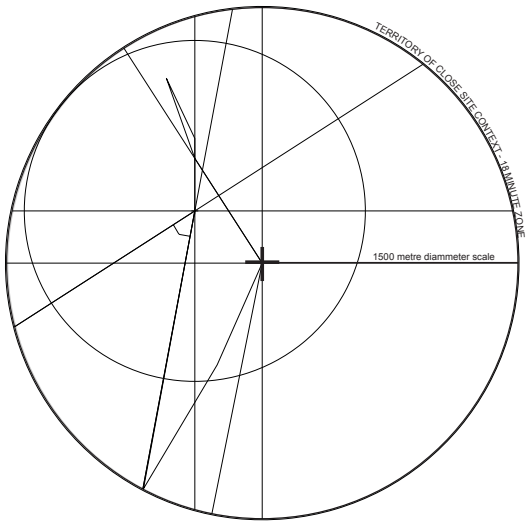
Jean-Claude's Residence

The official residence, a resting place fof Jean-Claude within the scheme. Here he has a grand dining room for banquets, private accomodation and an office.

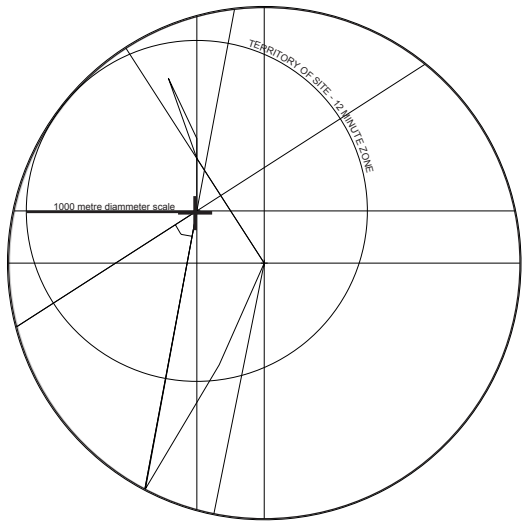
Site Strategy

Brief, Programme, Site responses

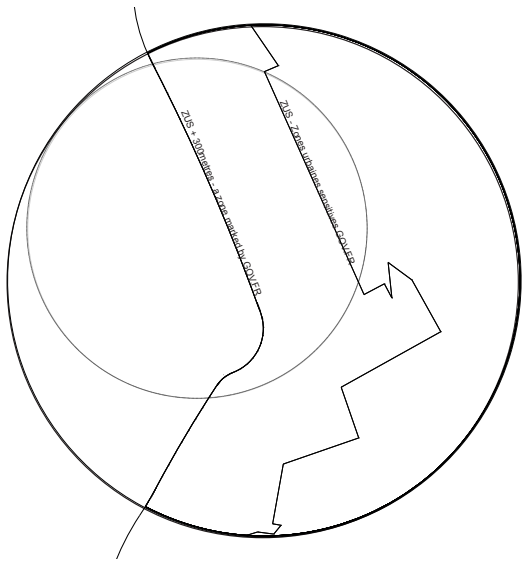
9 key strategies emerged as drivers for the approach to site. These came from all of the research shown to date: the geometry of the site, the relationship to the city, to the ZUS, to the sea, to the beach, to the clients themselves.



01
The geometry of Marseille's new port

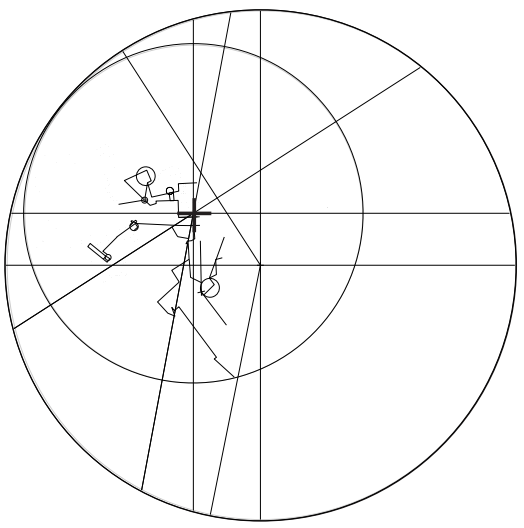


02
The geometry of the site

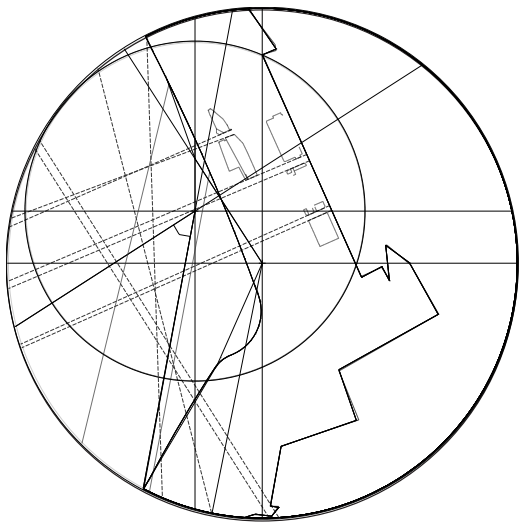


02
The territory of urban planning
political territories in the site: ZUS

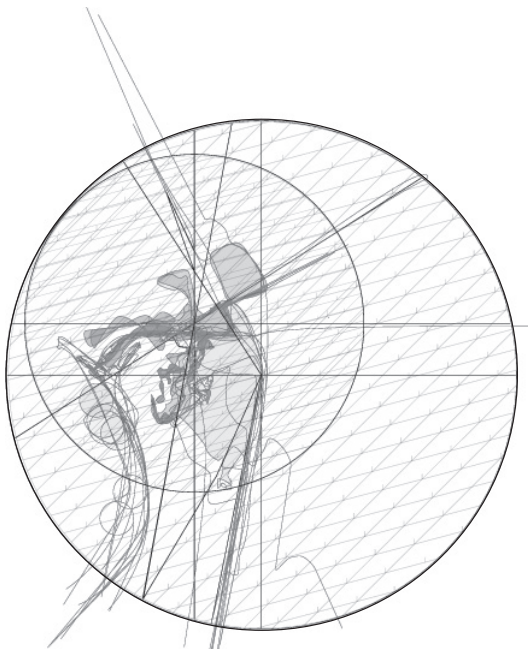
04
Existing site to preserve



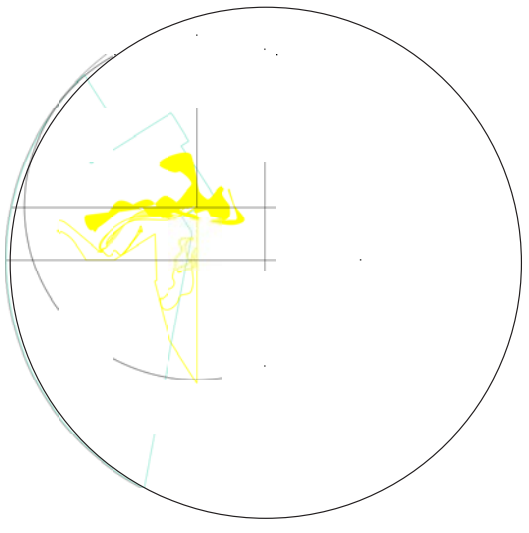
05
A calibration of Marseille's political territiories recontextualised within site axes



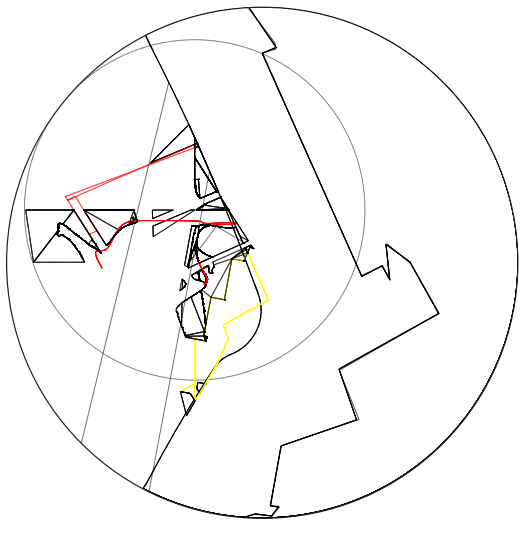
06
Axes of sightlines to be preserved



07
Tourist movement on site



08
Defining a beachscape territory

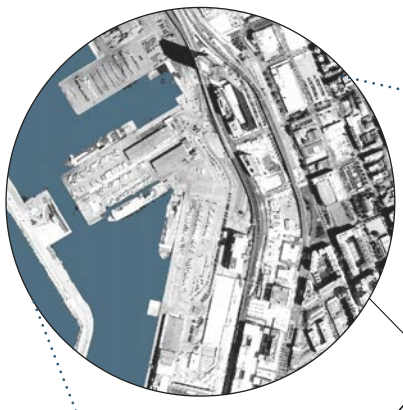


09
Resultant massing territory: the cliffscape

Masterplan

Marseillaise-Provençale Parliament

Using the 9 site strategies together, while refining the geometries they form, this masterplan emerged. It allows for a scheme to occupy the waterfront, across the line of the ZUS and commenting on Marseille's relationship to the sea and to political territories.



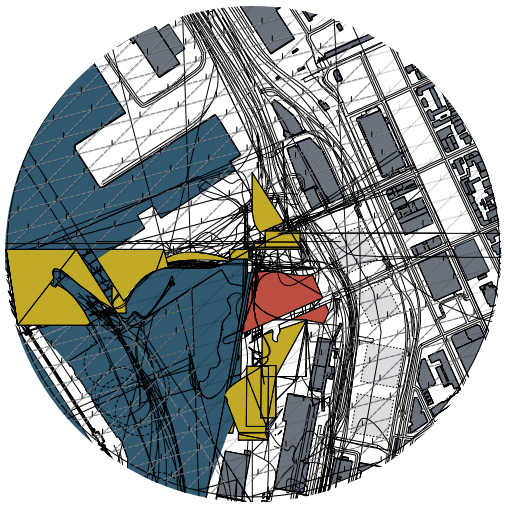
This masterplan shows the project in context - the realm of the Aix-Marseille-Provence Hub territory on the border of the ZUS.

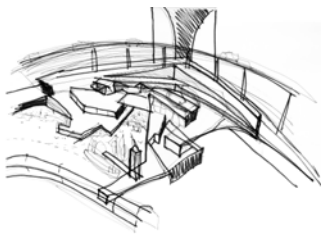
[1] Political Epicentre
[2] Public Square
[3] Library
[4] Tourist Centre
[5] Ferry/cruise ship terminus
[6] Beach facilities
[7] Cultural Centre
[8] Tech hub
[9] Cycling Stores & Facilities

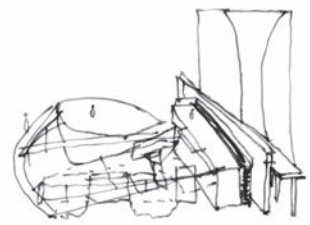
This is the extent of the scope of this project. In the coming pages it will be further explained. This will from henceforth be the only part of the scheme fully explored.

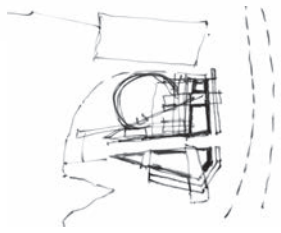
Masterplan to building

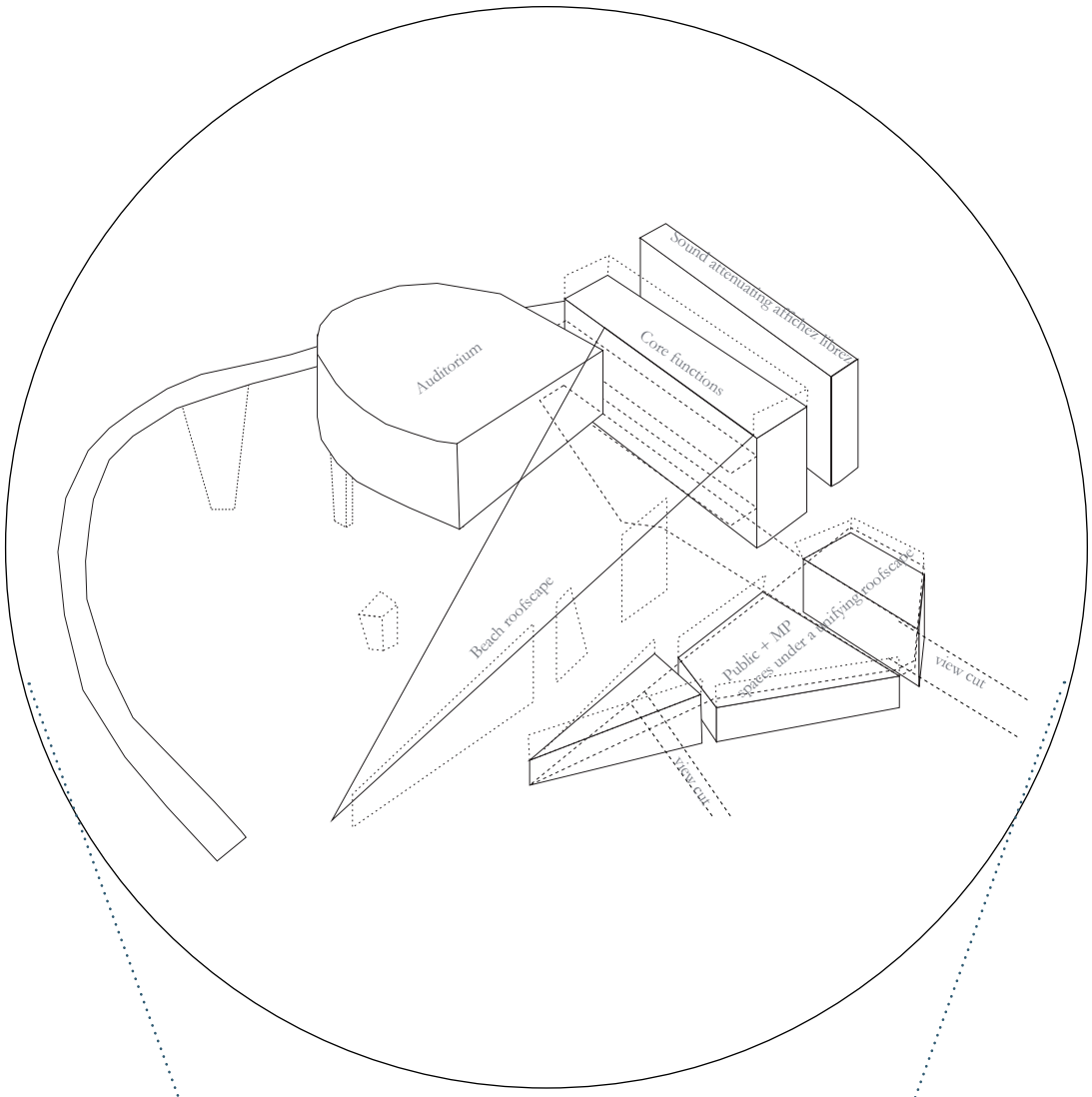
From the masterplan, a series of massing studies were undertaken. The resulting mass shown here is the result of that process. The circled region, the Political Hub, becomes the focus of study henceforth.

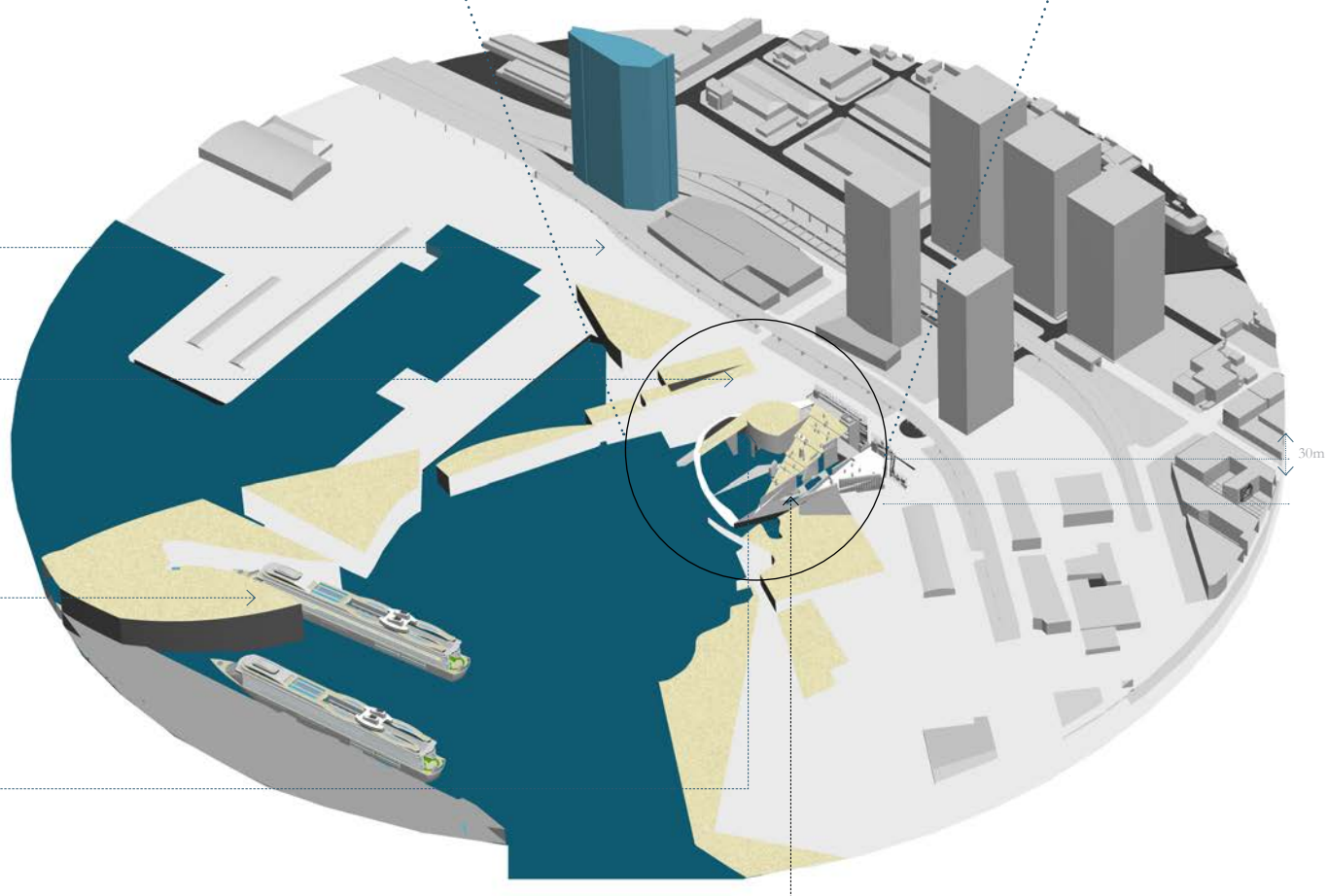












Wall

A sound-proofing wall, protecting site from the big road adjacent, as well as creating an imposing, fort-like facade

Beachscape

Roofs become beaches, the whole environment is playful and breaks up the monotony of the concrete portscape

The cruise ship terminus

Moved and modified, the entrance to Marseille is more specatcular

New waterline

The water's edge has been eroded bringing the sea back to the city

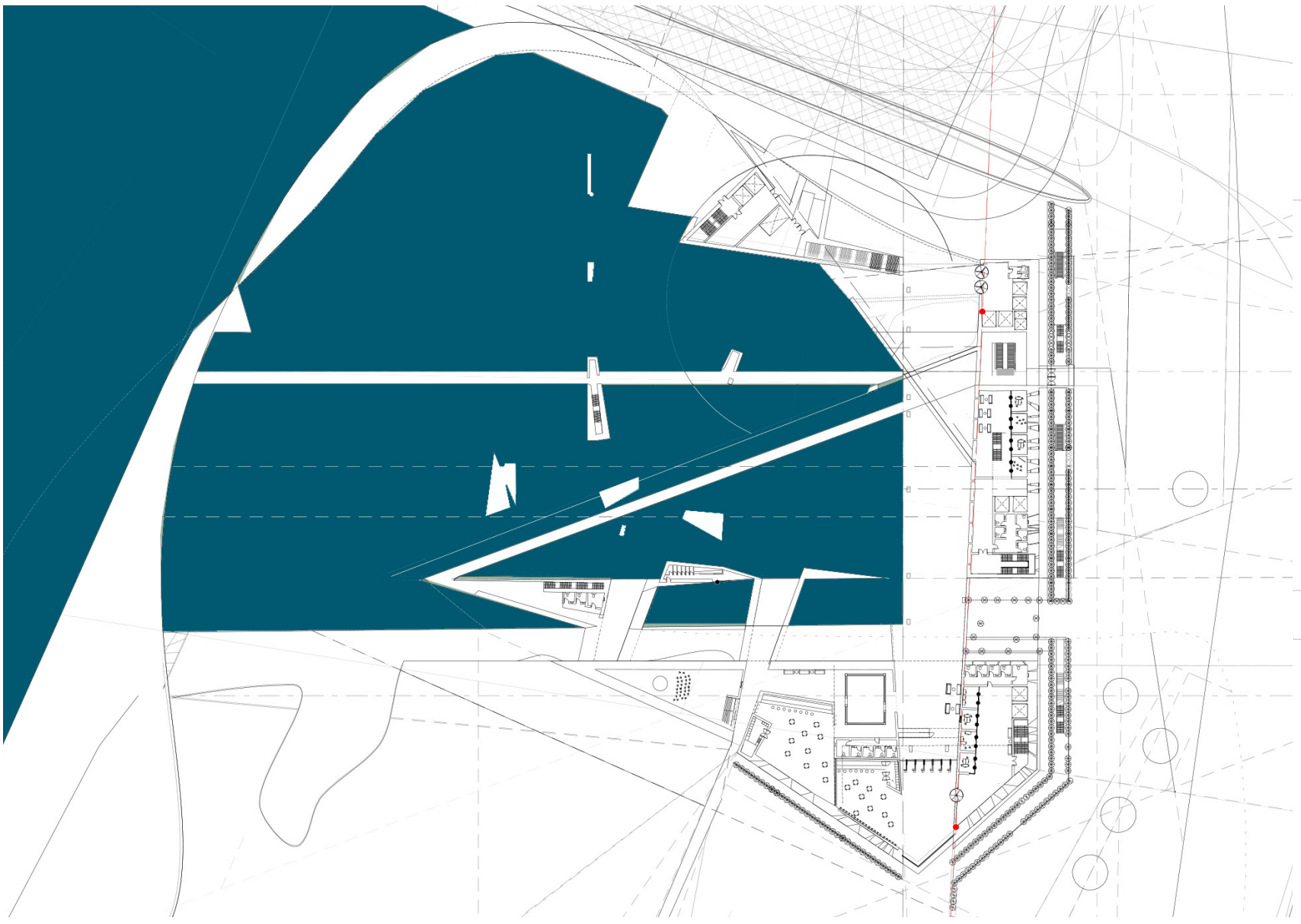
Political Hub

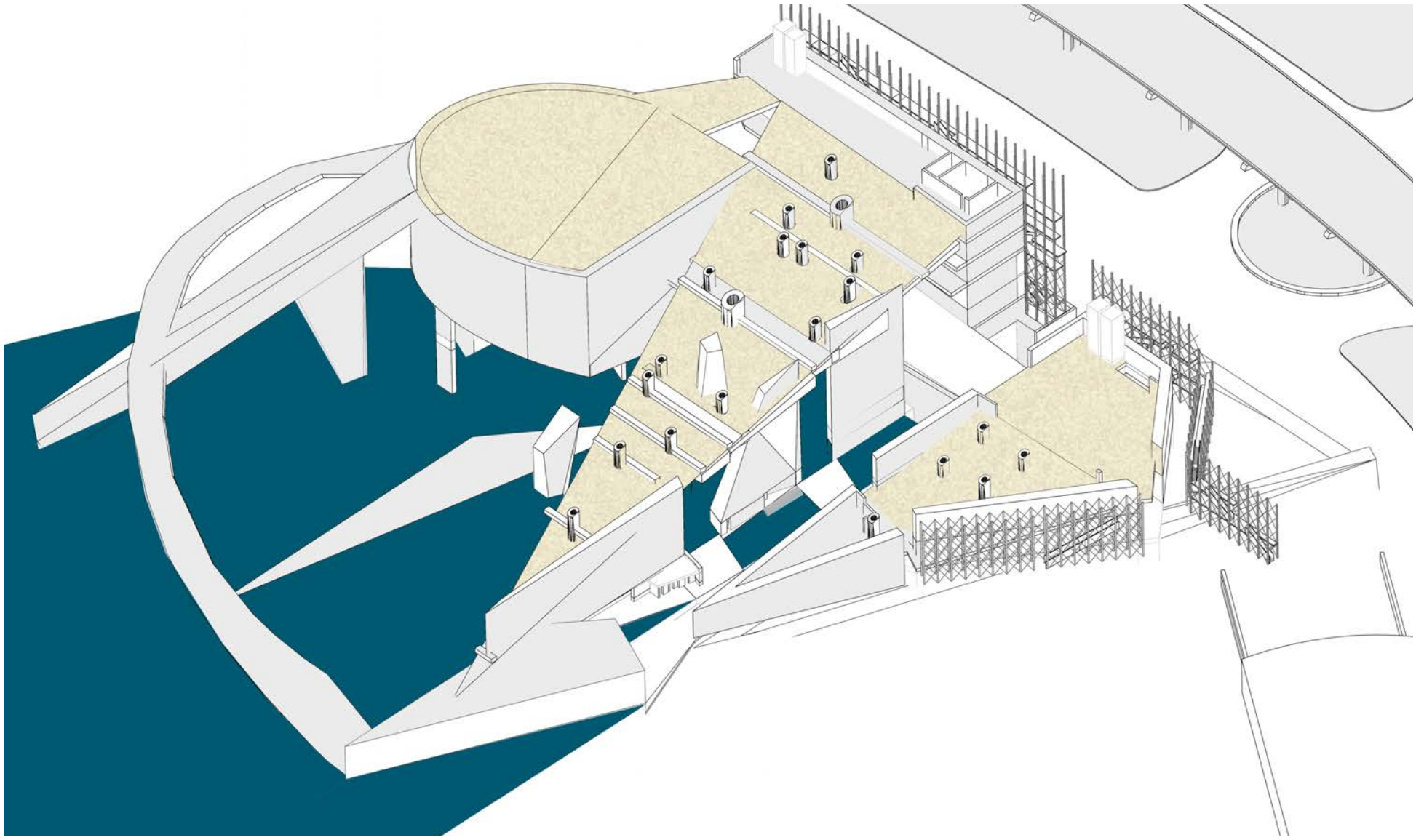
The main political building is central, at the bending point of Marseille, where the geometry changes. It is the epicentre of the site

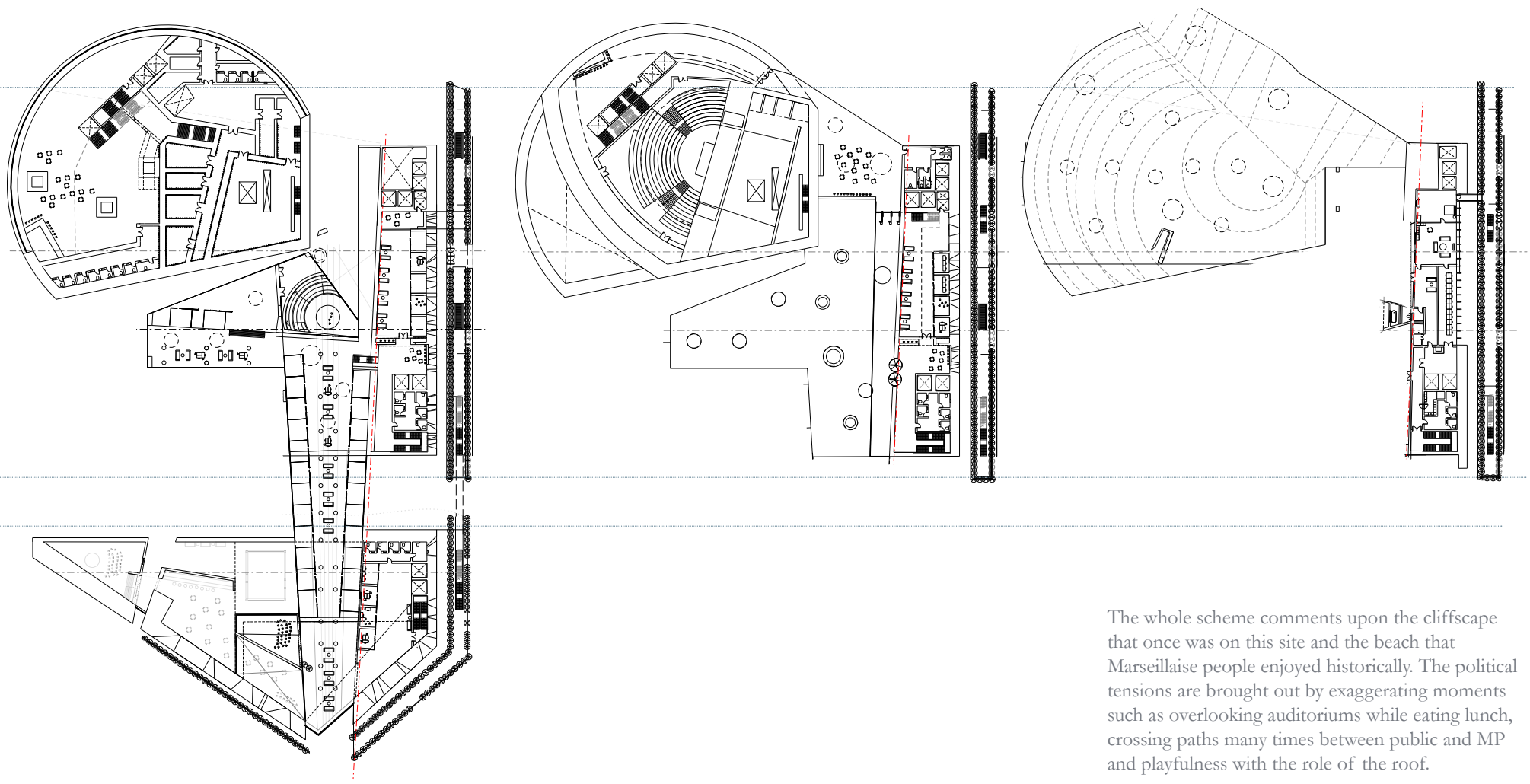
The Political epicentre

Extent of study scope

The focus of the study henceforth is the Political Hub : the Parliament of the Metropole. Here, the roles of Public realm, MP work spaces and flexible auditoria have created a scheme where culture and politics become interwoven with a sandy beach and waterscape.







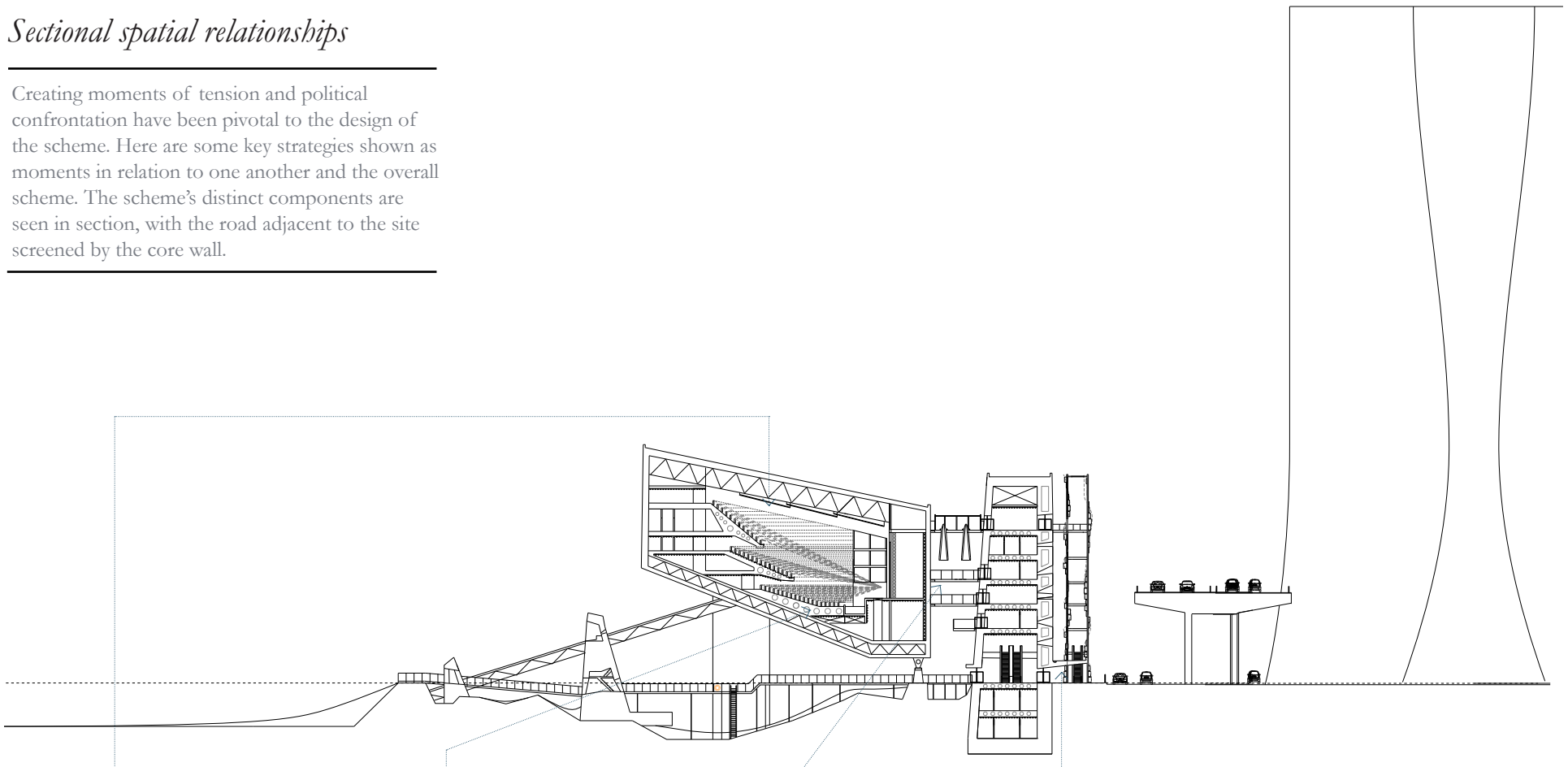
The whole scheme comments upon the cliffscape that once was on this site and the beach that Marseillaise people enjoyed historically. The political tensions are brought out by exaggerating moments such as overlooking auditoriums while eating lunch, crossing paths many times between public and MP and playfulness with the role of the roof.

The scheme consists of a core spine, an atrium that hangs off this and then a large roof which forms a new beachscape. An auditorium sits within this, held aloft by supports, allowing swimming beneath it's hull. The waterline has been changed to allow water back to form a bay, underneath the upper floors of the building.

Moments strategy

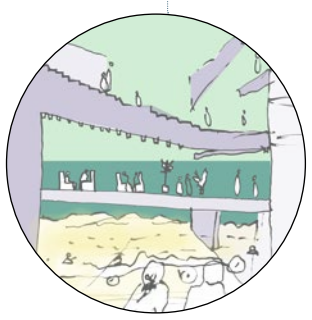
Sectional spatial relationships

Creating moments of tension and political confrontation have been pivotal to the design of the scheme. Here are some key strategies shown as moments in relation to one another and the overall scheme. The scheme's distinct components are seen in section, with the road adjacent to the site screened by the core wall.

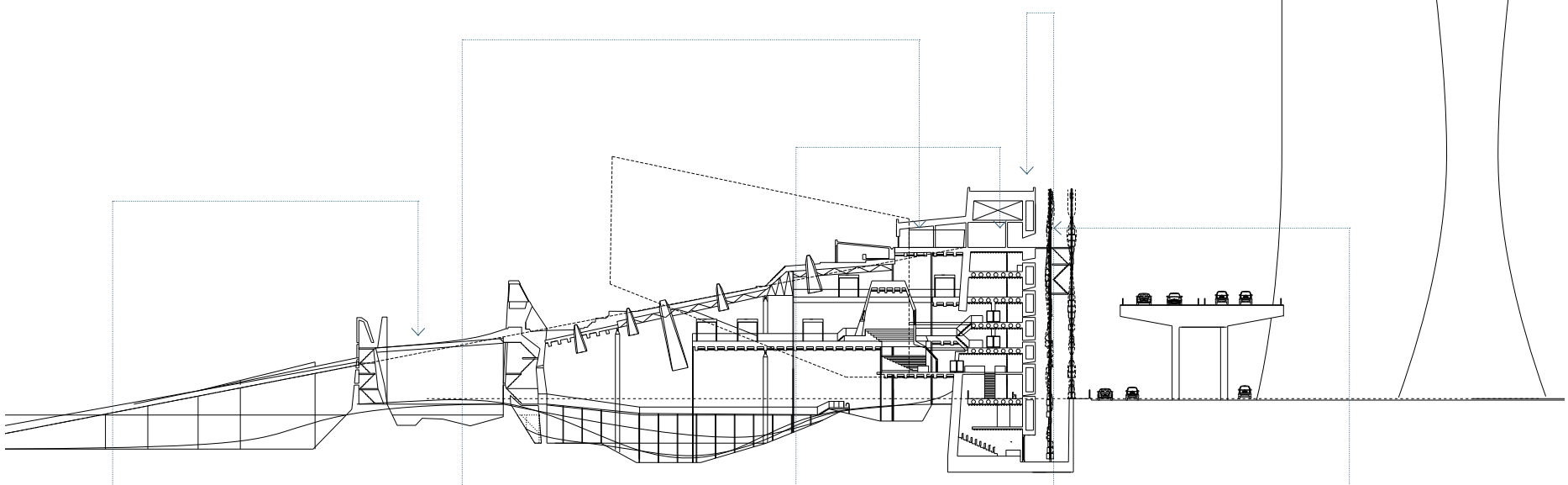


Auditorium flexible between being the location of serious political events such as conferences and gatherings of the MPs. It can also be used for cultural events like concerts and lectures.

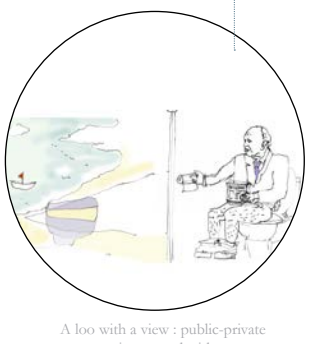
Hanging/ Balcony type levels offer accidental overlooking and chance for public to keep an eye on their governance



Cuts through the plan allow for views through the scheme: through to waterscape and landscaping



The roof is the beach: view down to adjacent buildings from on top of Parliament



A loo with a view : public-private views toyed with

private banquets interrupted by the moving facade of posters

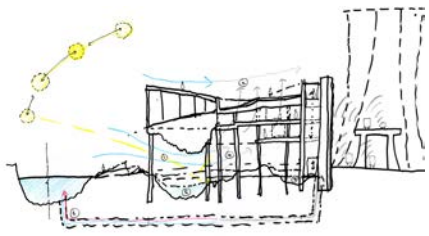
spectacle of helicopter arriving with guests - being watched by public Landing on the highest, flat part of rrof

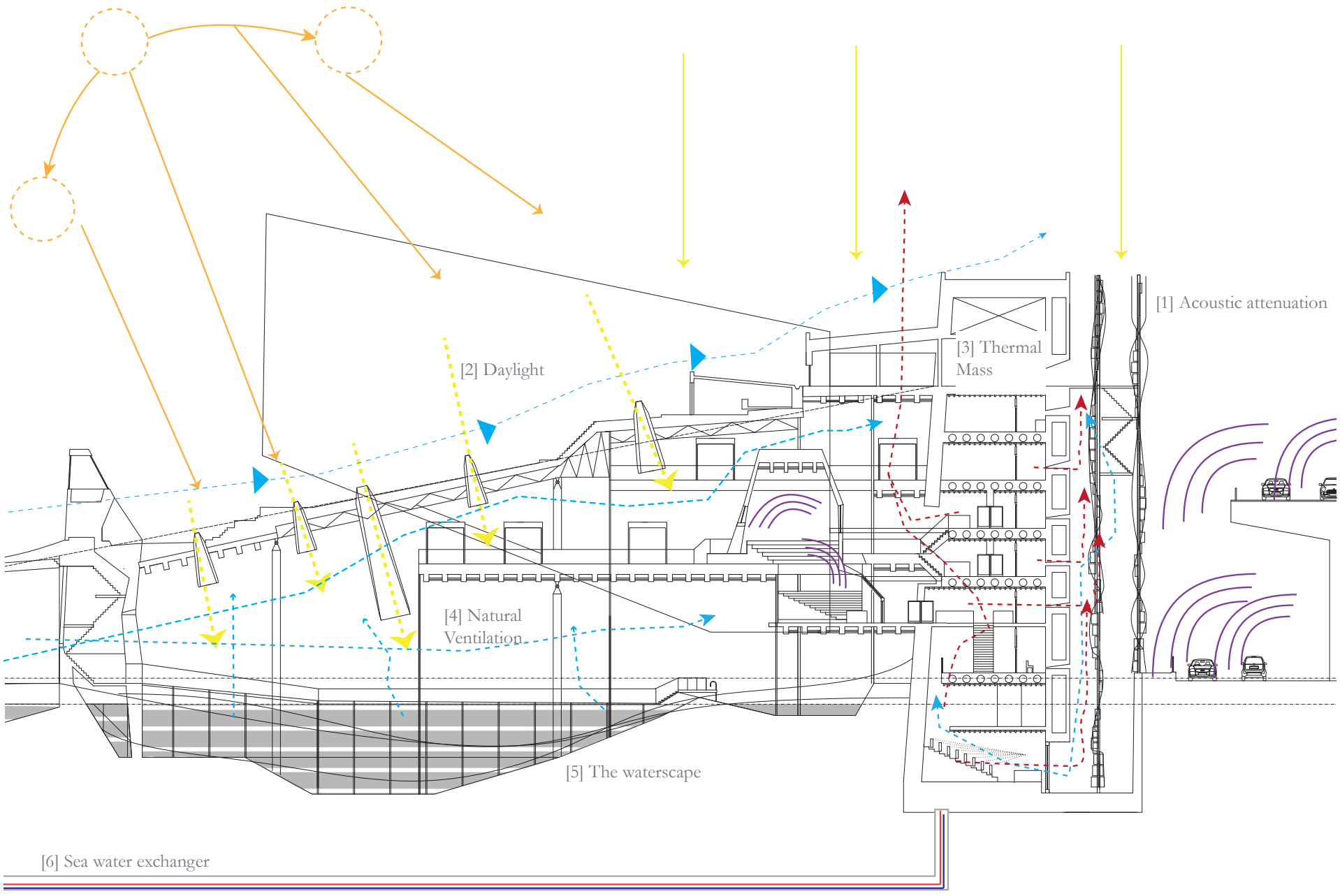
Jean Claude Gaudin spots graffiti on one of his posters

Environment Strategy

Transformation: Beach to Port

After an initial intent sketch environment study, I consulted Max Fordham Engineers as to the possibility of an entirely naturally ventilated, largely daylit scheme. Key priorities emerged, as shown here in my Environment Strategy.





[1] Acoustic attenuation
The site is adjacent to a busy road. In order to create spaces suitable for conferences, meetings and a peaceful beachscape, a living facade has been devised with bass traps, shielding the building from noise.

[2] Daylight
The roof is punctured with a series of solar tubes. These light both the atrium and the pools.

[3] Thermal Mass
The core acts as a thermal mass - keeping internal spaces cool in Summer and warm in Winter.

[4] Natural Ventilation
Much of the scheme can be naturally ventilated, with smaller enclosure provided to protect against wind, keep spaces warm while in use and to protect people from the elements.

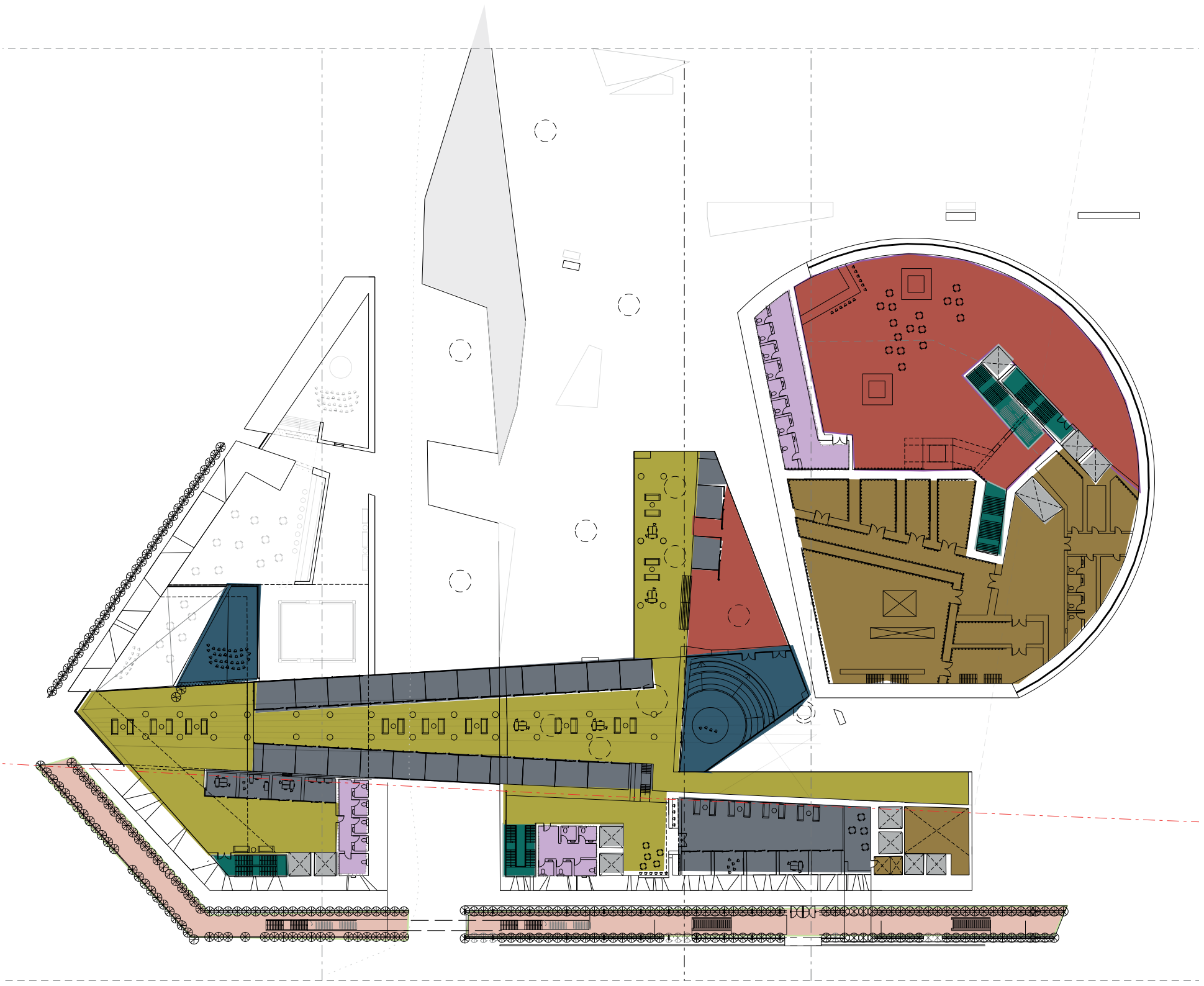
[5] The waterscape
The water beneath the building provides not just a place to swim, the water also reflects daylight into the depths of the building and acts through evaporation as a coolant

[6] Sea water exchanger
A heat exchanger pump reduces energy required in Winter and Summer to keep the building at a comfortable temperature.

Program Strategy

Program zones in diagram

One of the primary focuses of the scheme has been for it to be multi use, multi scale and multi client. Key issues are related to these multi purpose qualities creating conflicts - an auditorium next to a workspace for instance. As such, program arrangement is of of the uptmost importance.



Considered through design process:

[1] Quantity of people:
>2000 per cruiseship, 240 delegates
Large quantity of visitors, fluxes of visitation over year and over day depending on events.

[2] Hierarchy
It is vital in politics to consider the hierarchy between spaces: What can be seen by the public, what is hidden, what is shared space?

[3] Beachscape
How can the scheme accomodate a beachscape within its functions?

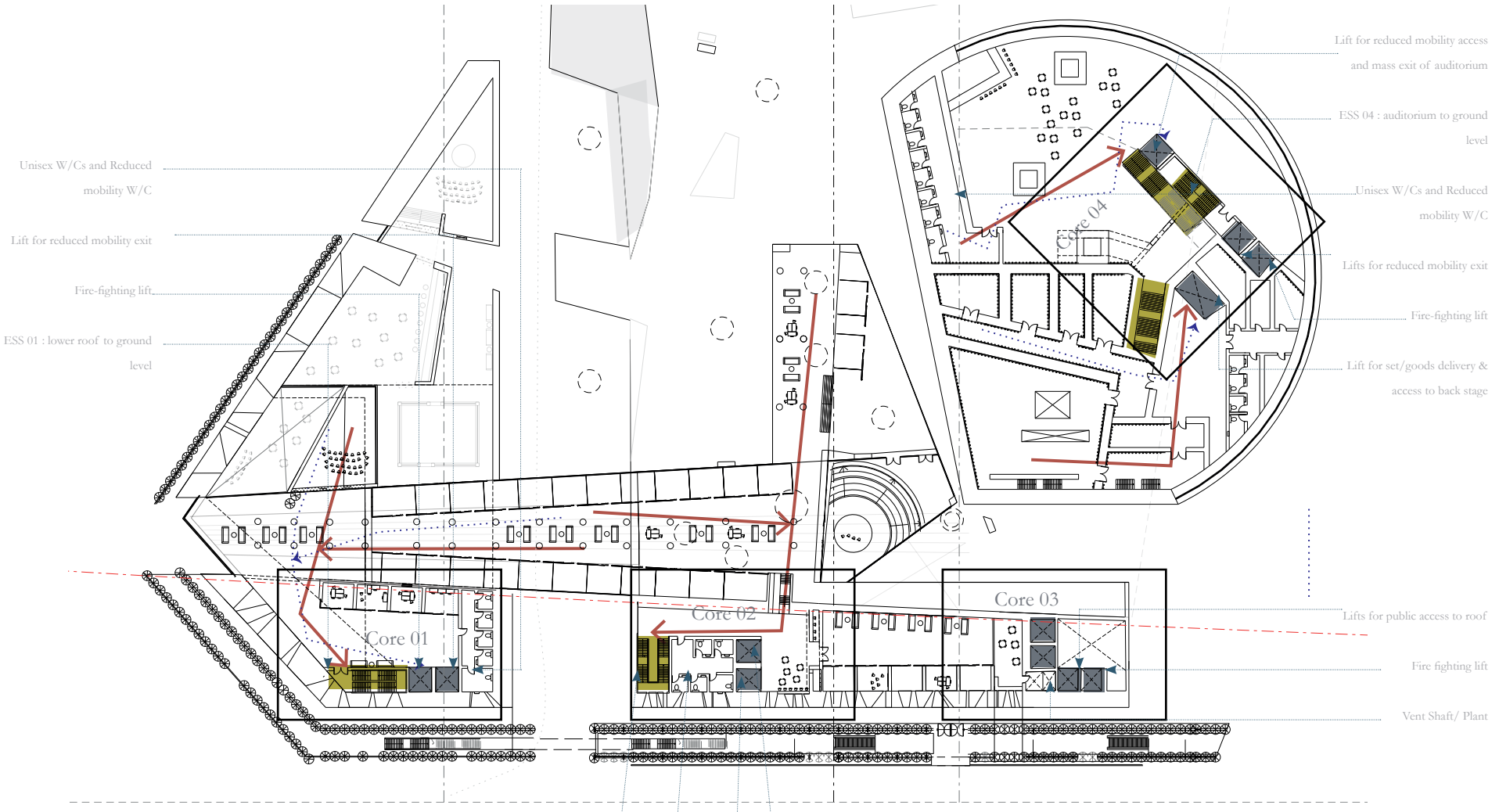
Key

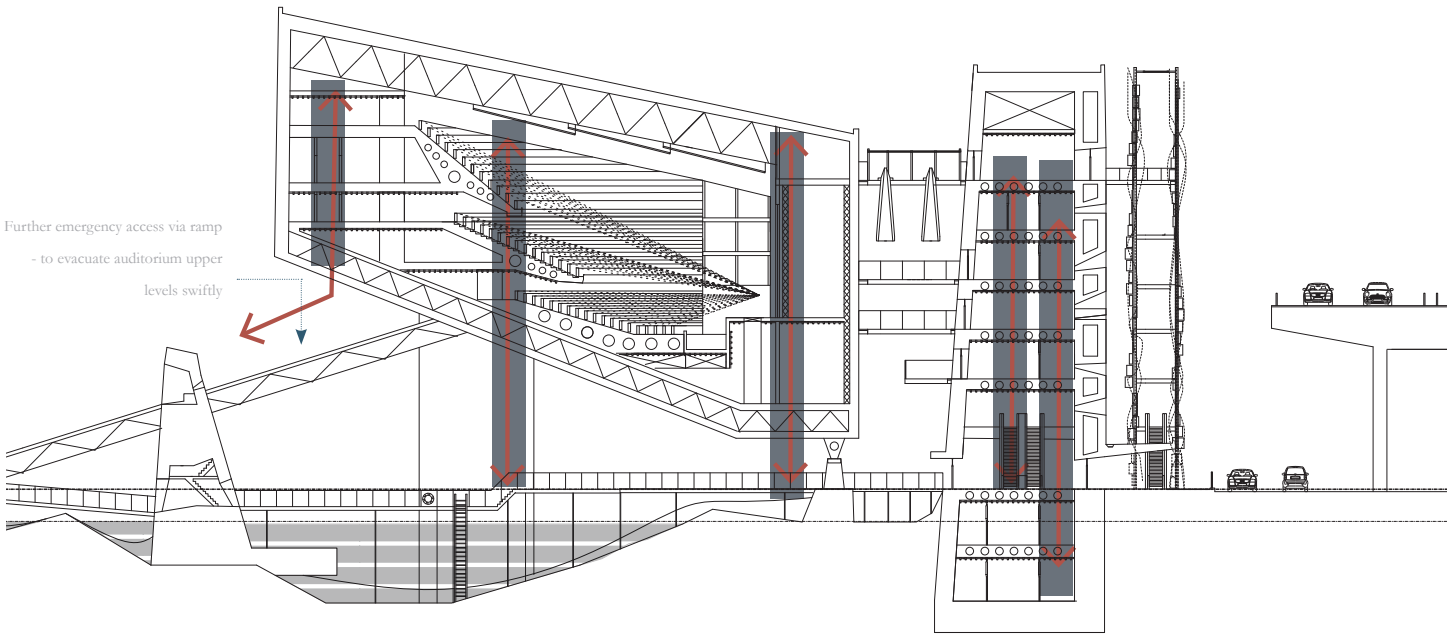
- Breakout/social workspaces
- Chambers of debate
- Enclosed offices - flexible, bookable
- W/Cs with reduced mobility W/C
- Back of house area/backstage
- Staircases
- Vertical Lift shafts
- Foyer space for auditoriums

Fire & Access Strategy

Diagrammatic analysis

The principle concern for Fire and Access for this scheme is the flux in people within the building being within a large range. As such, 4 main cores are employed with a mixture of emergency escape stairs and fire lifts for those reduced mobility members of the public.

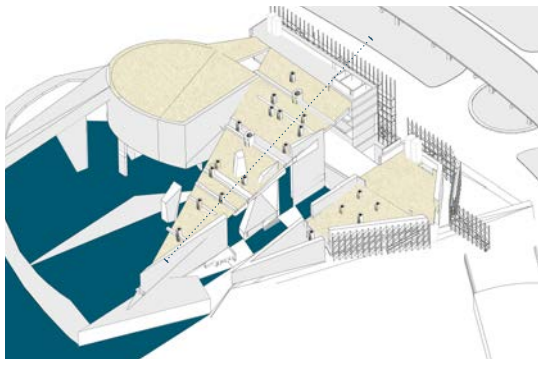


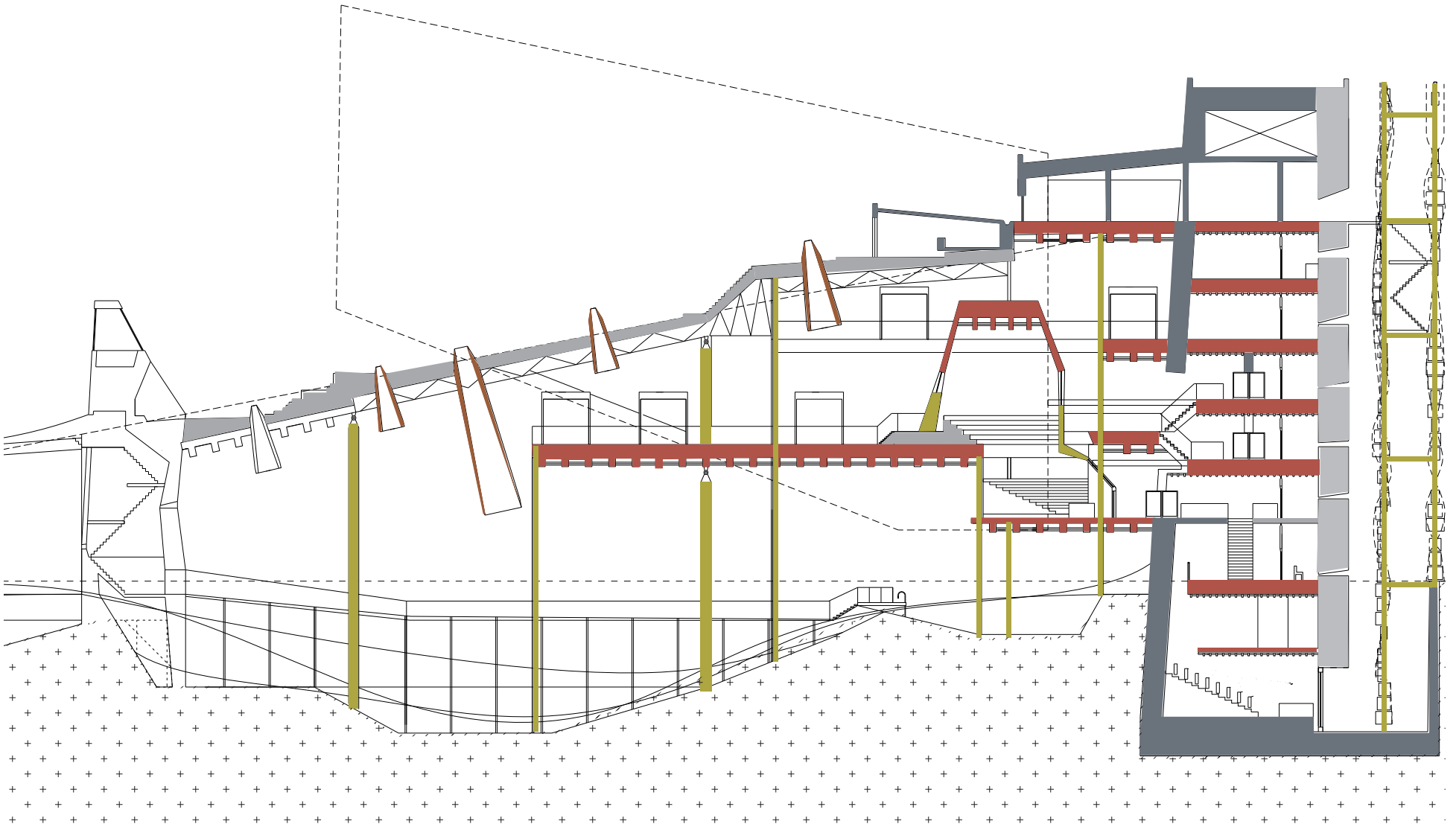


Structural Strategy

Code of concrete methods

Naturally the site would be made of limestone- as part of the Calanque coast. In order to reintroduce the coast to the North of the city, I will be introducing concrete, a beach and water back into its structure. This drawing proposes a series of systems for me to investigate in Section 02.





01 02 03 04 05 06

[1]
Cut and sculpted to create a new waterscape with pools suitable for swimming in. Testing required to investigate casting in sand situ. - I will investigate in section 2

[2]
Highly exact, factory formed pre cast solar tubes, precise and sculptural finish.

[3]
Precast concrete facade pieces. Max size to be determined by construction parameters.

[4]
Steel supporting columns, meeting concrete with a pin joint to emphasise difference in materials.

[5]
Shuttered insitu Marseille-Provence concrete and gabion facade.

[6]
Precast soffits, used to cast floor slab above and then remain as built shuttering.

Appendix

General Arrangement Drawings

Site

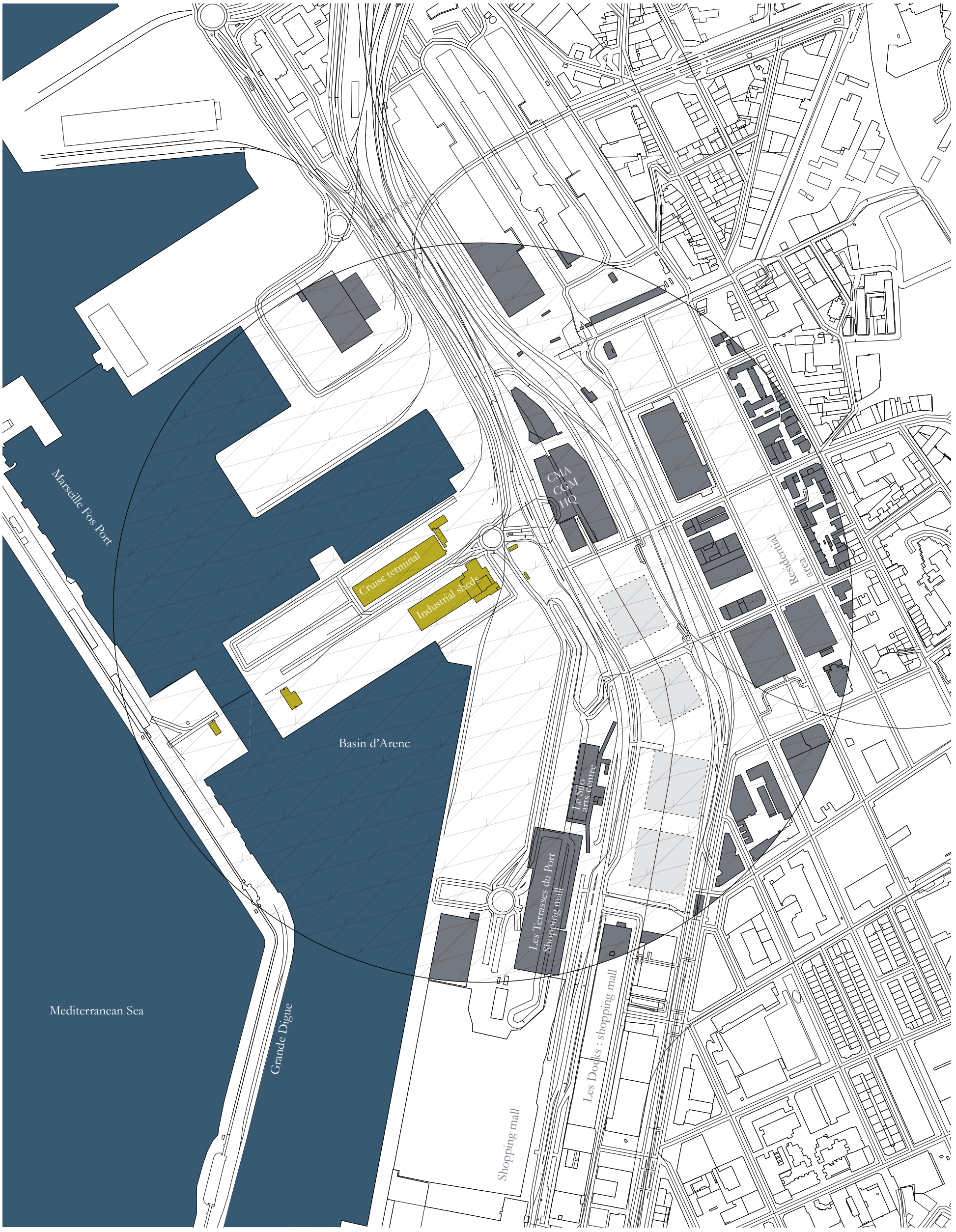
Site Location Plan
1:15000 @ A3

N

Zone of the masterplan

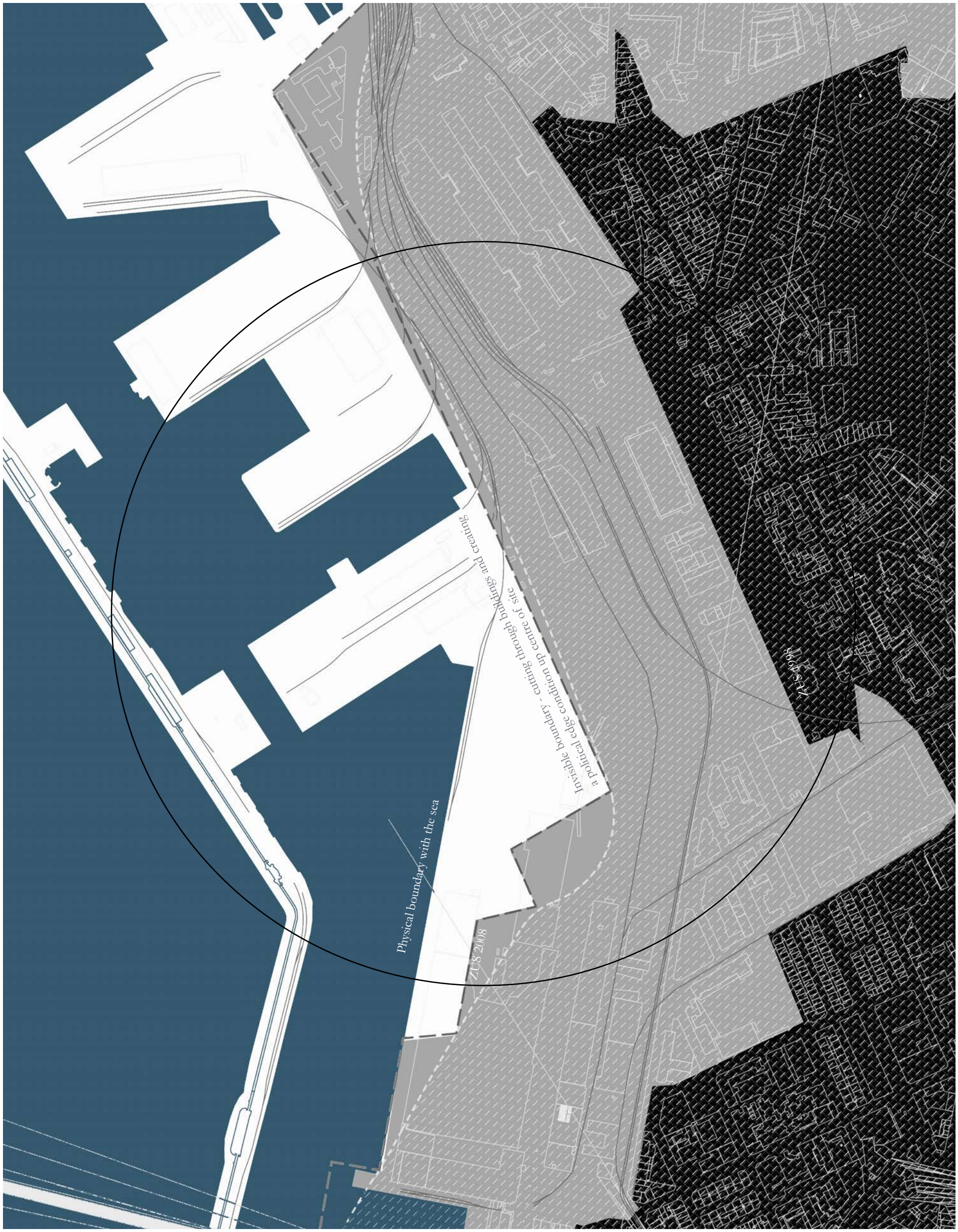
Site

Visible Location
Site Existing Plan
1:5000 @ A3



Site

[In]visible Location
Site Existing Politics Plan
1:5000 @ A3



N

Not part of sensitiv site

Zone Urbaine Sensitiv
+300m extension 2008

Zone Urbaine Sensitiv
Original boundary

Masterplan

Masterplan
1:10000 @ A3

N

Zone of the masterplan

Masterplan

Masterplan
1:5000 @ A3

N

Zone of the masterplan

Masterplan

Masterplan with massings of construction phases
1:5000 @ A3

N

Phase 02

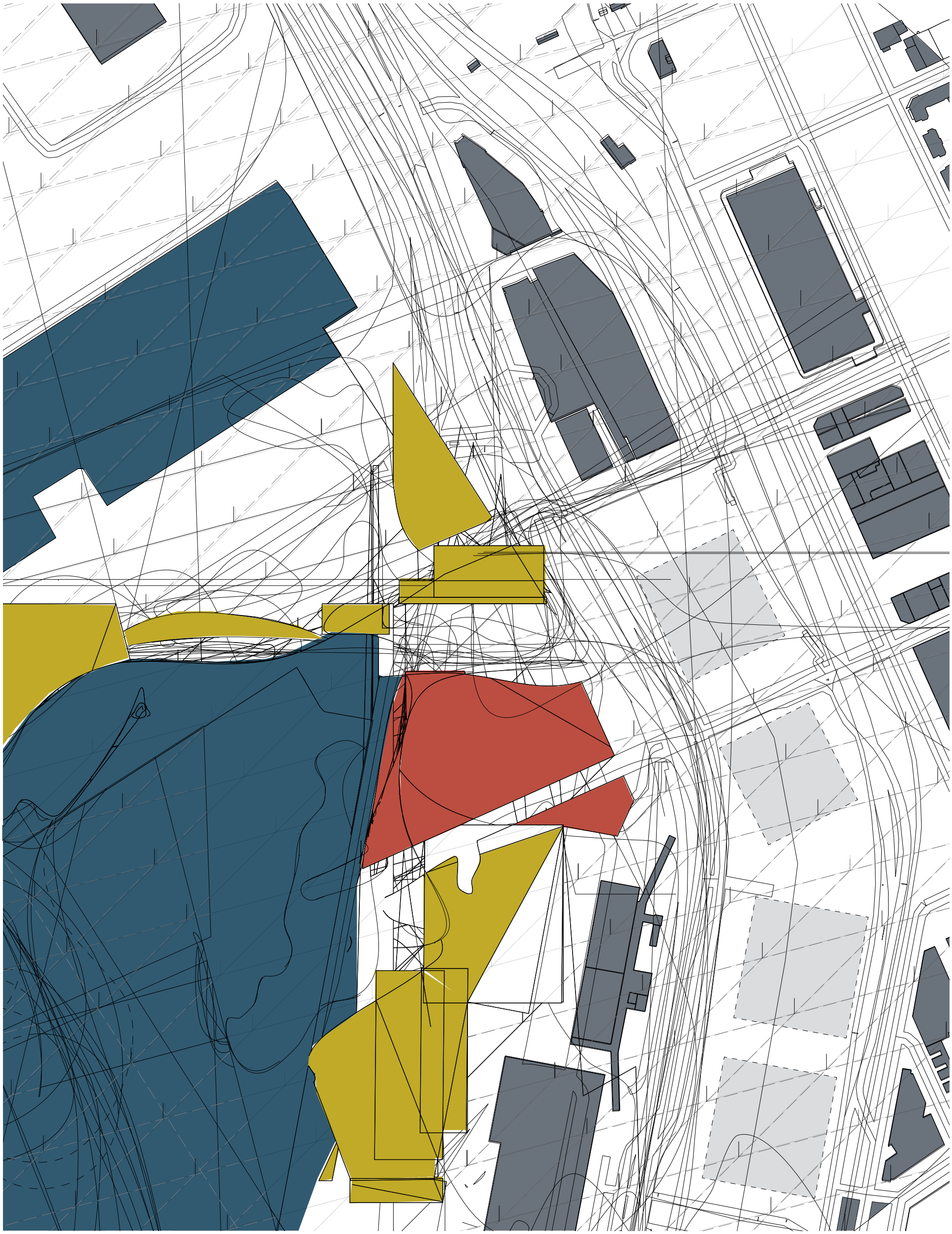
Surrounding context

Towers being built by Euroméditerranée

Phase 01

Masterplan

Masterplan with massings of construction phases
1:2500 @ A3



N

Phase 02

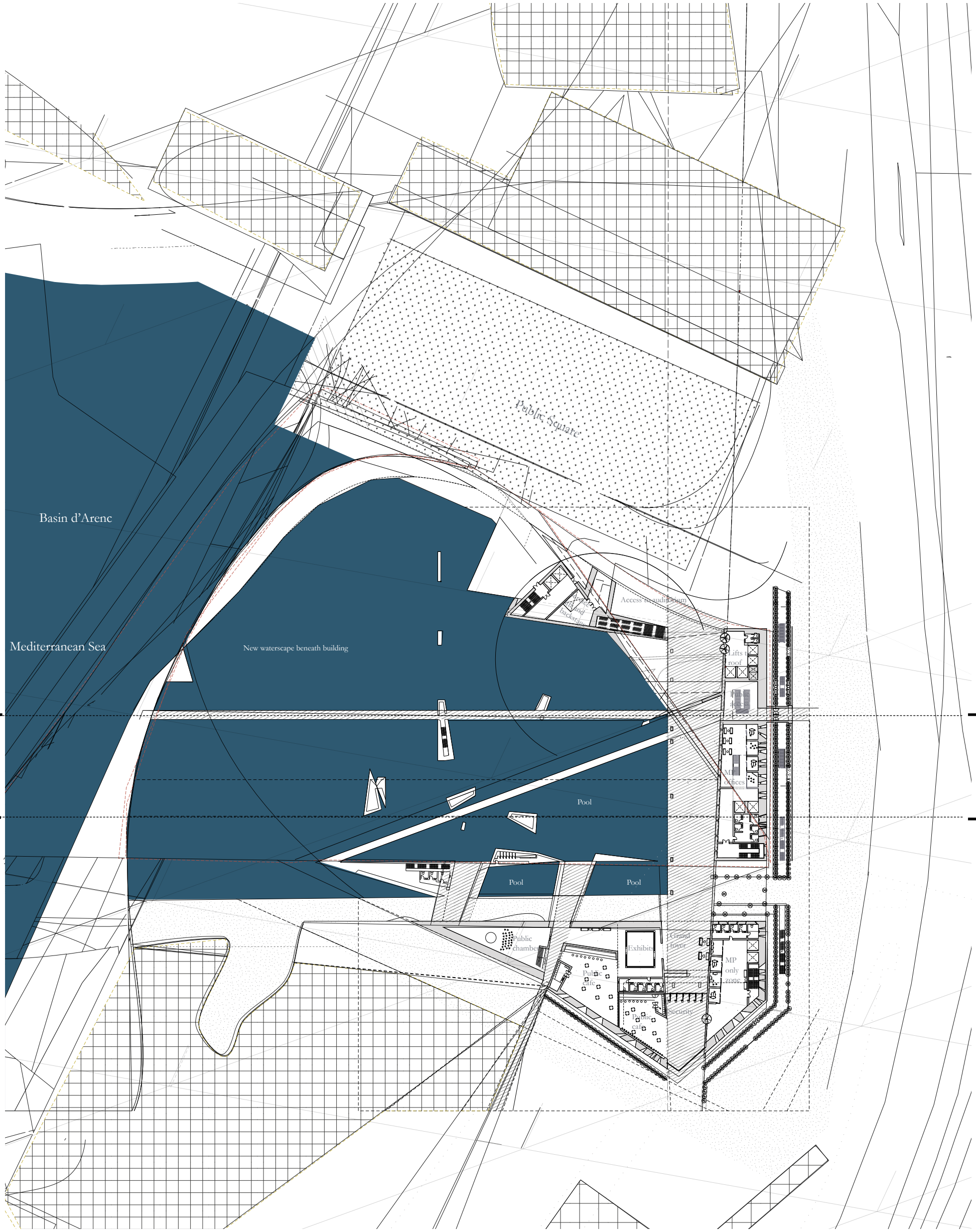
Surrounding context

Towers being built by Euroméditerranée

Phase 01 scheme

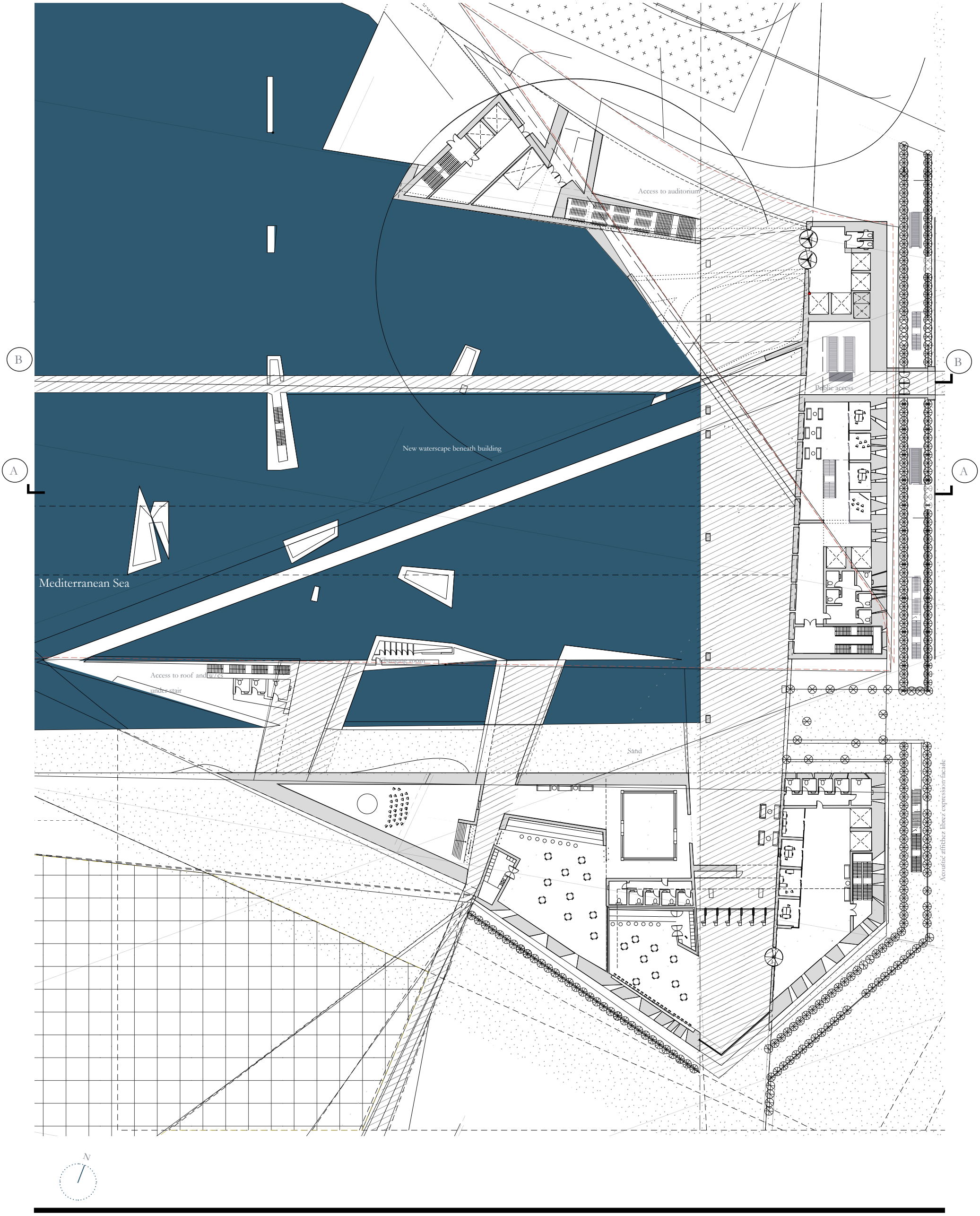
Plan

Ground floor plan
1:1000 @ A3



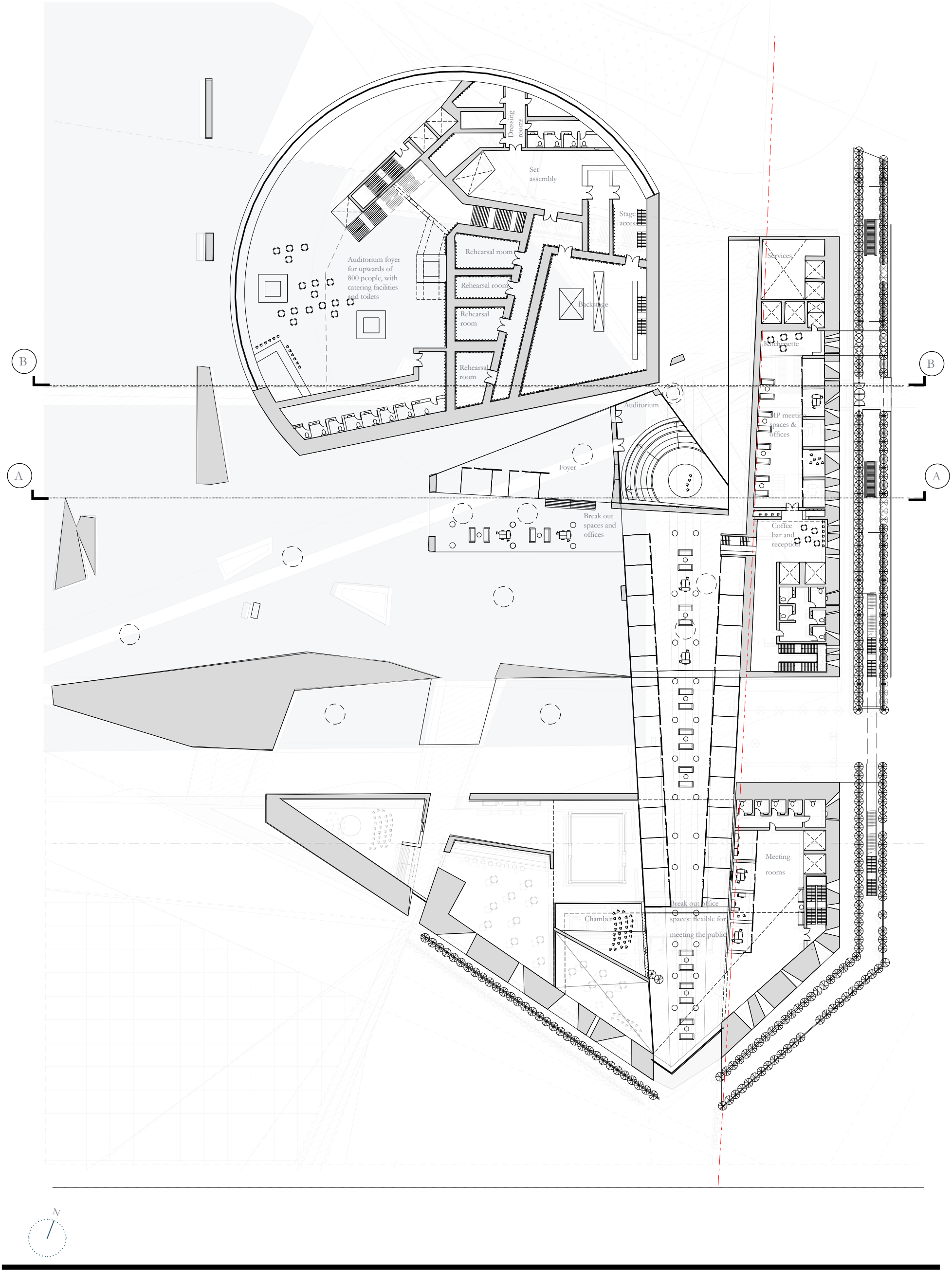
Plan

Ground floor plan
1:250 @ A3



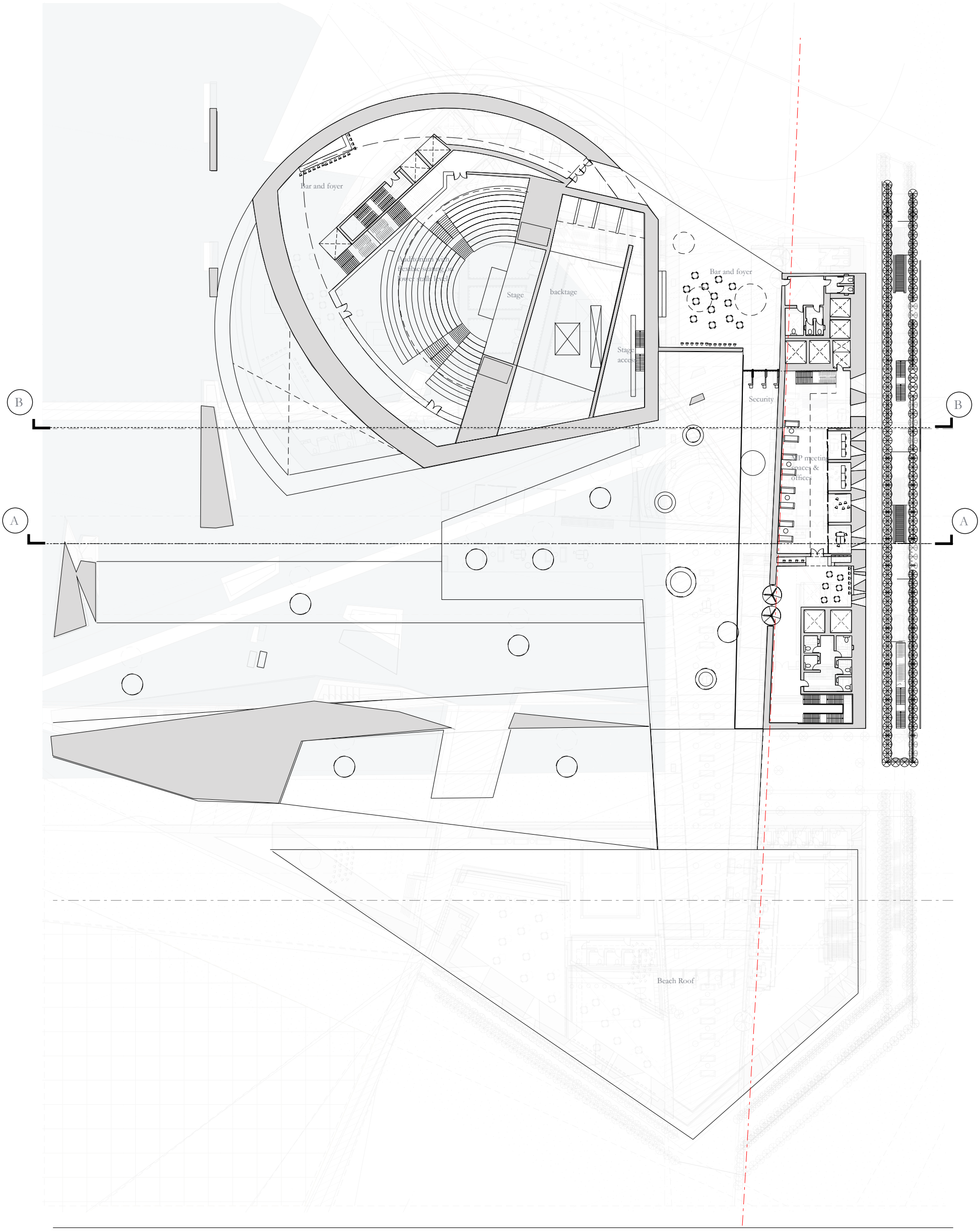
Plan

+8m plan
1:250 @ A3



Plan

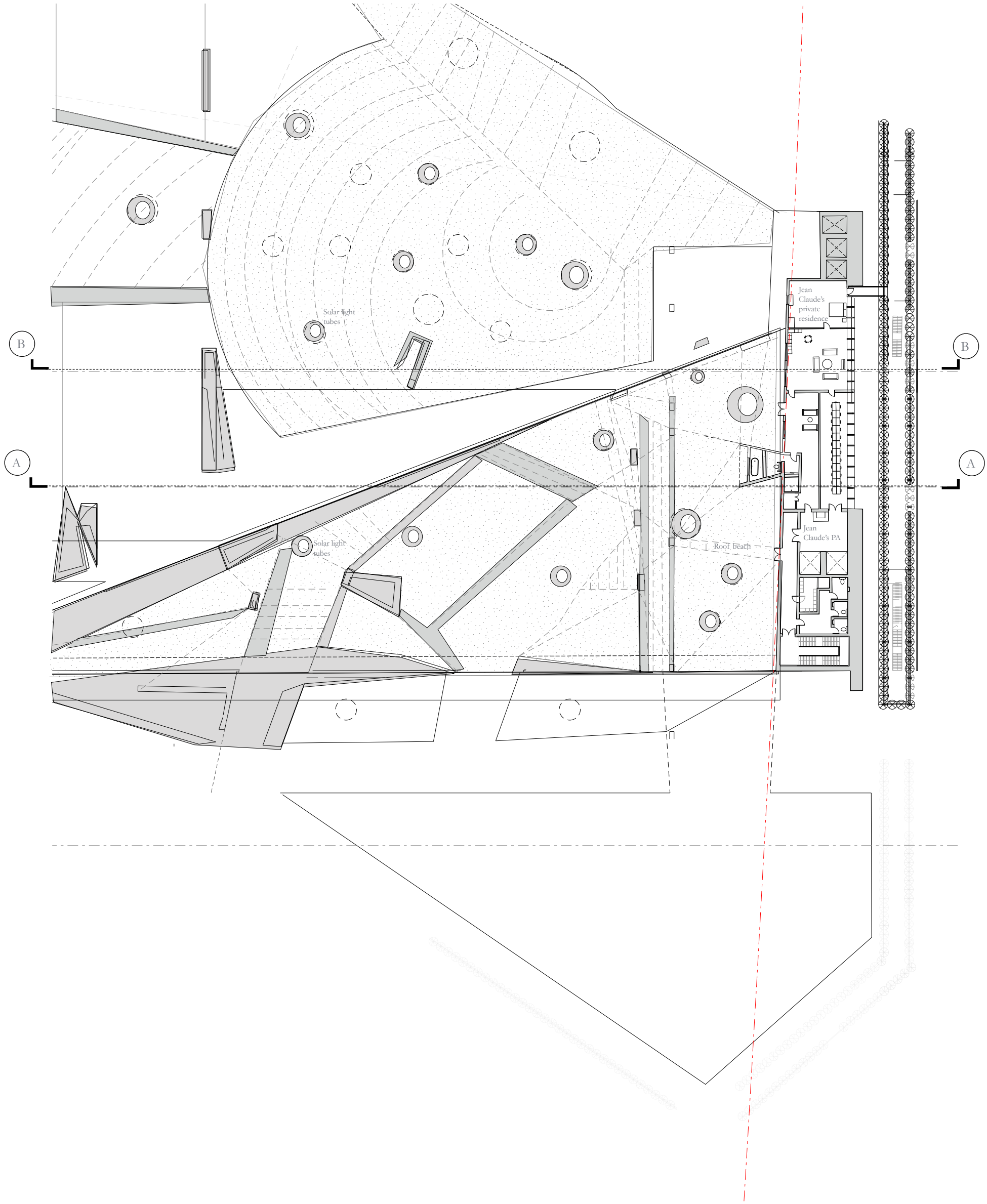
+17m plan
1:500 @ A3



N

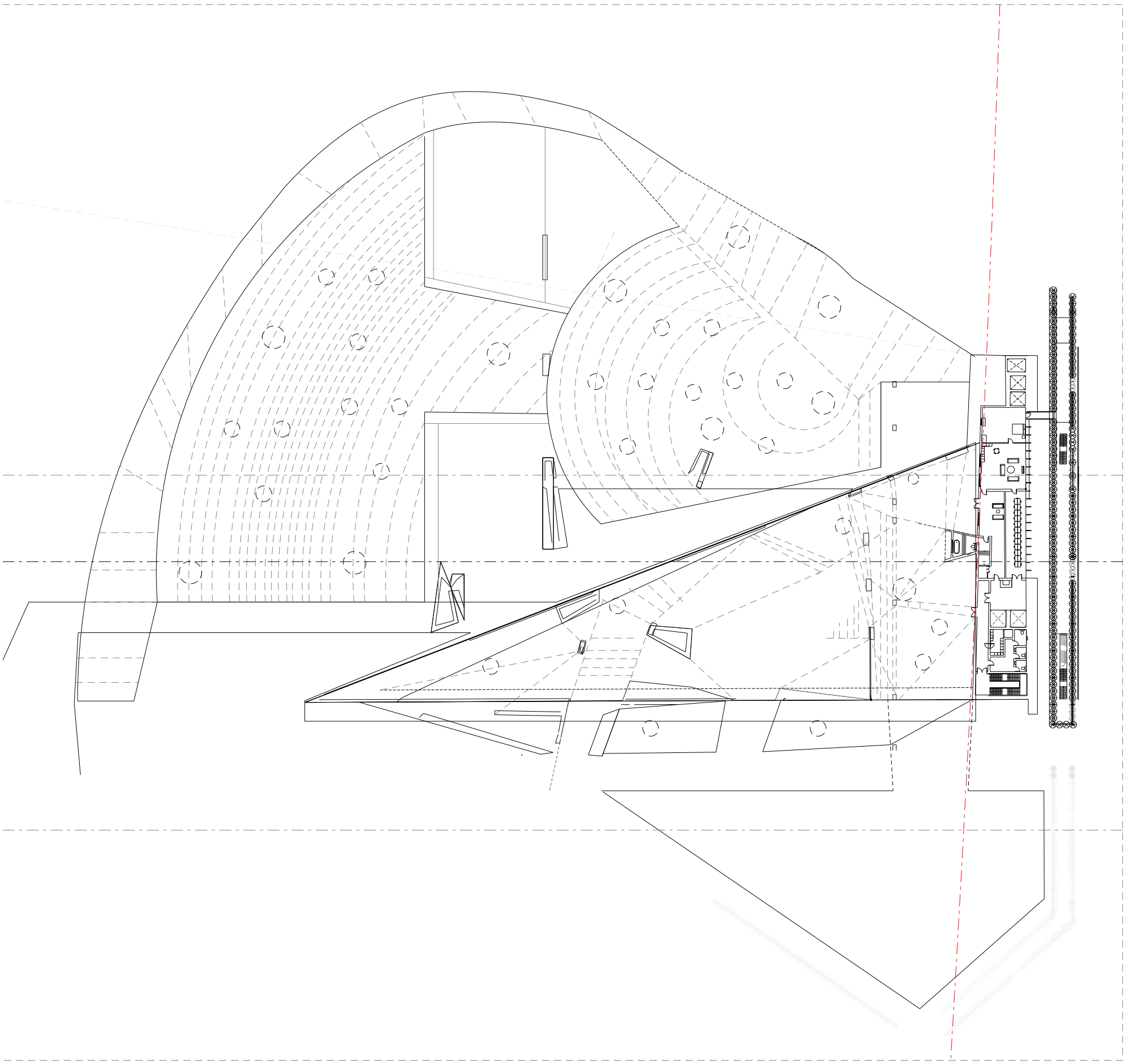
Plan

+23m plan
1:500 @ A3



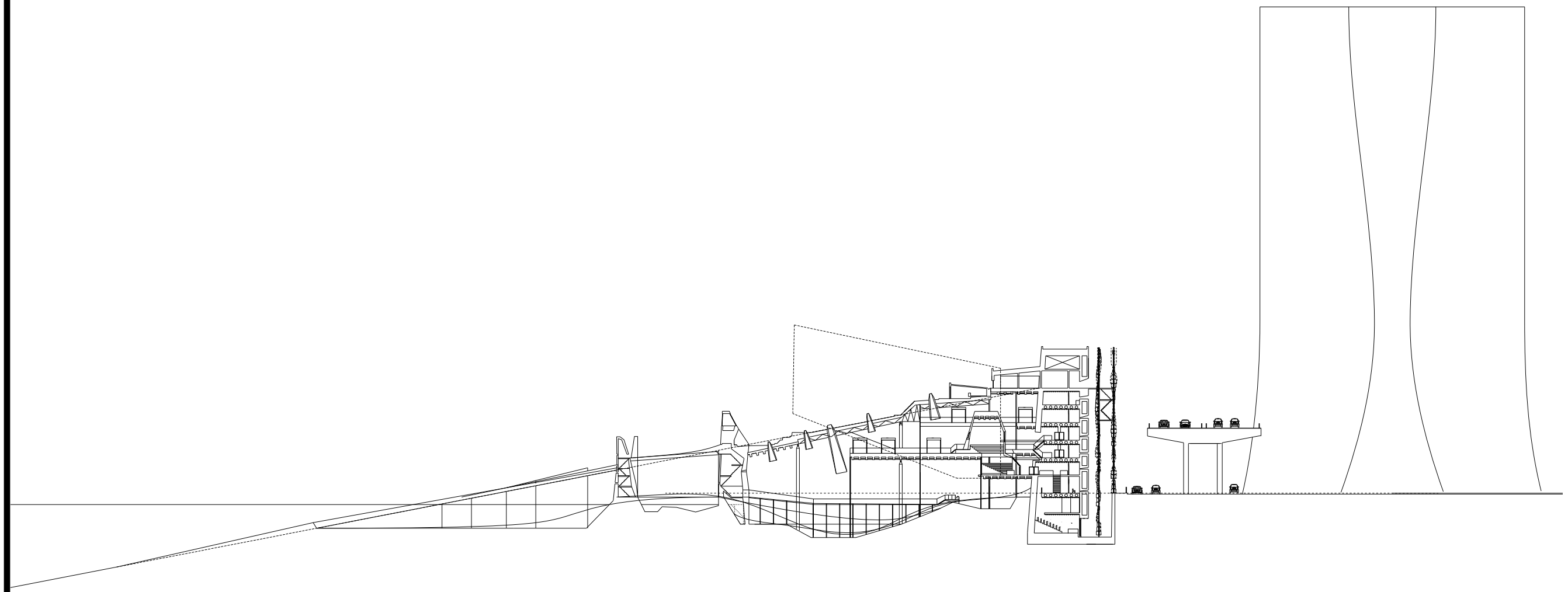
Plan

+23m plan
1:750 @ A3



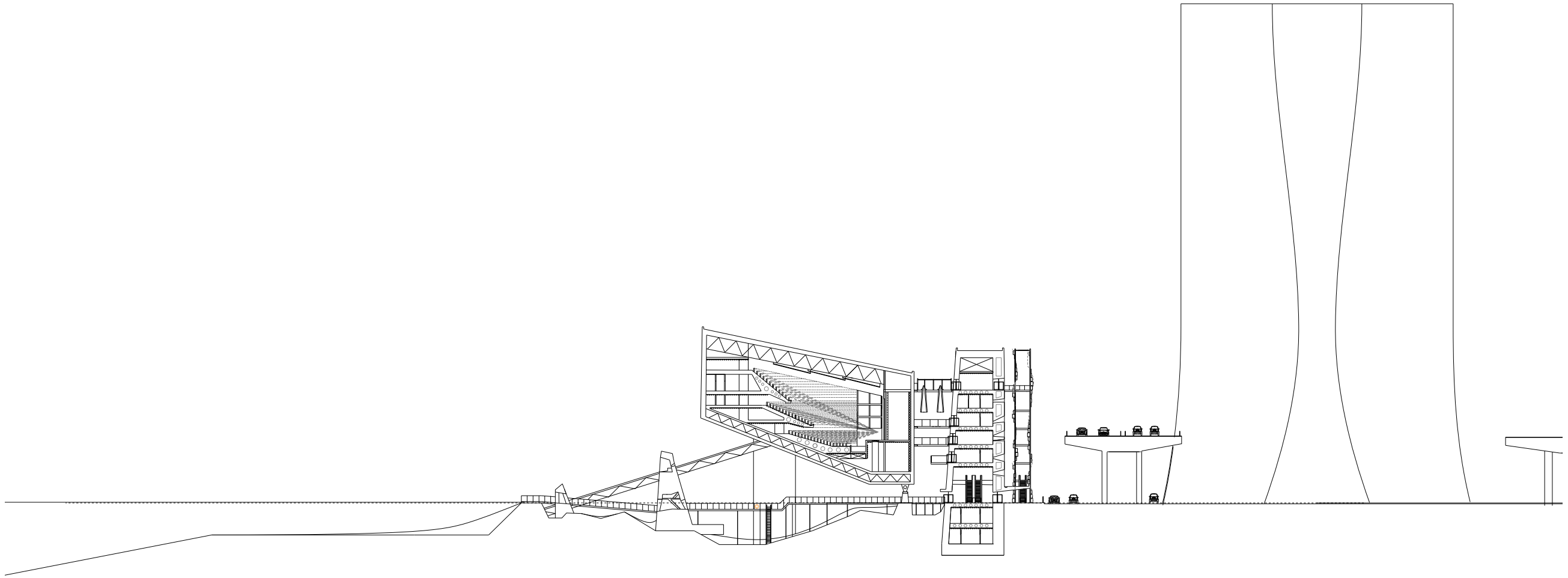
N

Section



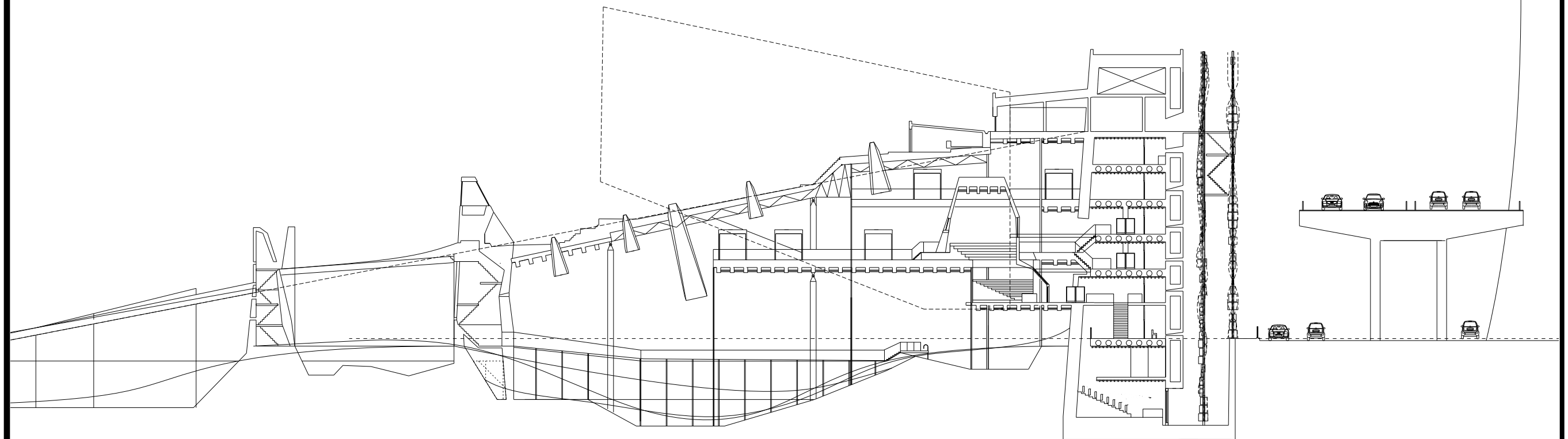
Section A-A
1:1000 @ A3

Section



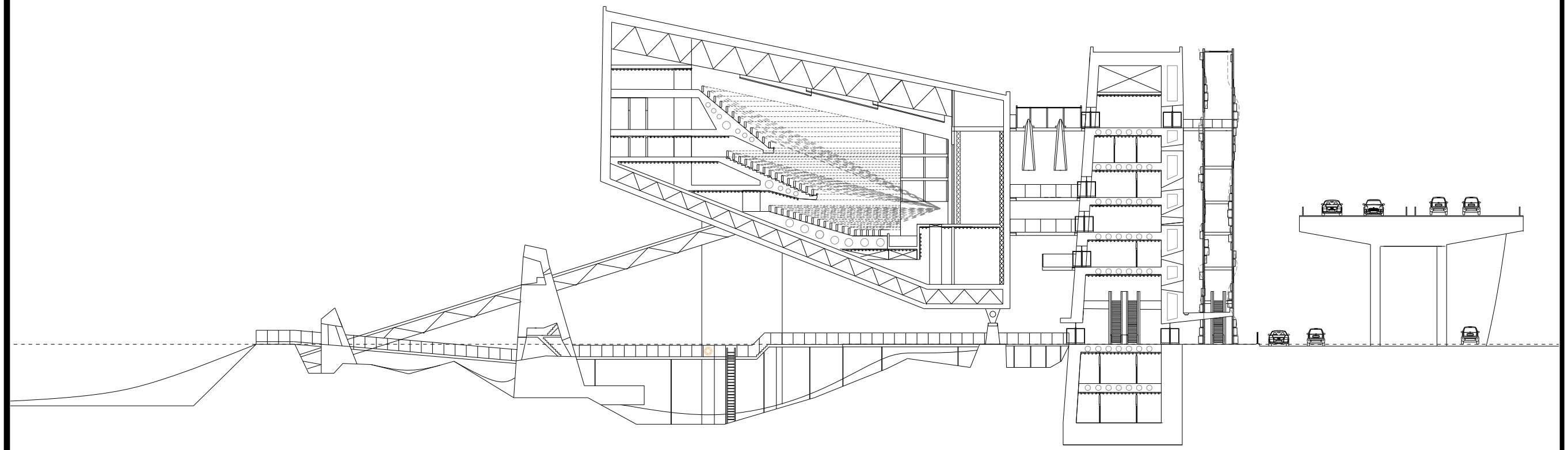
Section B-B
1:1000 @ A3

Section



Section A-A
1:250 @ A3

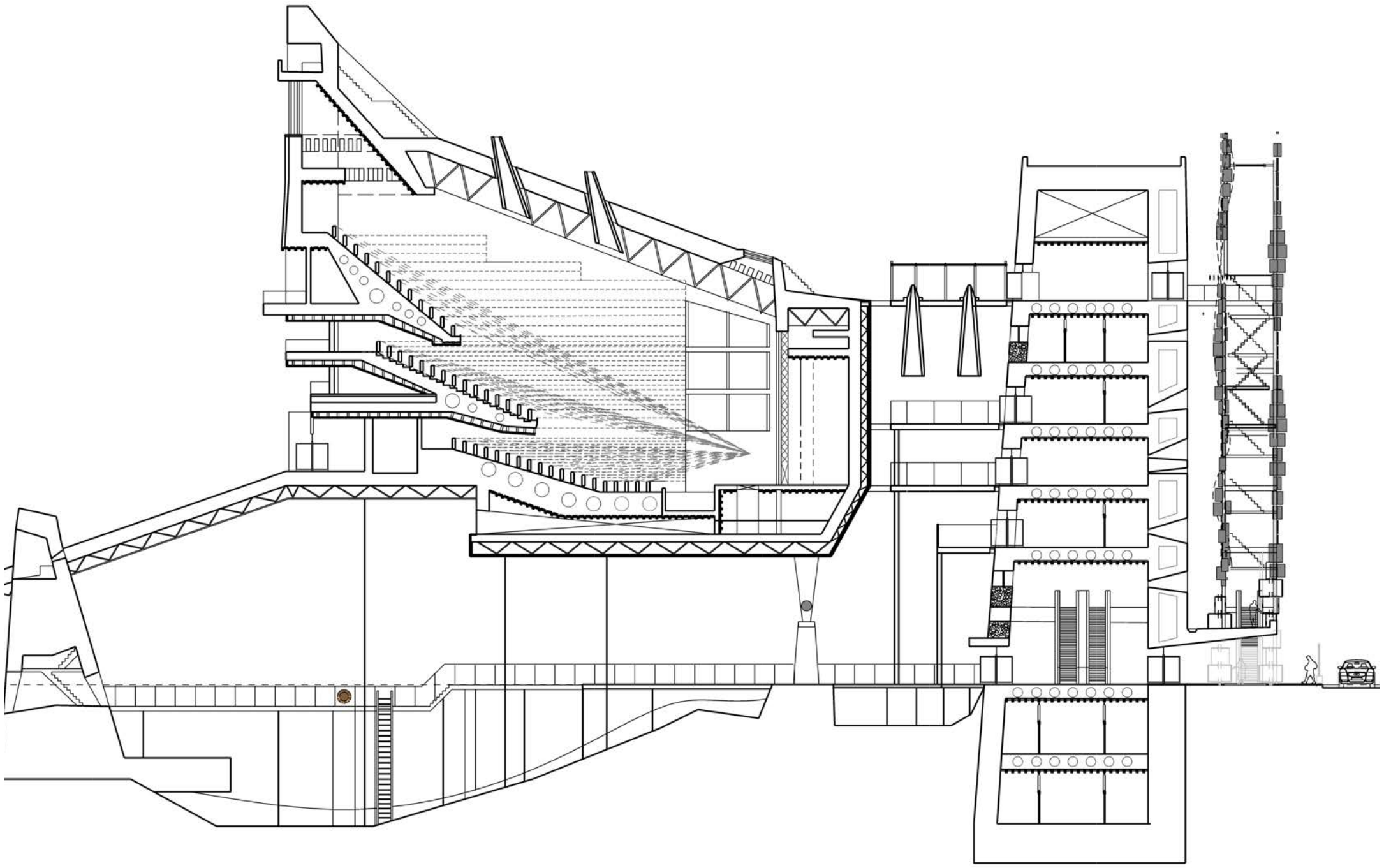
Section



Section A-A
1:250 @ A3

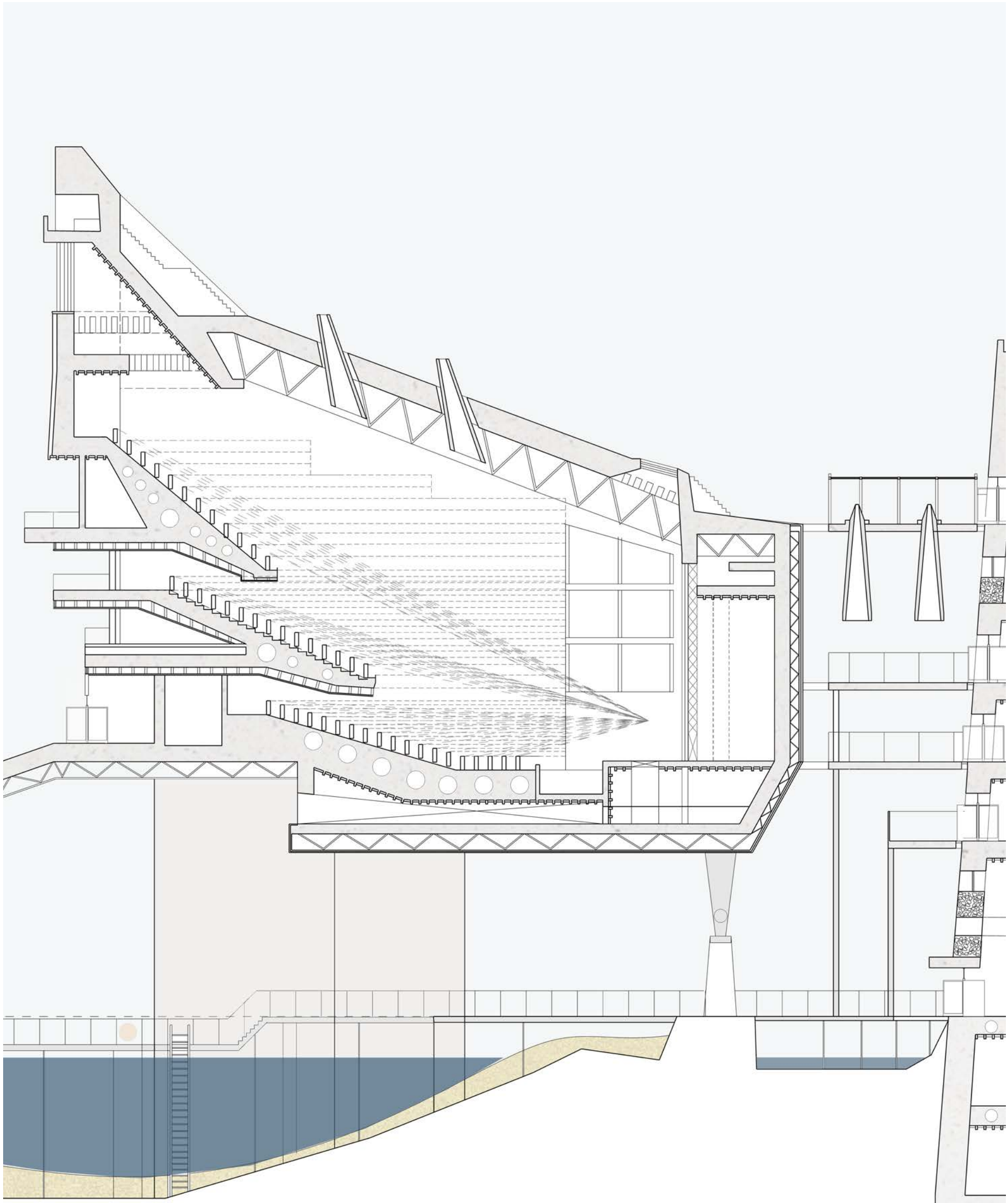
Section

Section B-B
1:200 @ A3
After DR updates to acoustic strategy and auditorium.

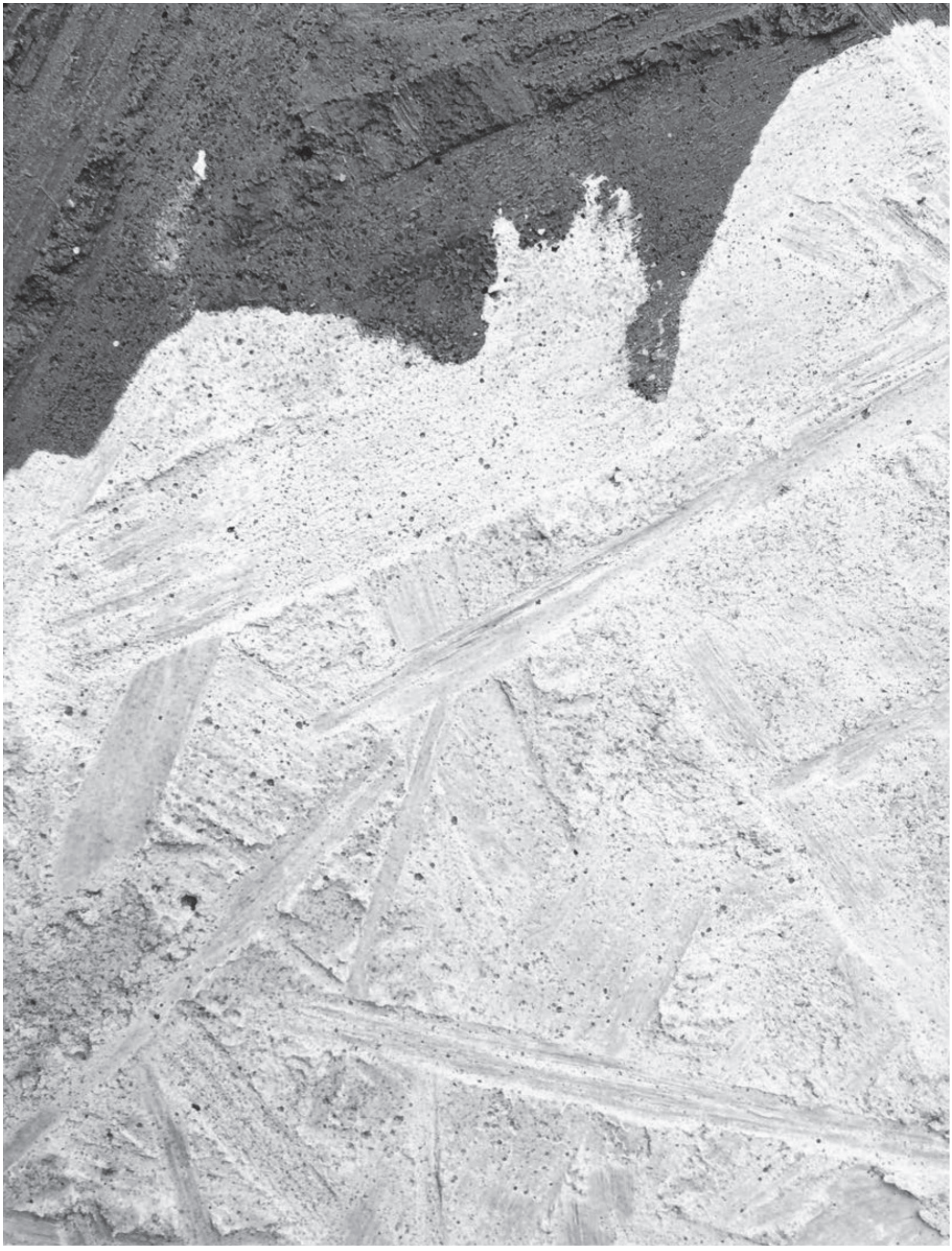


Section

Section B-B
1:100 @ A3
After DR updates to acoustic strategy and auditorium.



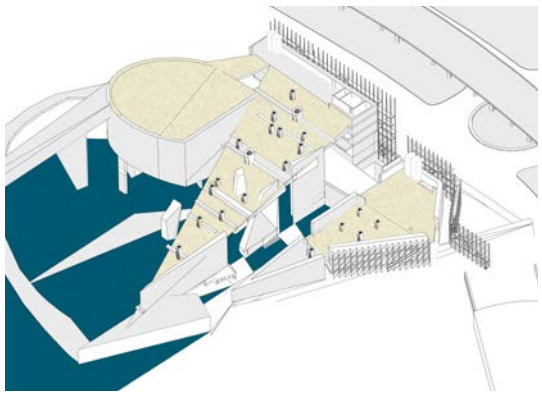
02 *Building construction*

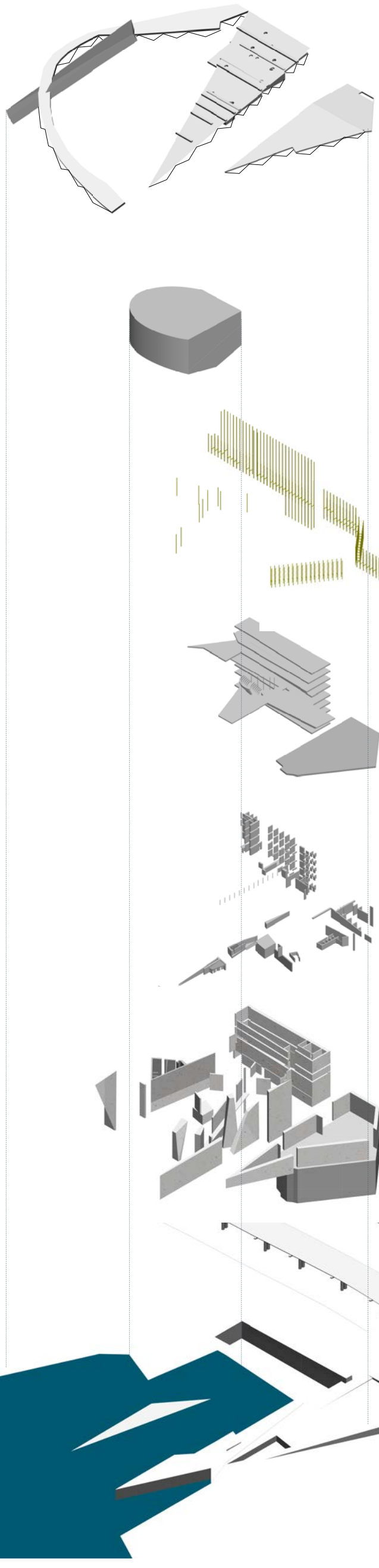


Principle Building Fabric

Structural Systems

The scheme has several key structures: A core, a beach roof, atrium levels, an auditorium, a new waterscape, an acoustic facade, a series of light tubes, glazed steel structures slotted into this. This diagram explains how they come together to form the overall building shown below.





06 Beachscape roof
Precast pieces on a steel truss system and supported by concrete structure below. After a consultation with Eckersly O'Callaghan, it was deemed possible to span the distances required with this hybrid solution.

05 Auditorium
Self contained construct: steel frame with relflective aluminium cladding and concrete panels

04 Gantry-type facade system
Acoustic Affichez Librez Expression - which acts as a hoarding line for the scheme's construction duration. Steel with ply wood panels for acoustic attenuation. Trusses support the system.

03 Slabs
Concrete cast insitu over precast panels of soffits to reduce formwork on site and to add structural strength. Resting on below structure, with some additional beams where required.

02 Internal walls and seperations:
Concrete cast in sit.

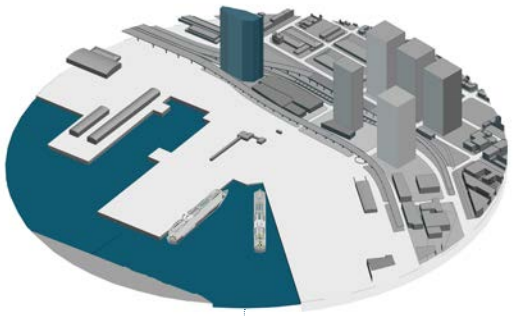
01 Primary Structure
Main structure is reinforced concrete. Structural system of concrete columns and supports and core buildings to support the above slabs, auditorium and roofscape, with as minimal additional steel support as possible

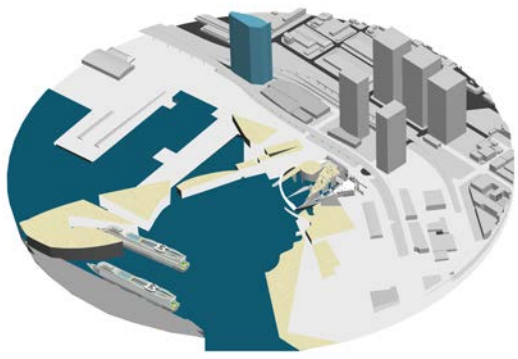
00 Foundations and new waterline
The project amends the coastline of the site, so will require edge condition of water to be demolished and to flood the landscape, after creating a waterscape and building lower

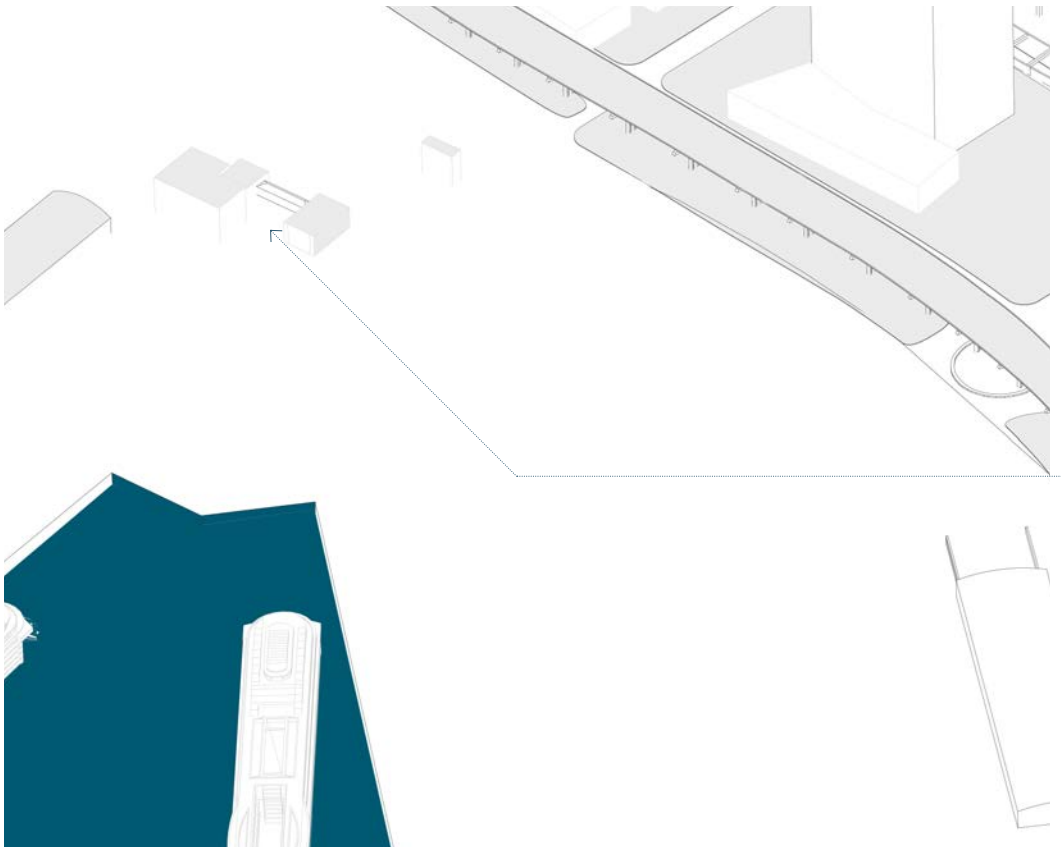
Construction Sequence

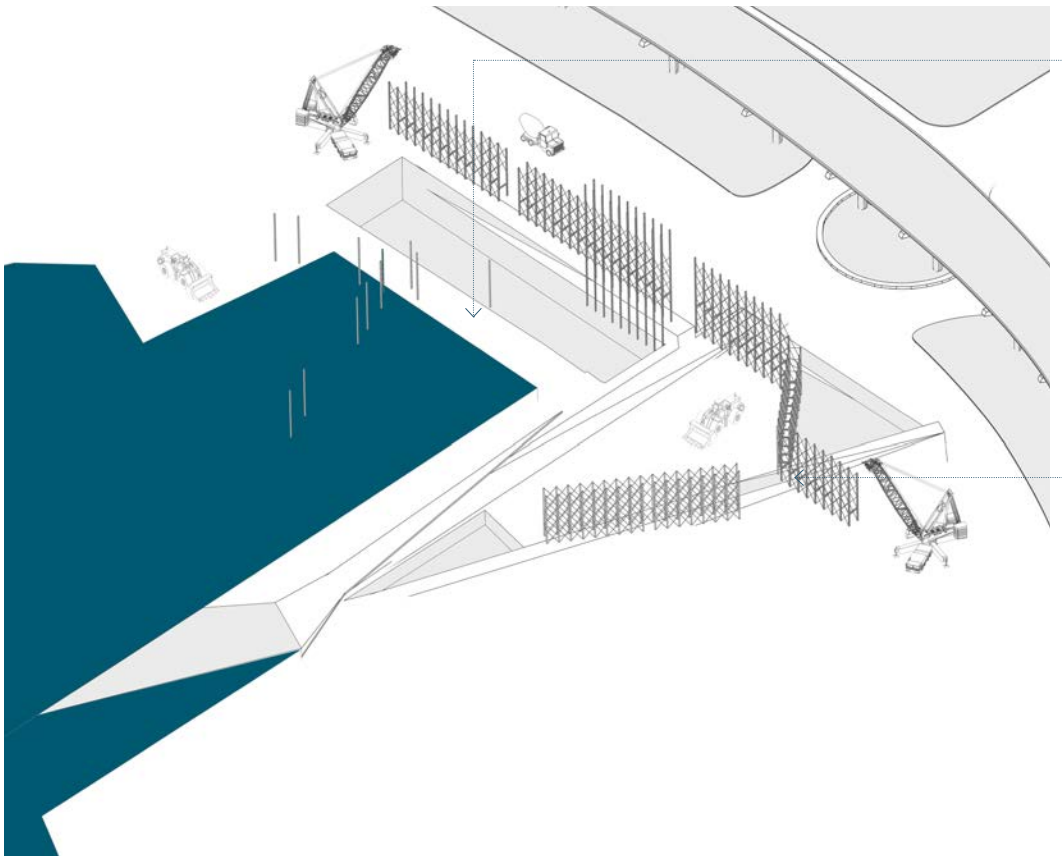
Building the Parliament

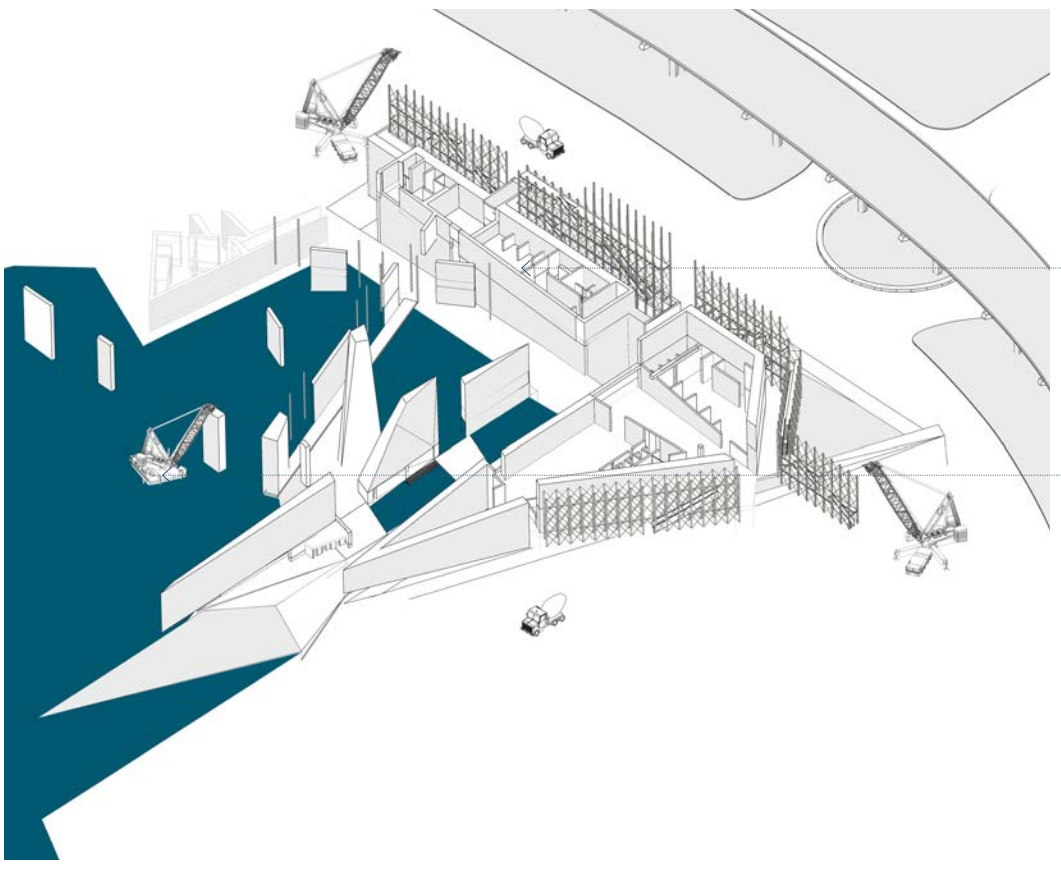
The construction sequence describes the process of how the scheme is to be put together and the hierarchy of the components that build it. The process makes use of the waterside location and the possiblility of the gantry to act as a scaffold and hoarding line.











Step 00: Site

Cleaning up site, demolishing buildings to be rebuilt as part of scheme. Ships to dock temporarily elsewhere along port for duration of construction process.

Investigations: Ground condition, archaeology scan, industrial pollution test

These buildings are being demolished and reincorporated in the scheme - they are a passenger terminal which iis currently a shed and some industrial buildings. .

Step 01: Groundworks

Digging base for foundation, casting foundation, excavating water's edge to create new waterline. If not polluted, aggregate can be saved for construction, to be used for making concrete, filling gabions and creating new landforms

Step 02: Construction of Gantry

The acoustic facade structure can act as scaffolding for duration of the build. It will have hoisting mechanisms fitted and lightweight cranes added

This will form the hoarding line for the project henceforth - the whole site will be closed to the public until completition, apart from publicity officially distributed by the Metropole

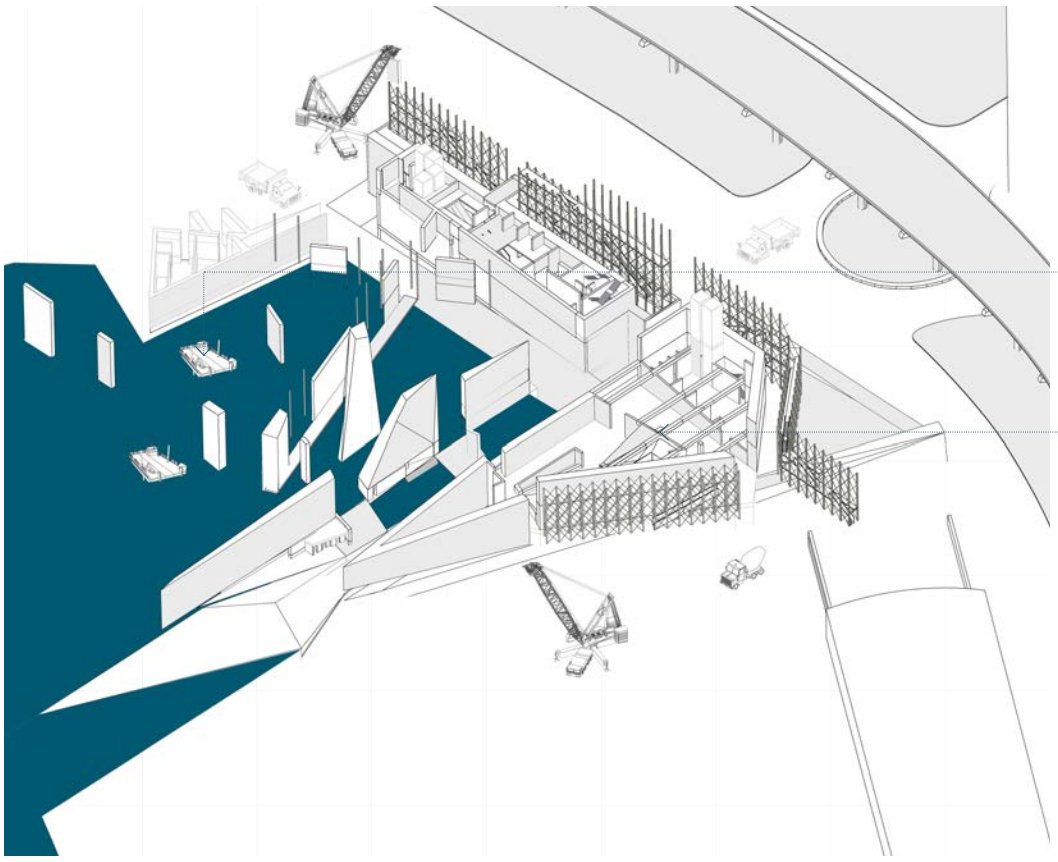
Step 03: Floor slabs, concrete insitu box

Casting the shuttering for the main structural pieces, with piling. Creating a strong, waterproof edge. Barges are used during construction process to deliver materials to site and as crane bases when working over water.

Step 04: Construction of upper level slabs

The building is to be constructed bottom-up, with slabs precast and insitu hybrid acting as the construction worker surface. The finish of the majority of structural concrete is to be visible, so all concrete is to be finished to high standards.

Key issue: waterproofing of concrete while setting : Temporary shelter may be needed if rain persistent to allow insitu to set

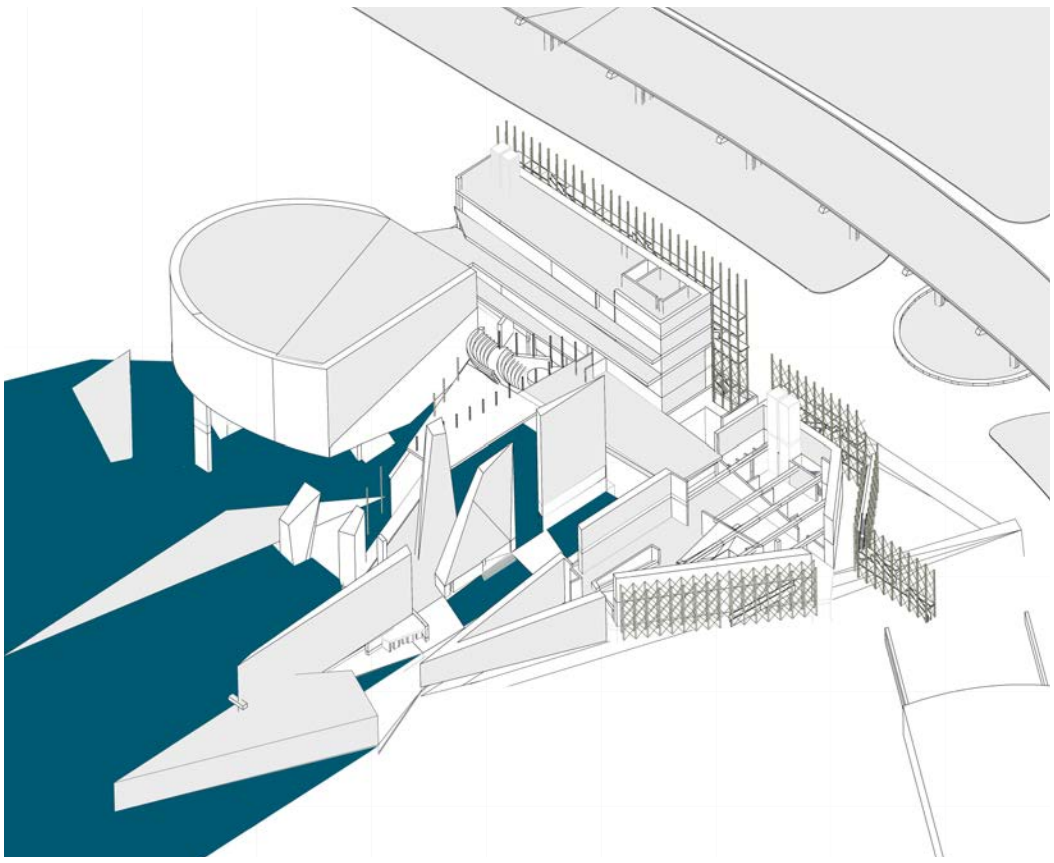


Step 05: Secondary Structures and facade pieces

Structural beams are lifted into position. As the building grows in height, the facade can be constructed increasingly. Pre cast pieces are lifted into position, interlocking as per details.

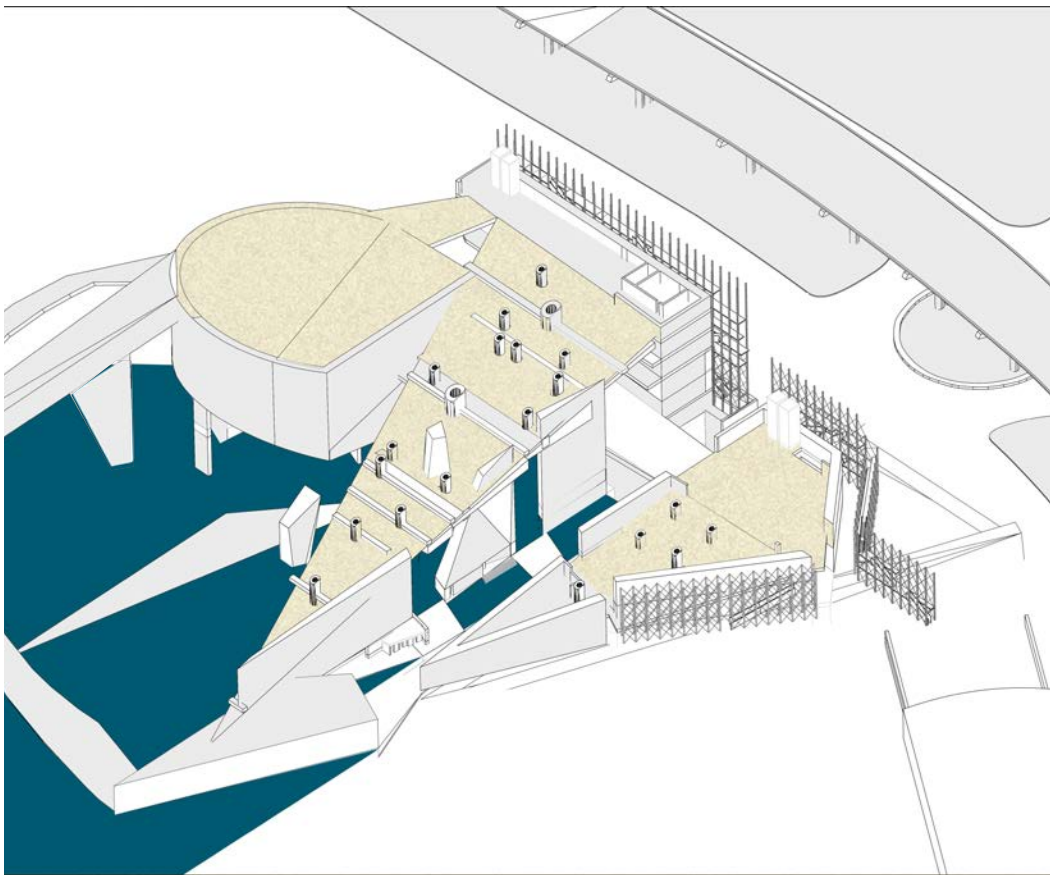
Investigation: After concrete has set, it will need checking for structural integrity.

Considerations: At this stage, noise and the volume of traffic to the site will need to be carefully managed to minimise disruption to the main road and local businesses.



Step 07: Construction of Auditorium

Once the base for the auditorium is set, the precast pieces for the auditorium's cladding system can be hoisted into position. At the same time, upper levels can be continued in the same process as previous. Overhanging balconies are cast as part of upper level floor plates' pre cast shuttering pieces.



Step 08: Topping out and beaching

The beachscape precast pieces interlock over intersistual structure. They are then laid with waterproofing build up and sand. This forms the final beachscape. Internal works can continue once the roof is built, with electronics, fitout added once building is waeathertight.

Materiality

Identity in material

Marseille has all the resources one would need to make concrete and cement - with clay, limestone & sand. Marseille was historically known as "cement city", famous for its ochre coloured sandy cement. Cementwork was a craft, with tradesmen leaving their personal stamp on facades like an artist signs a painting. Corbusier chose to use Breton Brut concrete in Marseille carrying on with the tradition, and it is now a place where Lafarge cement has produced innovative concrete buildings. This concrete past is part of the Marseille identity so perfect for a building representing the idea of identity in the Parliament.

Marseillaise cement trademarks

Provence textures and identities to capture in the territory's epicentre

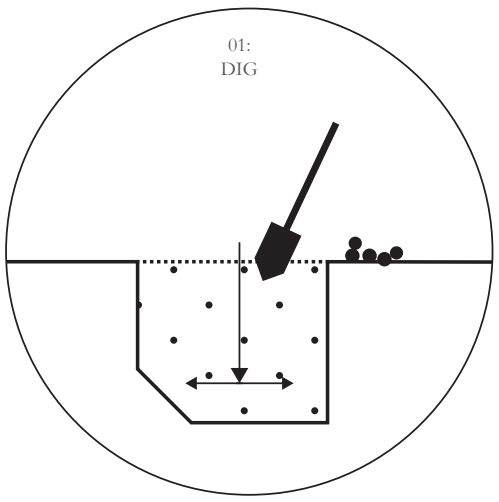
This history has led to the scheme being a largely concrete building. Internal finishing will be a mixture of concrete, cement plaster in the Marseille ochre colour and then glazing and steelwork in required areas. To also pay homage to the site's coastal location, the scheme incorporates the use of limestone gabions.

It is important to consider the wider materiality and patina of Provence - so within the scheme's use of concrete, experimental lavender and sunflower pieces to name but a few become the political ornament - symbolising the coming together of Provence with Marseille. These will be tested in prototypes.

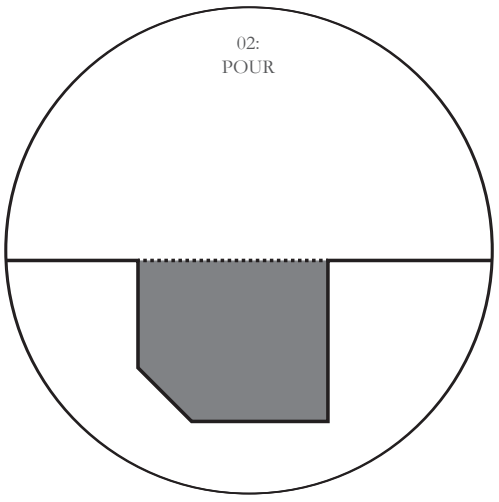
Concrete & Limestone Toolkit

9 potential tools for making

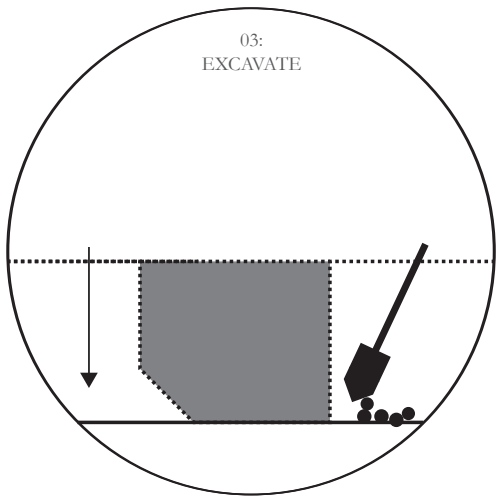
These are potential moves one could make both of the site and to make new components, using concrete and limestone. This has been formative for the overall strategy, defining different types of precast and insitu construction types. Treatment of the site itself, reusing aggregate is important to reduce the quantity of material required.



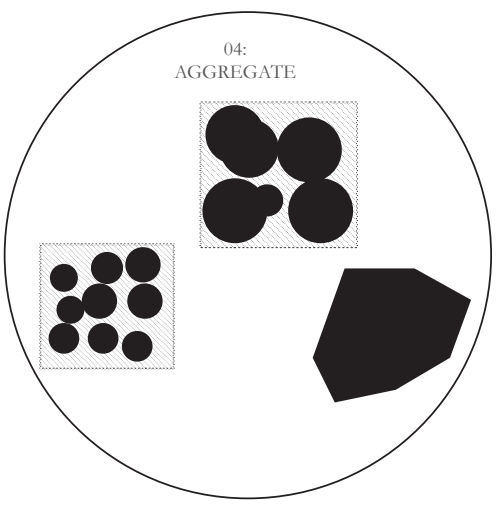
Digging down and out - subtracting from surface level. Varying levels of accuracy depending on tool size



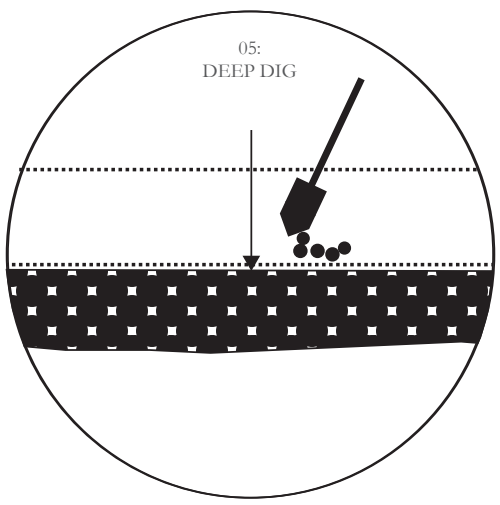
Using the dug surface as a means to pour. Can use a lining (which will impact on the surface) or sand or other means of seperating from ground plane.



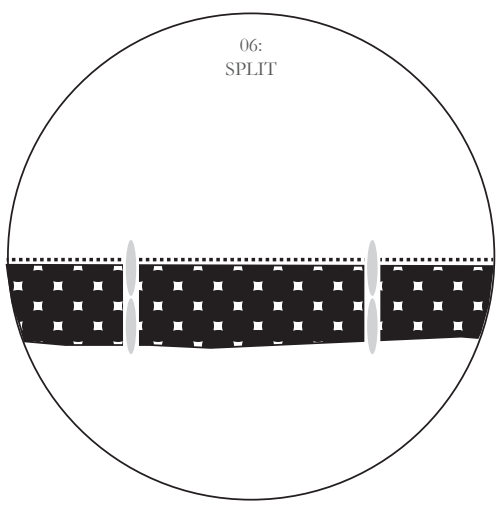
Digging around the new piece to reveal. Depending on tool, can have an effect on the surface. Will produce quantities of aggregate.



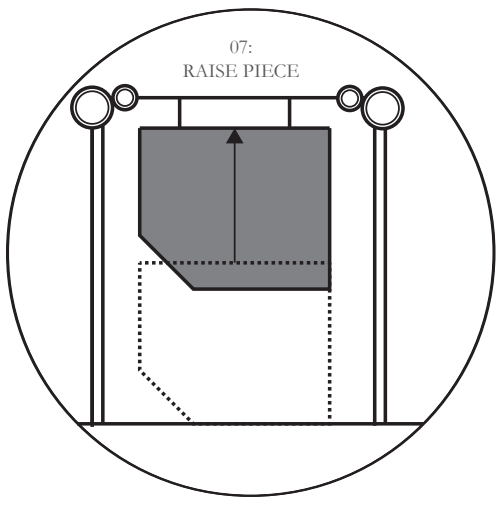
Depending on the sizes of tools used for digging process, there will be larger pieces of aggregate that can be saved as pieces in their own right. Smaller pieces can be used in the mix of concrete or in gabion structures.



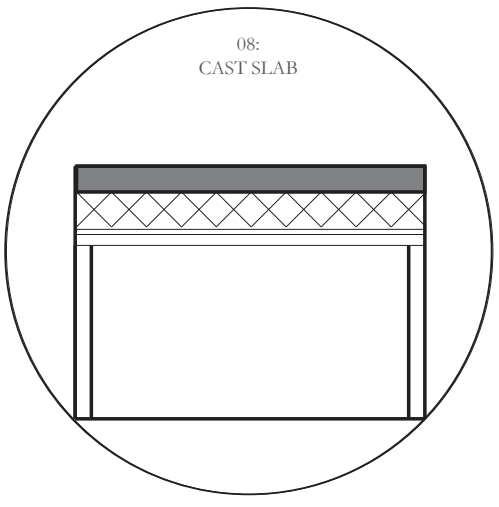
Digging down to limestone layer beneath concrete surface for using as a surface to work with, cut out from



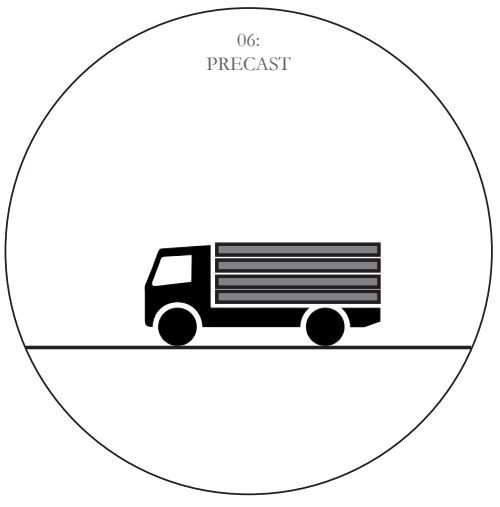
Using water bags as a quarrying technique to extract limestone from site in larger pieces



Depending on the sizes of tools used for digging process, there will be larger pieces of aggregate that can be saved as pieces in their own right. Smaller pieces can be used in the mix of concrete.



Casting slab raised above ground in position as floor slab, using a shuttering and support system



Precise pieces made in factory off site, brought to site on lorries or by ship. Craned into place on site - can be cast into insitu concrete or fixed in place with structural system.

Construction Parameters

Structural strategy design limits

Before designing each individual piece in too much detail, it was important to clarify key parameters that would restrict the size of each piece and how it can be constructed on site. This includes transport, lifting, fragility and has helped determine maximum sizes that apply henceforth.

Weight versus volume of concrete:

Sample size 01

For a piece of concrete measuring:
Length 10m, Width 4m, Thickness 2m

It will be 80 cubic meters of concrete.

If this is using pre-mixed concrete, it is 375,748.054 lbs or 170,400kgs.

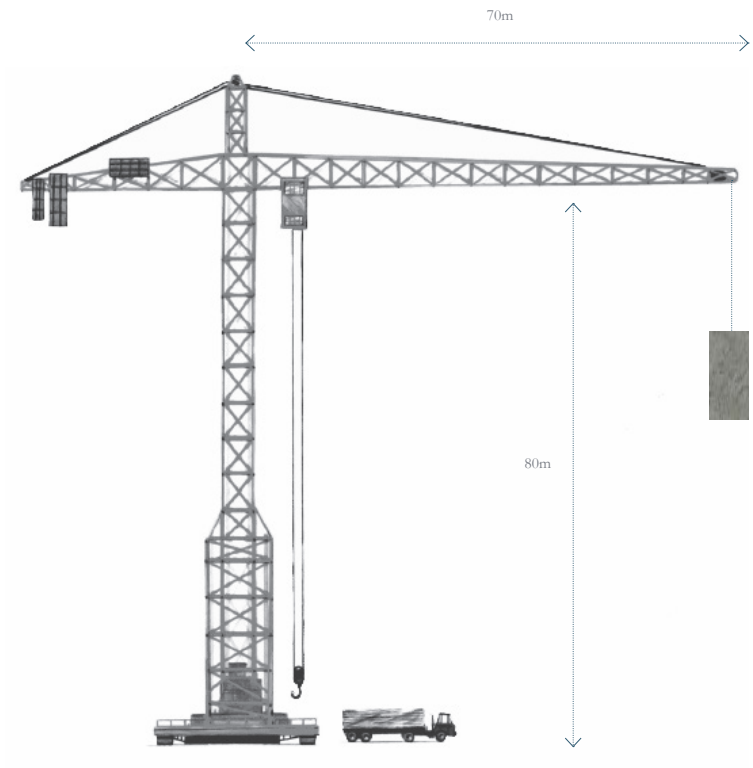
Sample size 02

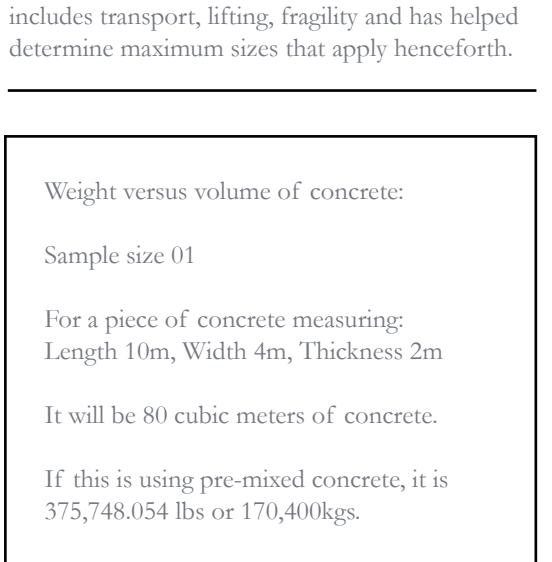
For a piece of concrete measuring:
Length 40m, Width 8m, thickness 50cm

It will be 160 cubic meters of concrete.

Therefore this is 240,800kgs of weight.

These ratios need to be considered when designing precast pieces, to be sensible about loading of cranes.





Site constraints & opportunities

The site itself is adjacent to a main road, a train station and the sea. This means that boat, train and car are all easily possible modes of transporting material to site.

Constraints of the site are that the nature of the business of the road could cause delivery problems, as site traffic could contribute to traffic. Additionally, as the site is adjacent to important businesses in Marseille, noise from construction will need to be monitored to avoid causing too much disruption.

The site has a large amount of space around it, as this will be the first part of the masterplan to be built, so there is plenty of storage and construction vehicle parking space. This will mean that deliveries of components can be done outside rush hour to avoid causing congestion during the day.

Standard tower crane principles:

1. Maximum unsupported height - 80 meters. The height of the building is 34m at its highest, so a standard tower crane is suitable.

2. Maximum reach - 70 meters - the scheme is deeper than this in diagonal, so there needs to be two cranes used on opposing sides of the site

3. Maximum lifting power - 18 metric tons, though the maximum is not possible at the end of the jib. For heavier pieces, they should be held nearer the centre mast.

4. Counterweights - 16.3 metric tons

There are then options in order to maximise/alter this set of principles. Multiple cranes can be used on opposing sides of a large span for example, or to work to hoist something together [fig 02].

Alternatively, sea cranes can be used in difficult to reach by land areas. [fig 03] This will be useful for constructing the beach roofscape.

Fixing points must be designed into structure or as additional features for any tilt up/ precast pieces that will not fit on a crate. This is to be considered in my detailing of precast pages.

Transport of Materials & Precast pieces

It is also important to consider how materials and if made away from site, precast pieces, will be transported to site.

01 Shipping by crate

The site is located on the port, so this will be a useful option. The standard size of 20ft x 8ft x 8ft must be considered. This can help to inform maximum lengths of precast pieces if they are to be manufactured abroad.

02 Transport by Road

Road transport again has size restrictions. It is more suitable for domestic constructions and for moving goods around Provence to the site.

Most French vehicles have two axles on the tractor and three on the trailer, which limits them to a weight of 40 tonnes.

The French law determines the maximum size of a lorry. Height is undetermined - but generally in other countries this seems to be about 4m to take into account low bridges. For a lorry in France the legal max length is 12m, for a road train max length is 18.75m and for an articulated vehicle max length is 16.5m. These dictate lengths of precast pieces maximum length therefore.

03 Transport by rail

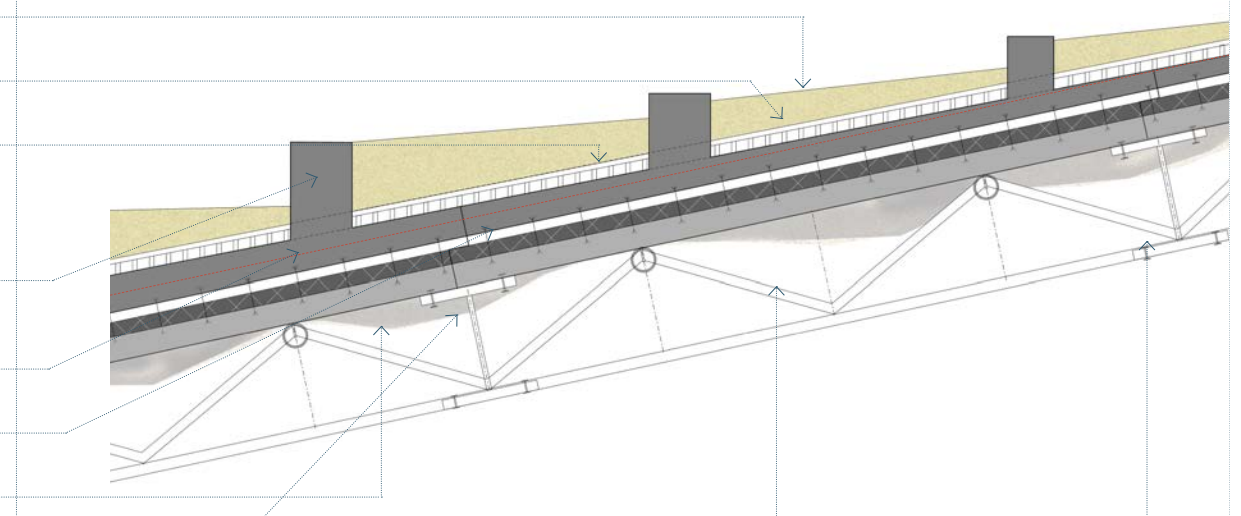
Close to the site is the Arenc station. It is possible to transport by train to the site. However, freight transport has declined in France and this would be less convenient than the previous two options.

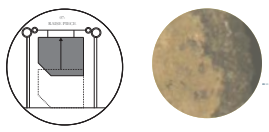
01 Beachscape Roof

1:25 @ A3

The beach has been raised up onto the roof of the building, in order to create a waterscape beneath and to create a new interaction with the spaces beneath; overlooking them and changing traditional hierarchies of political spaces.

Beach slab type [01]
Minimal acoustic attenuation with an insulatory layer



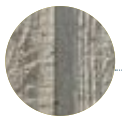


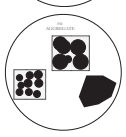
Underside of some roofscape can be tilt-up cast pieces of Provencale concrete

Denser insulation can be used in areas of extremely high acoustic pollution, here 100mm is shown,. Sand can also be made deeper in order to further prevent sound pollution.

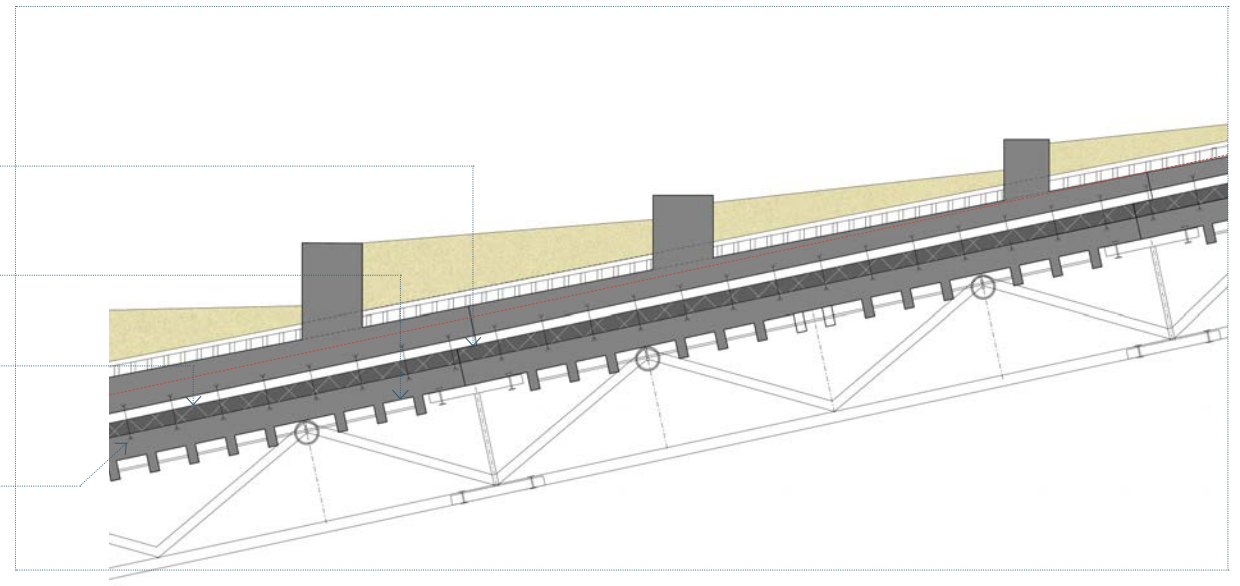
Ribbed pre-cast concrete soffit, between 400mm and 200mm from rib to no rib

Acoustic base trap - 18mm waterproof plywood fixed in corners to the ribs





Beach slab type [02]
Maximum acoustic attenuation with an insulatory layer and base traps

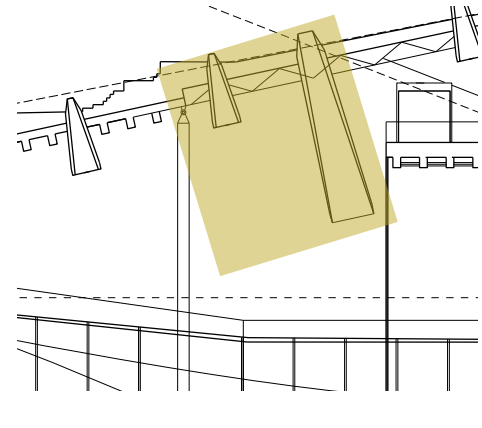


Beach slab edge condition

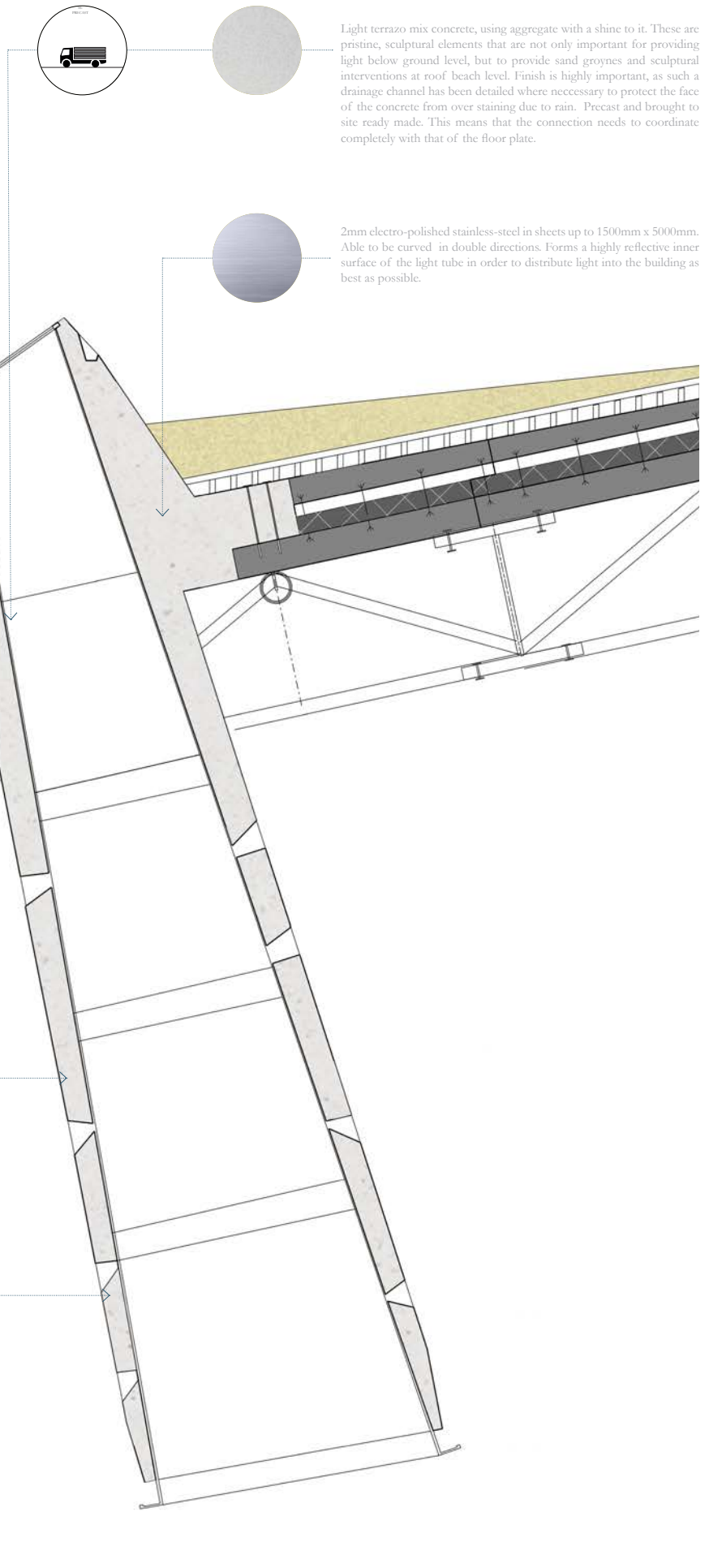
02 Pre-Cast Light Tubes

Factory formed pieces

In order to bring light into the areas of the sheme beneath the beach roof, there are a series of proposed light tubes to funnel light into the space. They are to be pre-cast pieces, fitted into place on site, with a high finish and a sculptural quality about them.



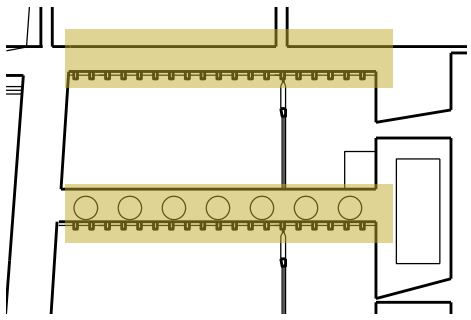
Sectional detail of Precast solar light tubes
1:50 @ A3



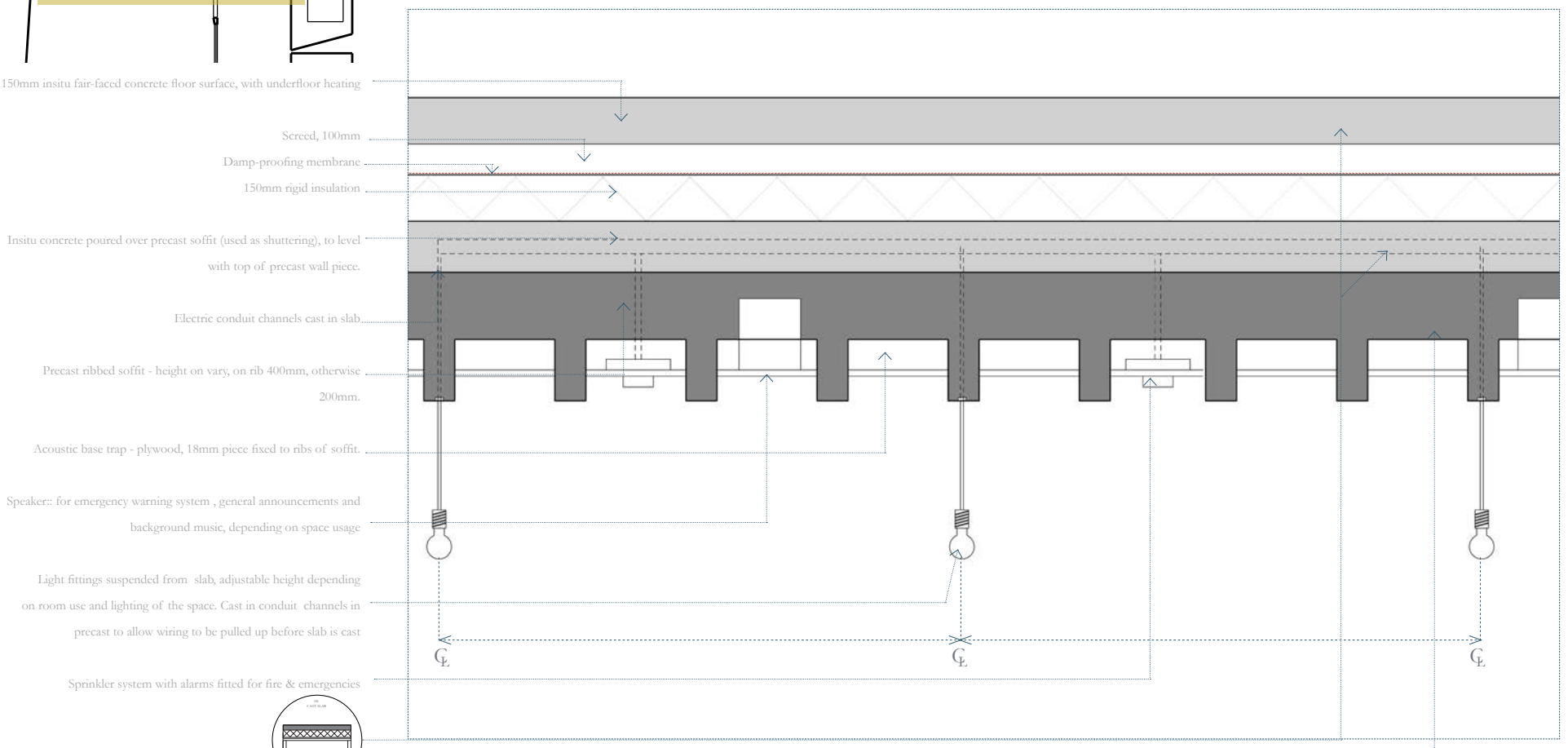
03 Internal Floor Slabs

1:20 @ A3

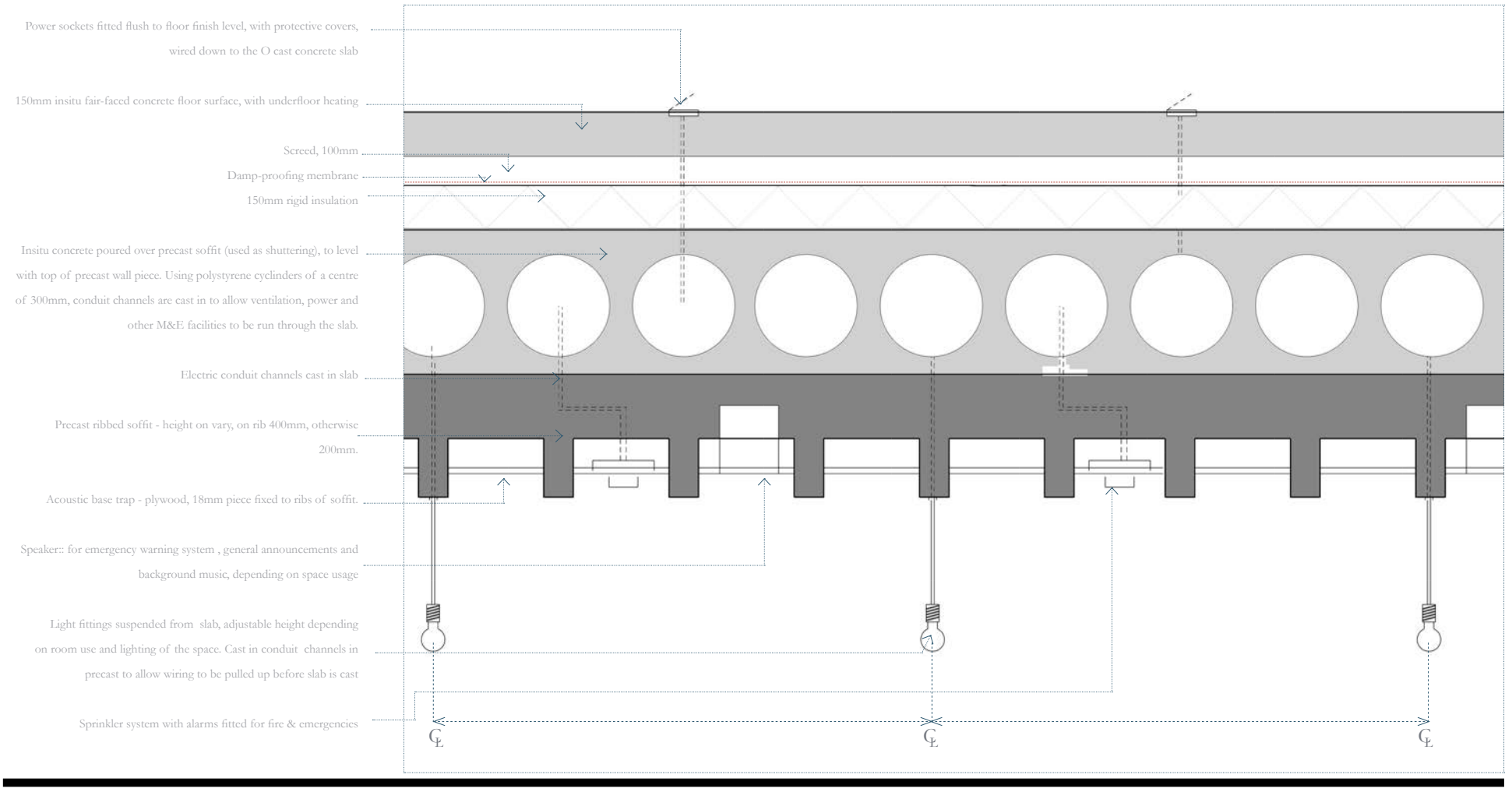
The floor slabs are dependent upon the use of the space they are serving. The workspace floor slabs act as ventilation tools - channeling cool air through the floor plates and running power and other services through them. For less demanding spaces, they don't need this level of channels through. The two options are shown here.



Slab type [01]
for levels that do not have a large power requirement, nor overheating from large groups of people



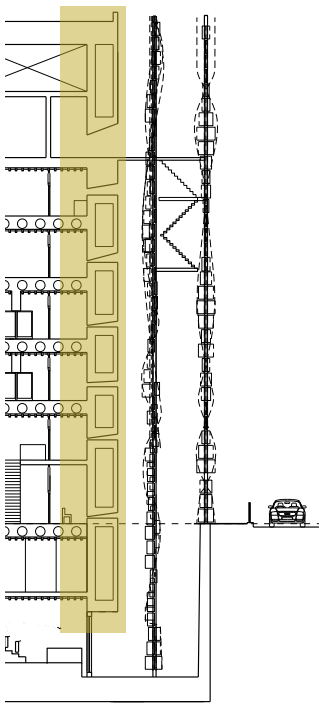
Slab type [02]
For workspace levels, where lots of power supply and ventilation is needed

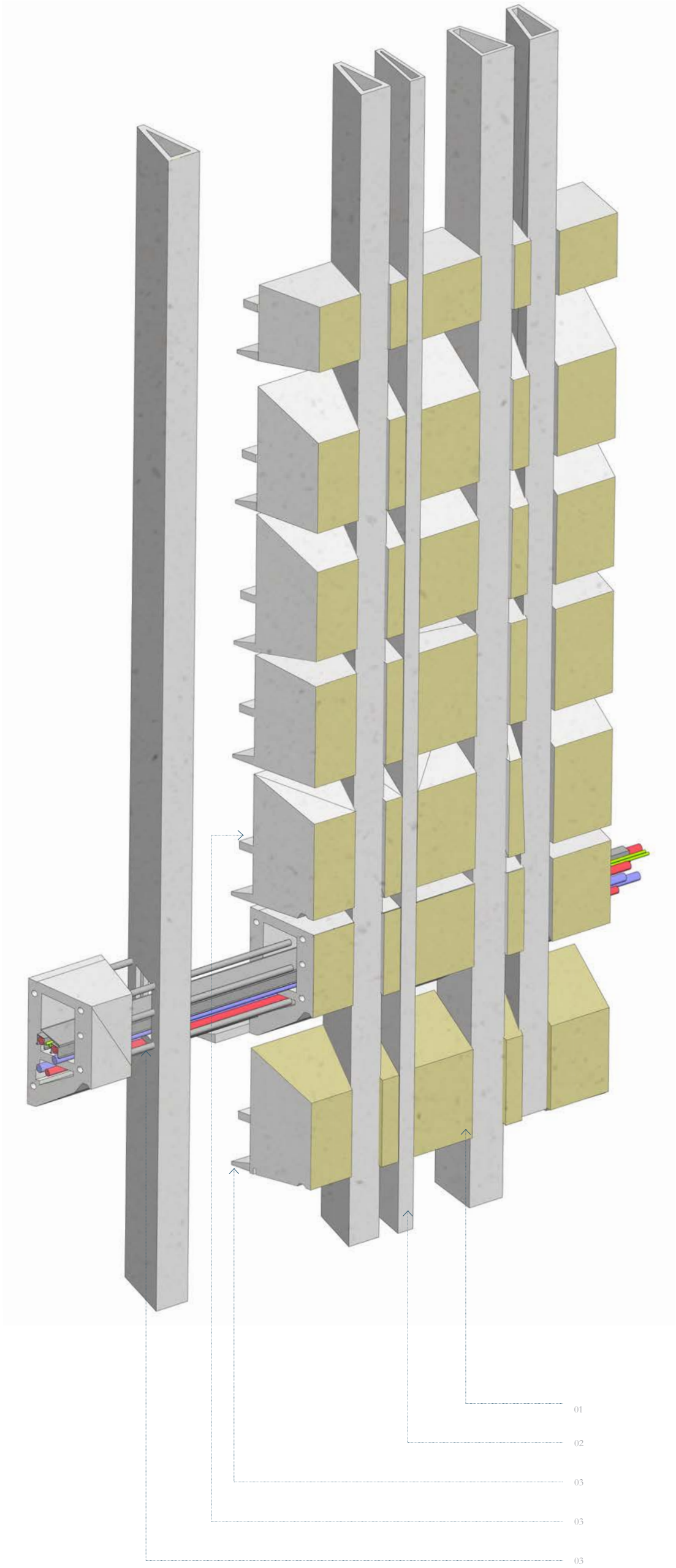


04 Pre-cast core wall pieces

Designing a facade system

The front facade of the scheme is it's core: housing chimneys that provide natural ventilation, power conduits. plumbing and providing thermal mass, acoustic mass and an important first impression to the building for visitors - implying strength of the organisation within.





Key priorities

01 Visible strength of politics : an exaggeratedly thick facade, with deep pieces to create a fort-like symbolism

02 Cement/concrete industry of Marseille: This building will seek to showcase the skillset of remaining cement tradesmen and train new people at the skill.

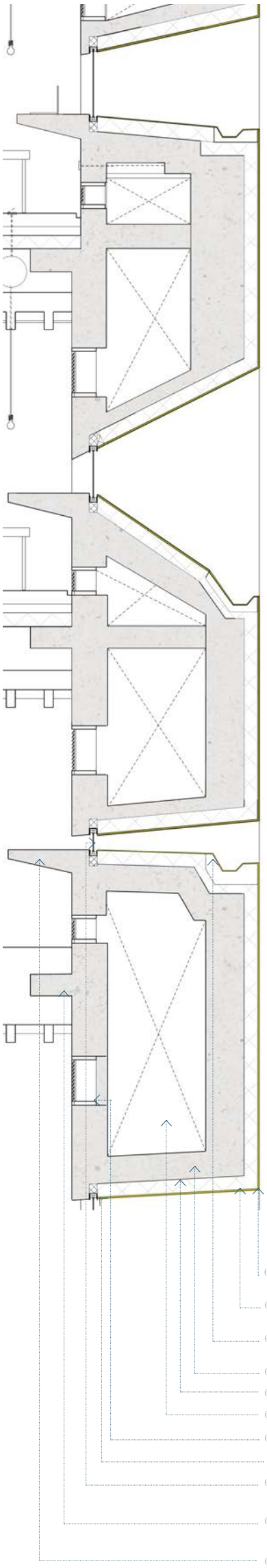
03 A series of views to the Affichez librez structure : Through specific, angled views, certain parts of the affichez librez become part of the fabric of the building, a rotating, changing surface of politics, seen from within.

04 Acoustic attenuation : major road adjacent to the site to be sound proofed to facilitate quiet working spaces inside

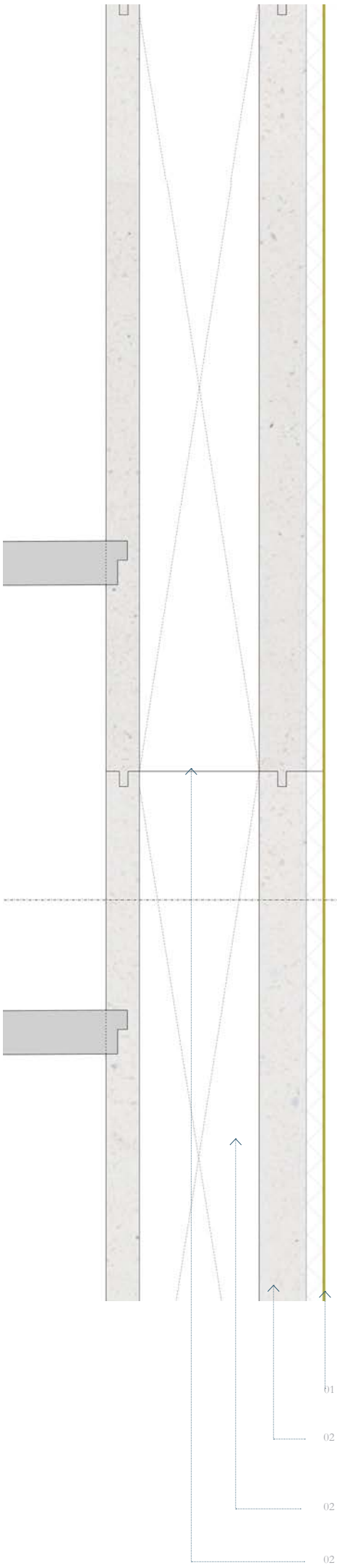
04 Thermal mass : Where there is thickness in concrete, it can serve as thermal mass to store heat energy and slowly release over course of day.

05 Ventilation : Through a series of ventilation shafts, or chimneys, stack ventilation is possible within the facade, with cool air brought in at below ground and released at roof level. Power and services can also be run through.

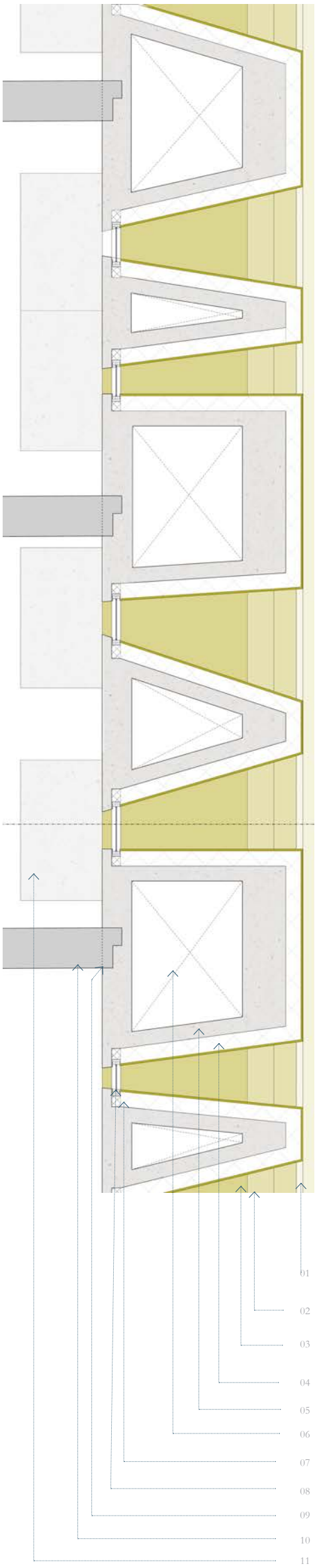
Facade Sectional strategy
1:50



Facade detail plan [01]
1:50

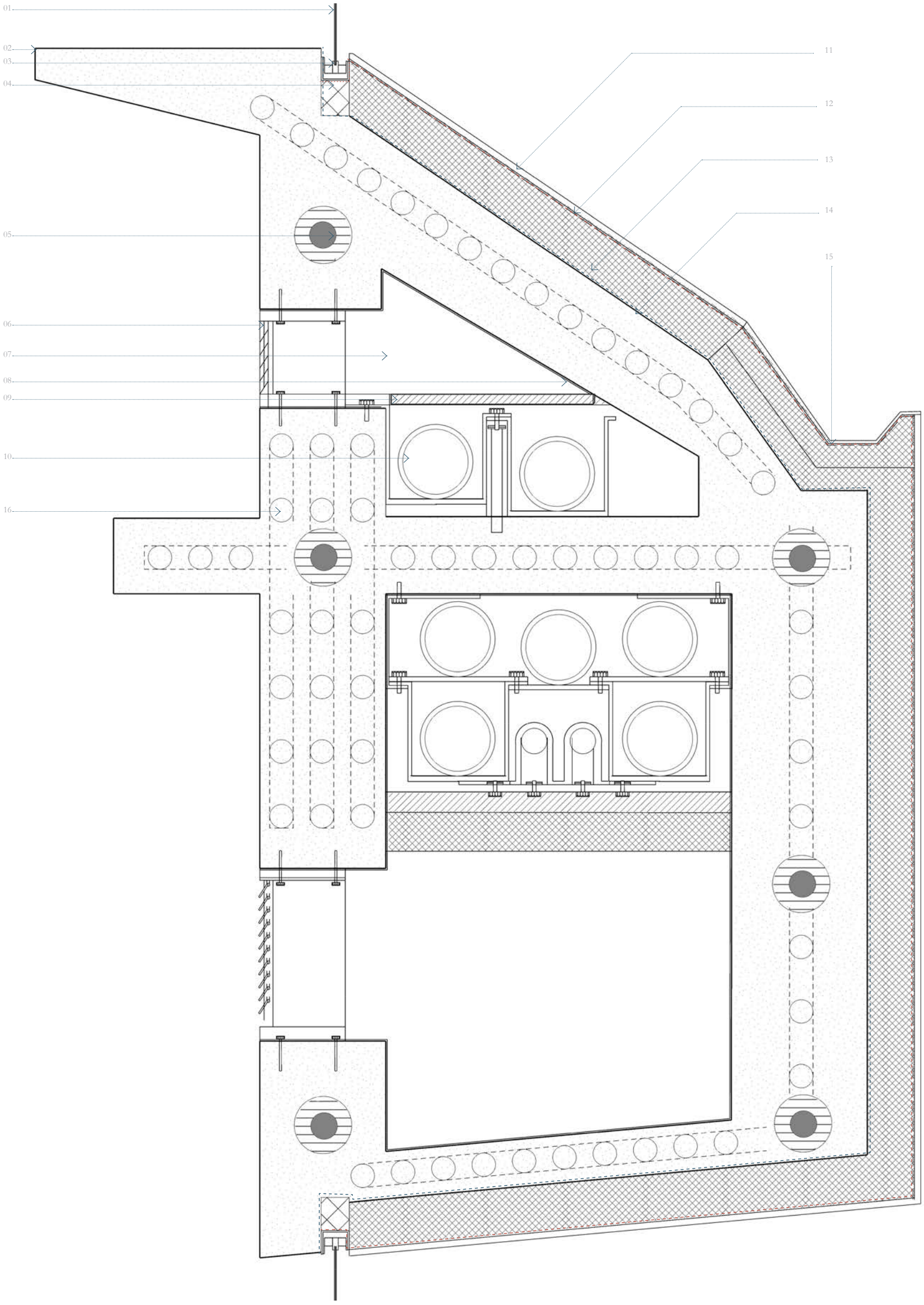


Facade detail plan [02]
1:50



01 Ochre Marseille cement | 02 Desk formed as part of precast structure, polished surface with low luster finish | 03 Glazing fittings concealed within cast recess in precast concrete | 04 A structural, thermally insulated block to complete the thermal barrier | 05 Fixing point for hoisting the precast piece into position - a series of these are provided that provide a hole for running chains through when craning into place. Can be filled afterwards with an insulating foam material to prevent breaking the thermal barrier, also used for slotting into position on the chimney piece. Refer to construction sequence for explanation. | 06 Louvred vent panel fixed into the precast, with user operability and also opportunity for it to be wired into the BMS to control ventilation. | 07 Vent opening connecting across to the chimney pieces, providing a means of natural ventiliation. | 08 Fire proofing finish, spray applied. | 09 Fire proof seperation between conduit and open vent shaft in case of electrical fire | 10 Conduit provision indicative - to provide power to the office spaces, internet cabling and water. | 11 Ochre Marseillle cement | 12 Damp proof membrane | 13 150mm rigid insulation | 14 Vapour control barrier | 15 Plastic drainage channel in same ochre colour as

Construction detail
precast concrete facade piece



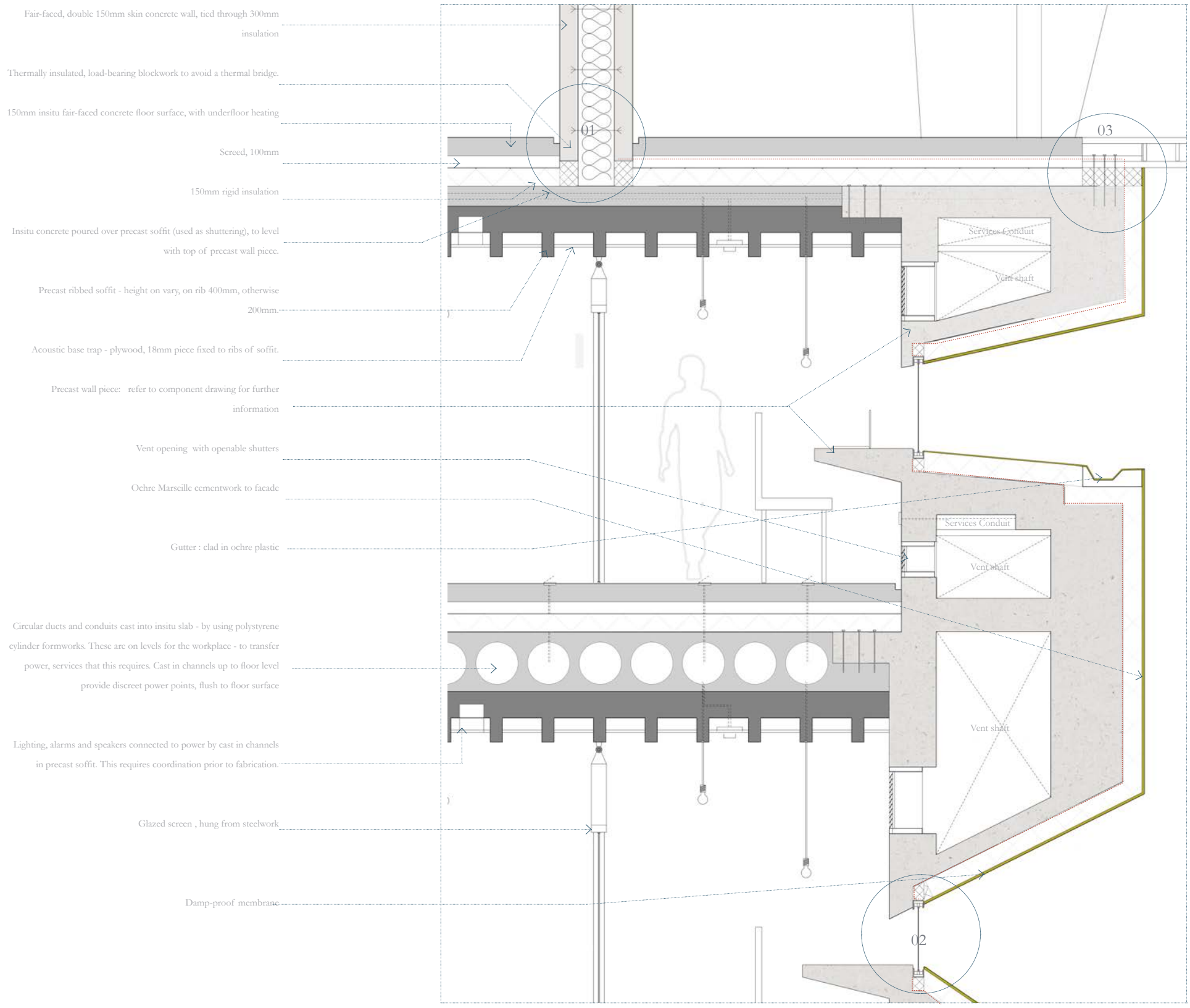
01 Double glaxed window, not openable | 02 Desk formed as part of precast structure, polished surface with low luster finish | 03 Glazing fittings concealed within cast recess in precast concrete | 04 A structural, thermally insulated block to complete the thermal barrier | 05 Fixing point for hoisting the precast piece into position - a series of these are provided that provide a hole for running chains through when craning into place. Can be filled afterwards with an insulating foam material to prevent breaking the thermal barrier, also used for slotting into position on the chimney piece. Refer to construction sequence for explanation. | 06 Louvred vent panel fixed into the precast, with user operability and also opportunity for it to be wired into the BMS to control ventilation. | 07 Vent opening connecting across to the chimney pieces, providing a means of natural ventiliation. | 08 Fire proofing finish, spray applied. | 09 Fire proof seperation between conduit and open vent shaft in case of electrical fire | 10 Conduit provision indicative - to provide power to the office spaces, internet cabling and water. | 11 Ochre Marseillle cement | 12 Damp proof membrane | 13 150mm rigid insulation | 14 Vapour control barrier | 15 Plastic drainage channel in same ochre colour as cement | 16 Rebar courses to be carefully coordinated with openings and hoisting points. Running in channels avoiding or strengthening these parts of the structure. Shown indicatively, would need concrete specialist's input. |

Junctions 01: Facade

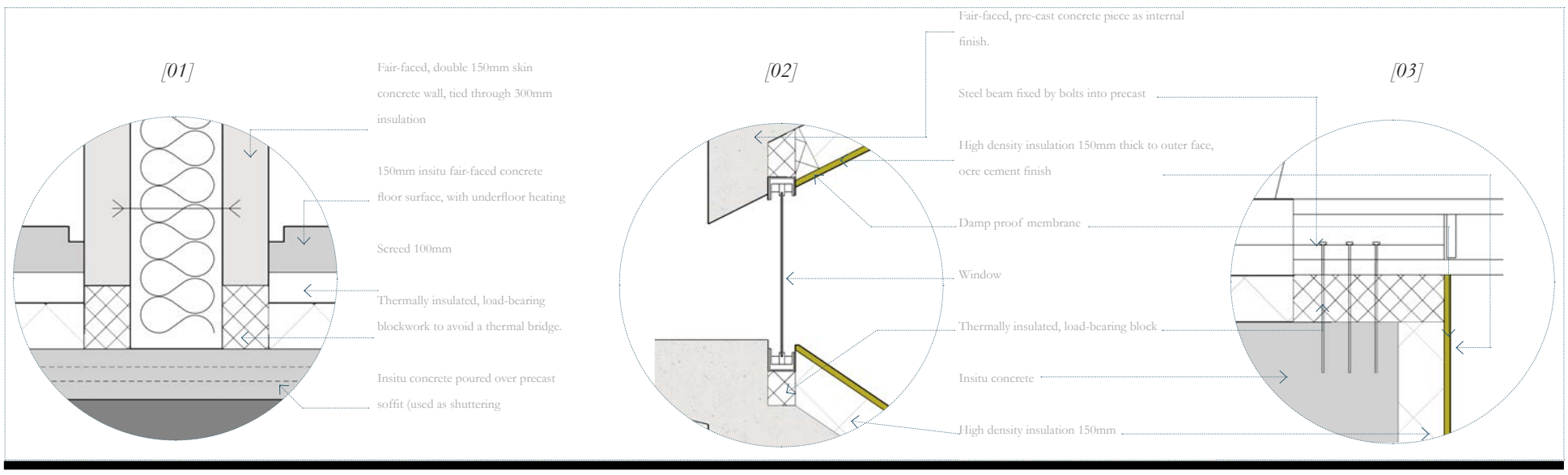
Components put in position

The relationship between precast pieces, insitu concrete and internal accomodation create complex junctions. This upper level section describes principles of their relationship which carry through to the rest of the scheme.

Upper levels junctions detail
1:75 @ A3



Details of three key junctions
1:20 @ A3

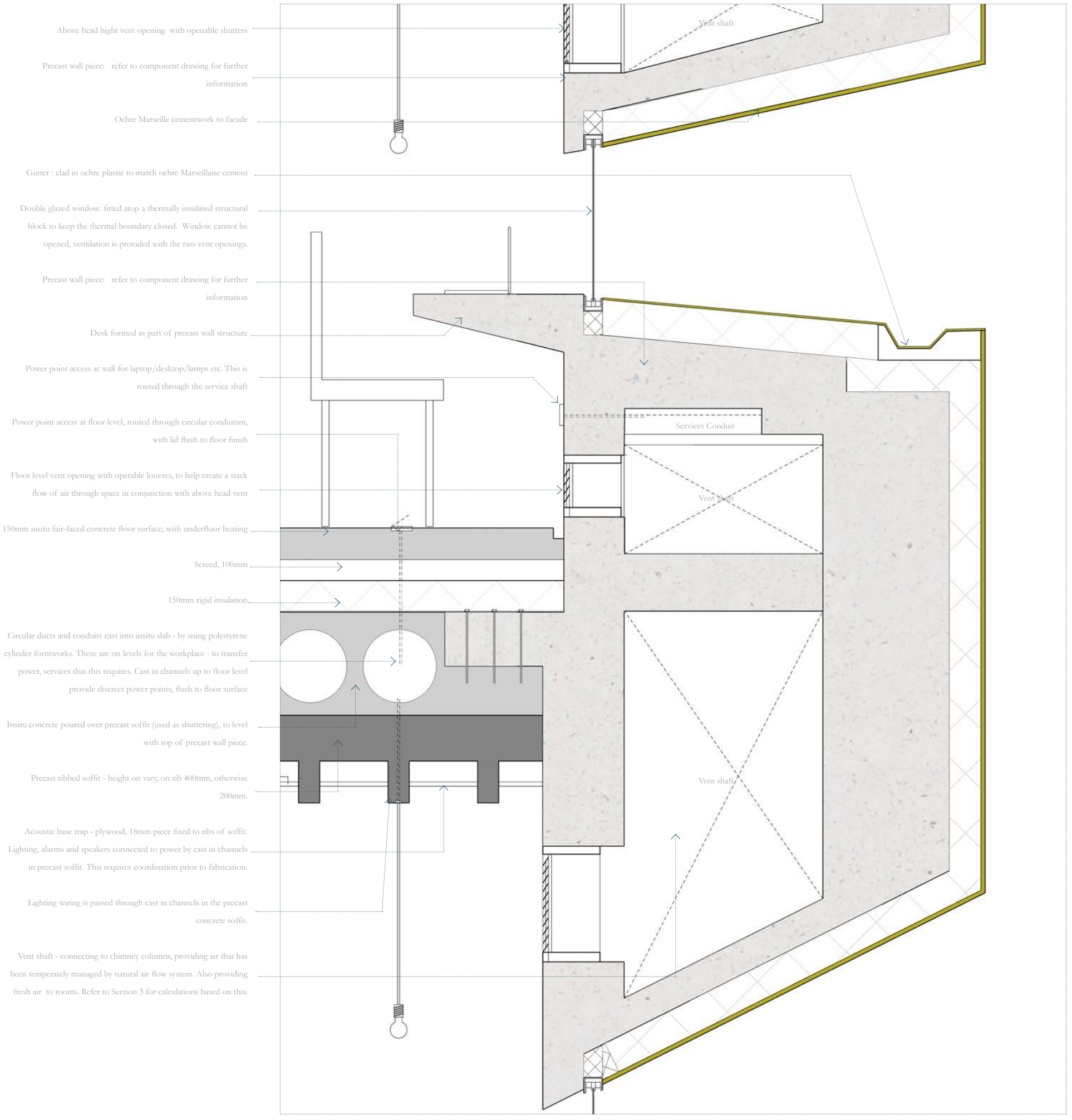


Junctions 02: Facade [cont.]

Outdoors to indoors

Here the extent to which the precast informs the internal and external relationship is made clear. The workspace desk is part of the structure, as office space is a programme integral to the building for it to be a Parliament, it becomes physically coordinated with structure and environmental considerations.

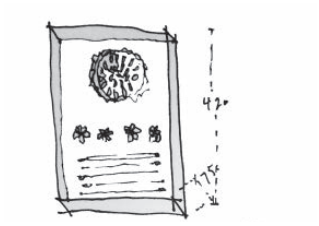
Workspace detail
1:20 @ A3



Concrete Experimental Prototype [01]

Aix-Marseillaise-Provencale Concrete

This prototype investigates creating a Marseillaise-Provencale concrete for the landscape that reveals the layers within over time. Casting within it icons of the region, like sunflowers, herbs de provence and lavender, it becomes a satirical manifestation of the politics of the new region, bound by the limestone cement of the calanque coast.



Initial sketch of idea

[01]

Sawing wood to make shuttering for concrete

[02]

OSB three faces, two faces mdf to experiment with roughness of finish. Sealed with glue and nailed shut.

[03]

Pouring layers of concrete, Provencale organic layers alternately.

Result

As the piece weathers, the loose sand and ballast it was cast in & organic substances are removed, producing a negative of these compounds in the surface. It therefore has a poetic lifecycle - with varying structural integrity depending on the level of organics used. This will be used to form the landscape and non-structural elements of the scheme. As the concrete splits in two, positive and negative impressions are formed.

The roughness of this concrete will be interesting to investigate alongside more pristine, controlled cast elements. Some of this piece is too loose and crumbly to work for structural elements, but the essence of the piece will inspire the waterscape.

Marseillaise-Provencale concrete
Cast in sand and herbs de provence

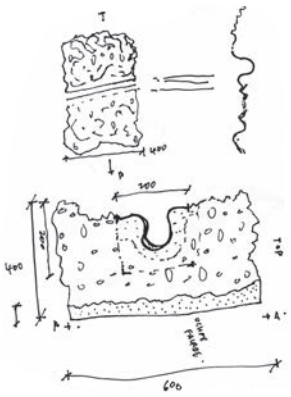
Splitting of piece over time

Over time weathering produces a positive and negative face

Prototype [02]

Tolerances in tone and texture

This piece aims to convey a tactile and tonal range of the building. From smooth handrails, to rougher surfaces, the concrete will range in tolerance and in finish, in order to convey the craft of its manufacture, to control people's exploration of the building and for a broad palette from one material.



Result

Mixing sand and white cement, yellow concrete is produced, akin to the Marseille Cement historically used. This smooth ochre concrete contrasts when placed alongside grey concrete that uses rougher, larger aggregate pieces cast roughly over sand. The contrast more tactile and sound absorptive. Both of these finishes will contrast with the controlled finish of the precast elements and will offer a more varied patina of concrete.

These effects can be employed in the building's waterscape and tonally throughout the building are used as contrasts. A handrail or somewhere touched in the building needs to be smooth, but regions where people don't touch can be rougher and more textural.

Face [01]

rough cast with large aggregate and grey cement

Face [02]

Ochre cement smooth mix cast into sand , rocklike concrete produced

Piece prior to sanding.

OSB close-up of imprint

Face [03]

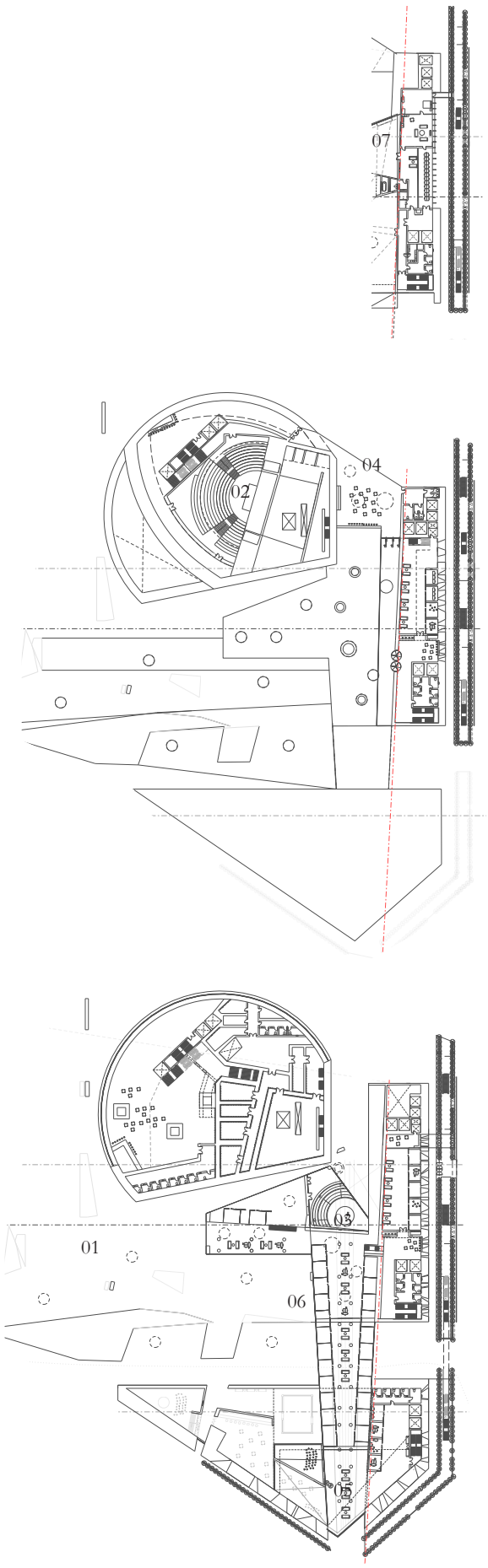
The layers mix halfway. Almost like geological striations of rock over time.

03 *Building Performance*

Programmatic Environment Strategy

Requirements for each programme

Each programme within the building has its own set of environmental requirements. These need to be considered when the whole scheme. Their interactions and differences will create boundaries of environments to be designed as fabric : walls, roofs, floors.



01 Beachscape

[01] Sunny rooftop, largely open and exposed environment . Under roof, areas of shade and light contrast. Moments of shade offer a contrast to sunshine, this is poetic
[02] Areas of shelter against wind, sun, rain
[03] Pockets of insulated building - beach huts for changing, shower rooms, W/Cs
[04] Maximise cooling effect of water and the poetic qualities of light reflecting from it.
[05] Sand quality changes in relation to weather - impact on building fabric to be considered

02 Main Auditorium/ Theatre

[01] Multi-use space, for performances and for large-scale political conferences and public debates. Acoustically suitable for these purposes, flexibility in acoustic strategy
[02] Large numbers of people, 1000+, at events. Controlling heat of space and providing adequate ventilation is vital, flexibility in control important for different events and timescales
[03] Lighting can be daylit in daytime, however at night and for performances, artificial lighting will be needed
[04] Waste and water use will be large on performance days, so a system needed for this

03 Chambers & small auditoria

[01] Smaller chambers too have same requirements, as large without need for as much events flexibility. They can be more fixed in terms of acoustic, lighting, ventilation systems, using same principles as large auditiorium[02] Areas of shelter against wind, sun, rain
[02] These spaces may contain more private conversations than the large chamber. As such, should be acoustically suited to this.

04 Restaurants\bars

[01] Smells need extracting from kitchens and restaurants themselves, as does heat produced by cooking and by numbers of guests
[02] Acoustics should be of a 'conversation background noise' level, with perhaps music, so private conversations of politicians can't be overheard.

05 Circulation

[01]A place for moving, stopping and chatting. This means the space can be acoustically varied to lend different zones to different functions
[02] Sound in circulation spaces will be of conversation/ crowd of people levels depending on area of building. This needs to be protected to avoid causing noise interference for auditoriums and for adjacent workspaces.
[03] Sheltered from rain/ inclement weather, but with a sense of being indoor/outdoor in some places to bring politics into landscape

06 Workspaces

[01] Appropriate lighting for working at a computer/ desk
[02] Temperature should be 19º in enclosed spaces. [03] There should be shelter from elements and wind in open working spaces

07 Jean-Claude's Residence

[01] Soundproofed - no overhearing possible.
[02] 20º as Jean-Claude prefers to be warm
[03] Sunny views over Marseille and over the Sea.
[04] Insulated well and seperate heating, lighting systems to the overal BMS of the whole building.

Acoustics Strategy

Sound is a wave of pressure... noise is just unwanted sound

The site is next to one of the noisiest roads in Marseille. The acoustic environment is in excess of 85 dB. To create a peaceful beachscape, and suitable sound intensities for spaces like assemblies and offices, the scheme needs to address this key issue. This is to be achieved with a hybrid solution: with an acoustic attenuation facade and sound attenuating wall/floor buildups internally.

Sound intensity level (dB)	*Intensity I (W/m2)*	*Example/effect*
0	1×10^{-12}	Threshold of hearing at 1000 Hz
40	1×10^{-8}	Average home
50	1×10^{-7}	Average office, soft music
60	1×10^{-6}	Normal conversation
70	1×10^{-5}	Noisy office, busy traffic
120	1	Loud rock concert; threshold of pain
160	1×10^{4}	Bursting of eardrums

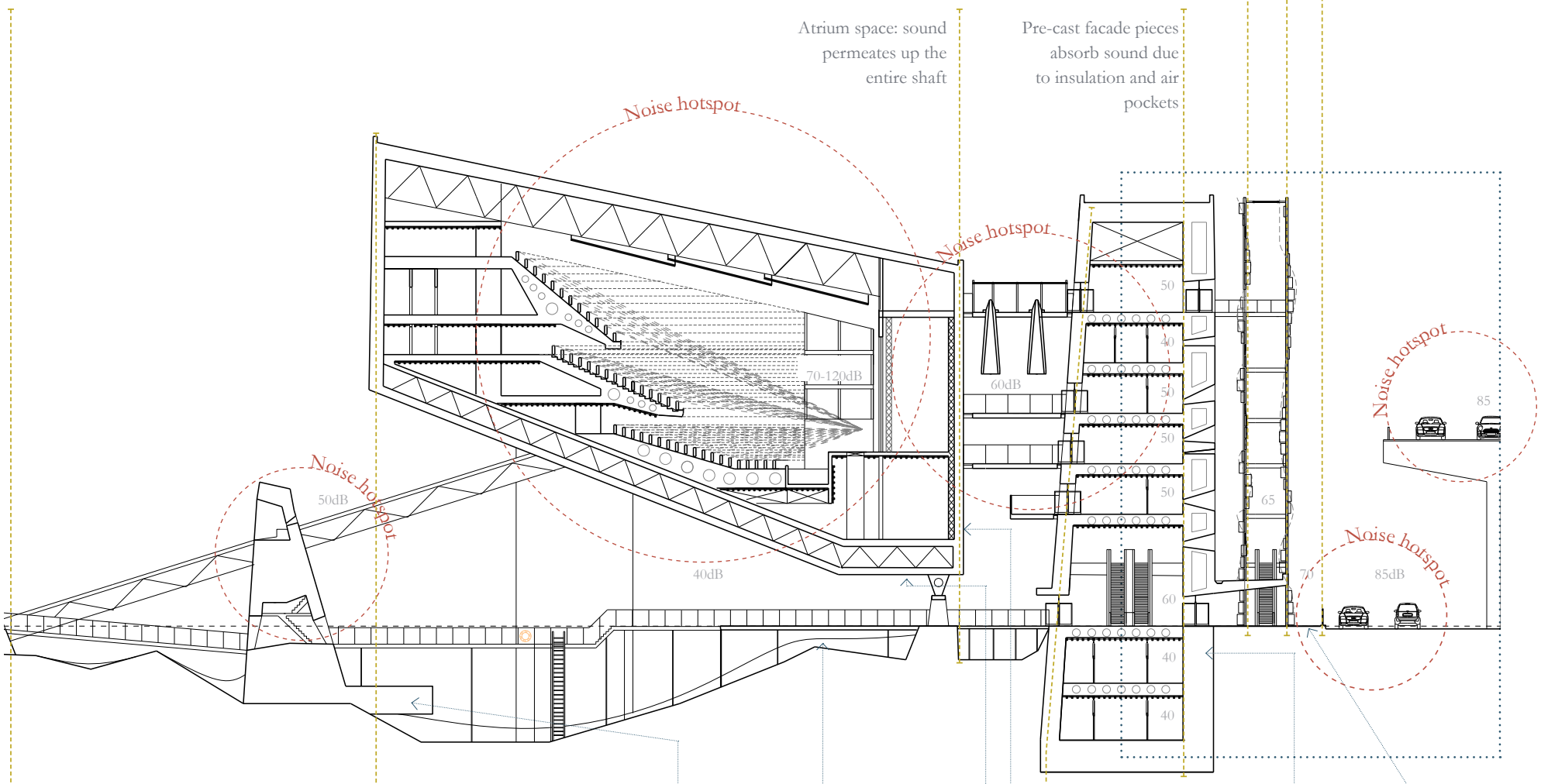
Streetscape:fast road and pedestrian access : Planting to reduce sound reflections. Sound absorbed by affichez librez

Affichez librez expression: an acoustic attenuator and political canvassing screen

Main road with rush hour traffic jams , upwards of 85dB

Atrium space: sound permeates up the entire shaft

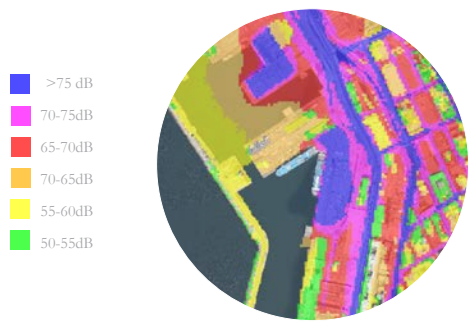
Pre-cast facade pieces absorb sound due to insulation and air pockets



Beachscape roof: sand provides acoustic absorption, making this a peaceful realm

Main auditorium: capacity of above 1000 people. Large amounts of insulation and containment of sound - also finish is such that it enhances quality of the sound internally

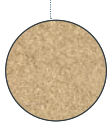
Working core: Insulation between levels to absorb sound



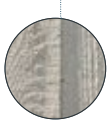
Sound on site

It is particularly noisy at the proposed site: due to adjacent road, shipping activities and overall surface being concrete which doesn't provide signaficant acoustic absorption. These issues will need tackling in the design in order to create suitable sound intensities internally.

Gabions block low frequencies and scatter all frequencies

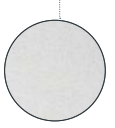


Sand absorbs sound



Fair faced concrete scatters sound to an extent but transmit sound. Ribs can help scattering.

Stainless steel reflects sound



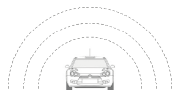
Smooth concrete reflects sound. Precast pieces are packed with insulation to minimise sound transmission.

Vegetation absorbs sound and scatters it

Acoustic Facade Strategy

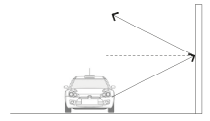
Sound barrier & better streetscape

Not only is it important that the internal acoustic environment is optimised, equally the street outside of the building is vitally important. This needs to be a pleasant place to walk, to ensure the scheme gets plenty of pedestrians wandering in and exploring the political system. The acoustic facade offers a political canvassing screen while offering a quieter streetscape. This also is aided by street planting, laying of softer asphalt on the roads and the precast concrete pieces having an adequate thickness.

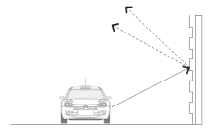


Sound propogates as waves, outwards from source.

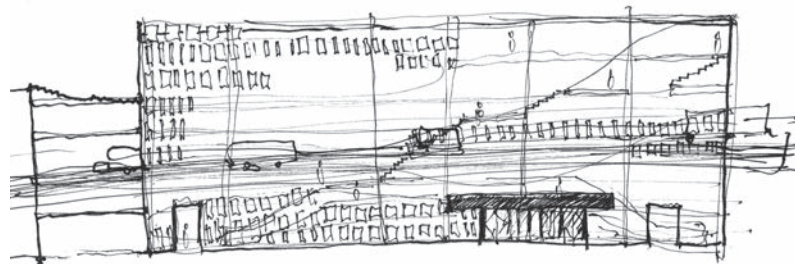
Sound can be considered for purpose of investigations as a ray too, in similar way to light



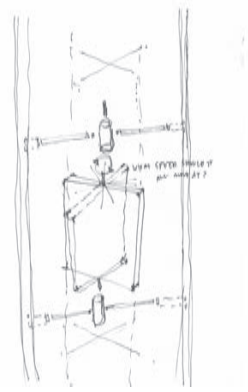
Sound can reflect in same way as light. By providing a barrier, sound bounces back into space it originates from.



However, if sound is scattered by a non linear surface and absorbed by a surface which has a resonance, this reflectance can be reduced.

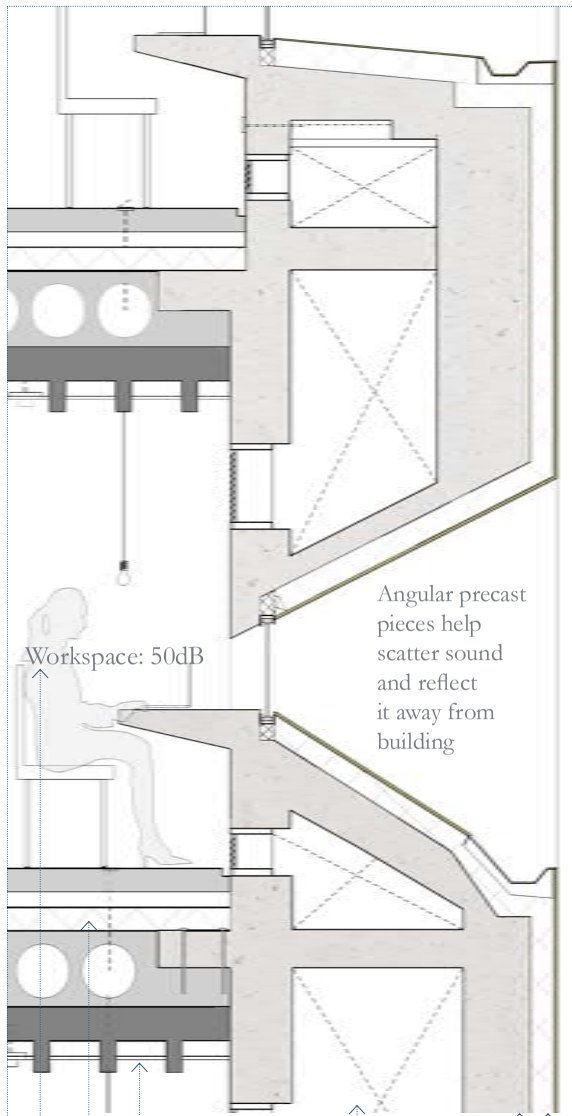


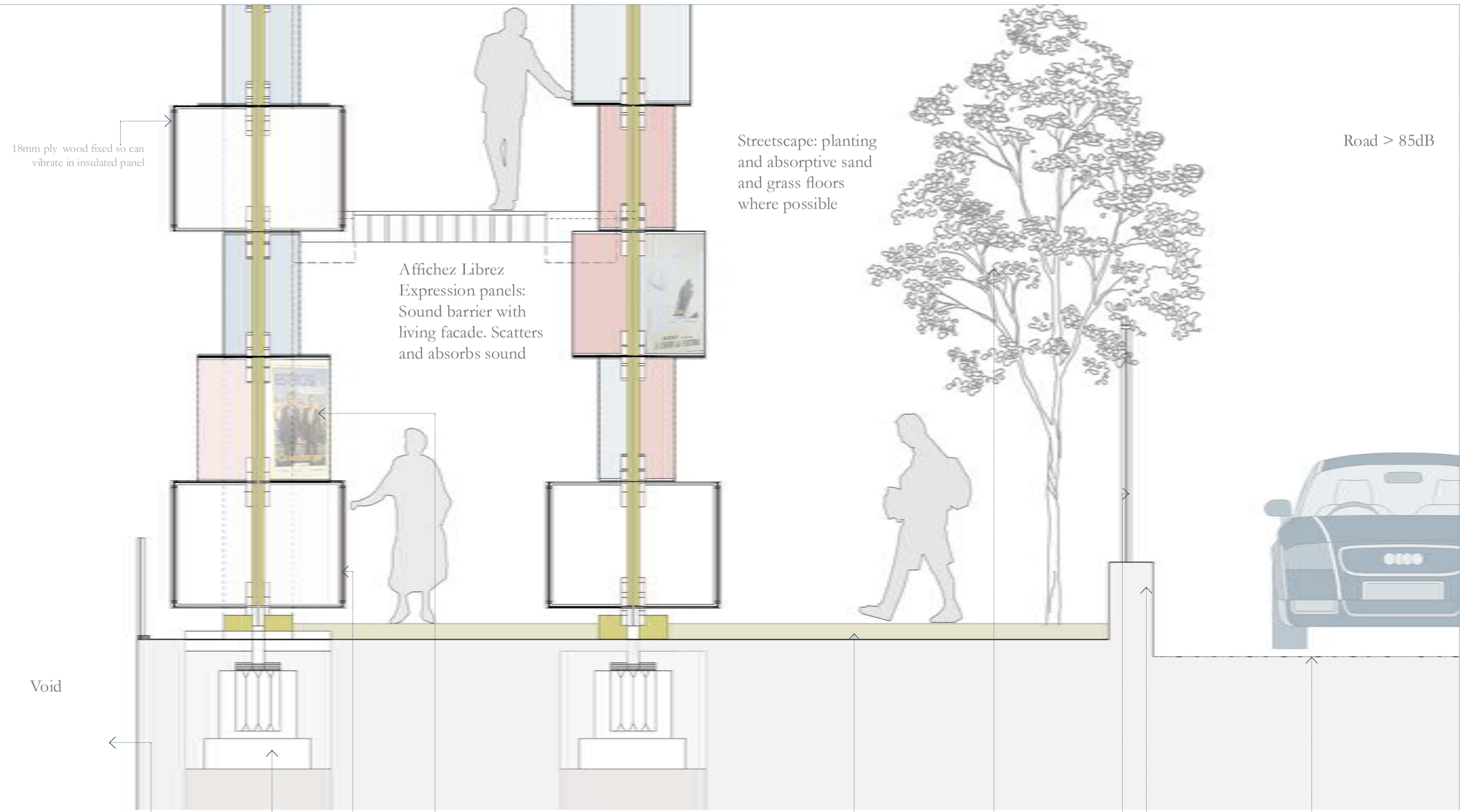
Sketches of facade: with movement and activity bringing it to life



Acoustic Affichez Librez Expression
1:50@A3

In line with French politicy, there is a fixed ratio of propaganda postering allowed per capita. Marseille has reallocated its allocation to form a facade of acoustic attneuating panels made up of bass traps.





Working environment - at around 50 dB

Bass traps used between floor plates to insulate sound internally

Insulation used between floors for both thermal and acoustic insulation. Thick floor plates help too.

Voids in precast pieces for ventilation also act as a sound barrier - as air vibrates it absorbs sound energy

External insulation acts as sound and heat barrier

600mm thick concrete acts as sound barrier

Deep void between building and sound barrier protects below ground from sound interference

Political posters are wallpaper pasted onto the ply panels, which then vibrate and absorb sound waves.

Affichez llibrez Expression facade - a legal place to post propaganda and posters, which also incorporates a bass trap system.

Rotation mechanism: silent system of turnable inner tube of facade system, to allow users to rotate the affichez librez pieces to inspect and add new ones, without causing sound in itself

Grass and sand mixture provides a soft surface where possible, absorbing sound of cars reflected from faacade.

Trees absorb some sound, and create a new sound, of trees rustling, which makes for a better streetscape acoustics

Raised concrete barrier acts as a sound barrier for the noisiest part of cars: wheels on asphalt.

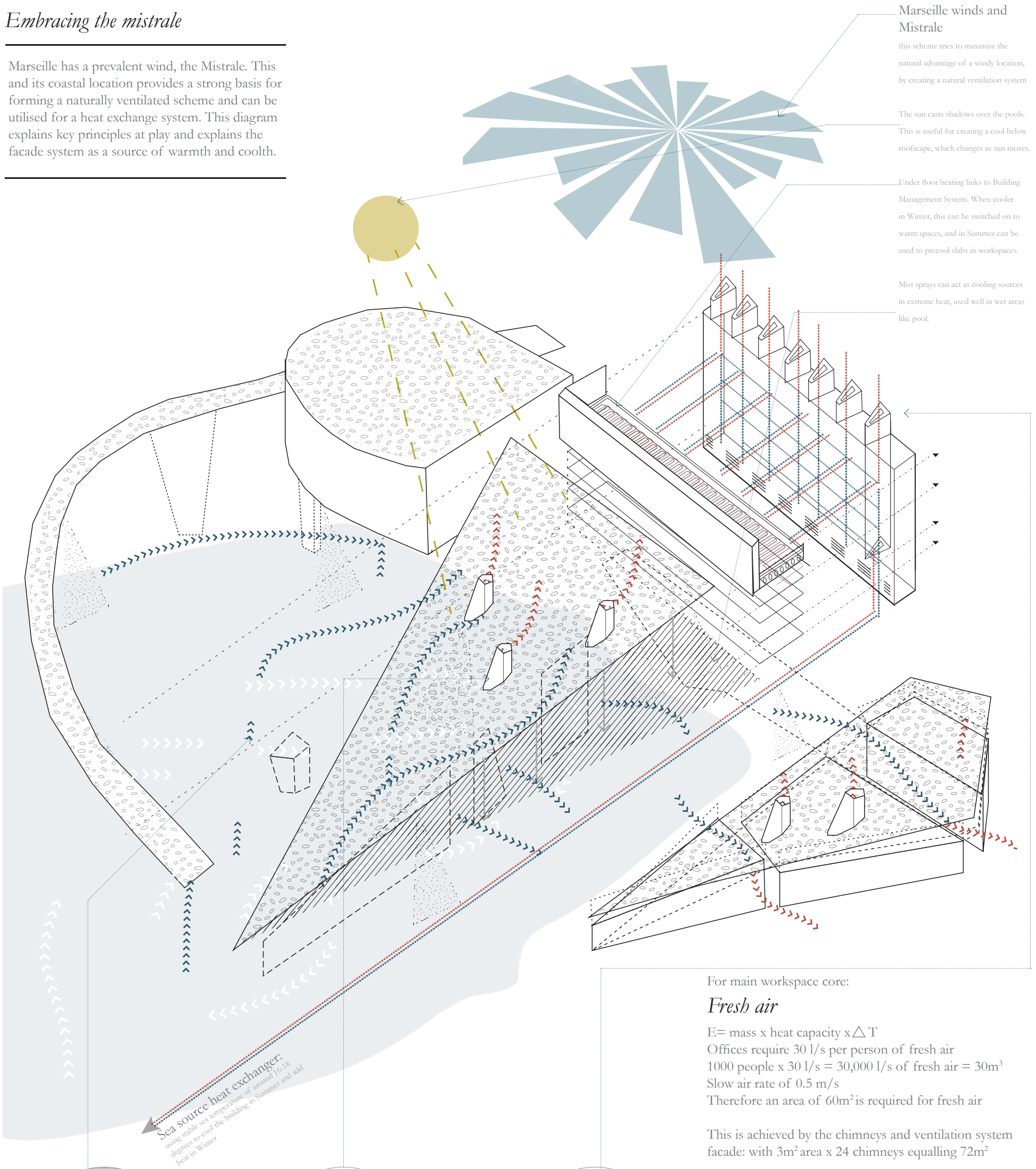
Glazed barrier between road and pavement is a acoustic barrier and still allows for views of the building

A new top layer is applied to the road, which is a spongier asphalt, absorbing more of the sound of the tires.

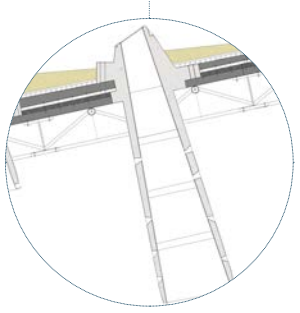
Heating ,Cooling & Ventilation

Embracing the mistrale

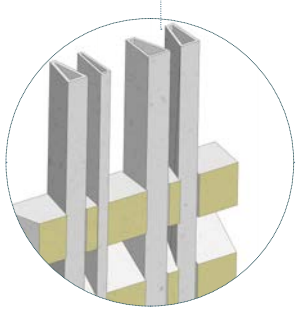
Marseille has a prevalent wind, the Mistrale. This and its coastal location provides a strong basis for forming a naturally ventilated scheme and can be utilised for a heat exchange system. This diagram explains key principles at play and explains the facade system as a source of warmth and coolth.



Mistrale and evaporation from the sea provide a cooling series of air currents, creating stack ventilation and keeping the air under the roof fresh and cool



Light tunnels also act as ventilation chimneys, providing an escape for hot air caused by stack ventilation



For main workspace core:

Fresh air

E= mass x heat capacity x△ T
Offices require 30 l/s per person of fresh air
1000 people x 30 l/s = 30,000 l/s of fresh air = $30m^3$
Slow air rate of 0.5 m/s
Therefore an area of $60m^2$ is required for fresh air

This is achieved by the chimneys and ventilation system facade: with $3m^2$ area x 24 chimneys equalling $72m^2$

Ventilation Rate

120w/person x 1000 people = 120,000 w
120,000 w in 1 second = 120,000 J
So in one second: $30m^2$ air density = 30 x 1.2 = 36kg of air
36 x spec heat capacity = 36 x 100J/KgK = 36180J/K
120,000J of capacity = 4K

Which is adequate for office spaces.

Therefore, the ventilation system in place is adequate for the needs of the space.

Lighting Strategy

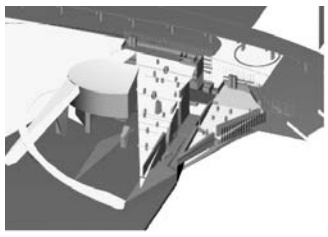
Light study on building

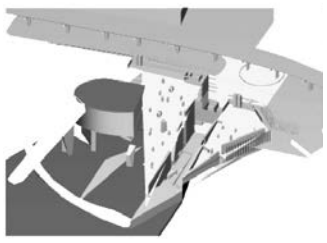
Marseille is the sunniest city in France, with over 300 sunny p/a, as the mistrale clears skies after storms. The scheme is largely a working building, though due to the cultural and public areas it will be open outside of 9-5. The outdoor spaces will mainly be for Summer use, though Marseille's beaches are popular all year round for volleyball team leagues and hardy swimmers.

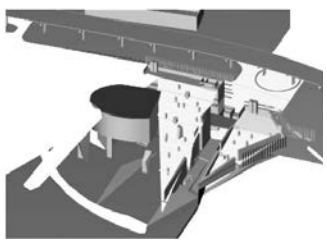
Solar studies on scheme

Marseille; 43.2965° N, 5.3698° E

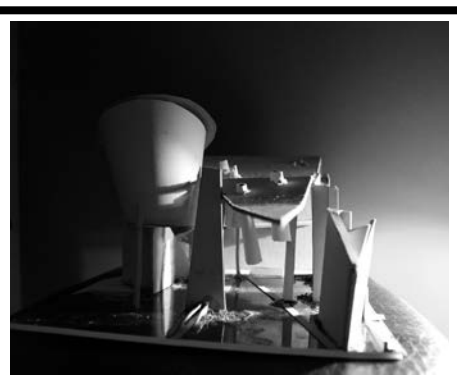
Summer Solstice	Equinox	Winter Solstice
Dawn: 5h58	Dawn: 6h40	Dawn: 8h08
Noon: 13h40	Noon: 12h40	Noon: 12h47
Dusk: 21h58	Dusk: 18h40	Dusk: 17h08
Solar altitude max: 152°	Solar altitude max: 149°	Solar altitude max: 147°

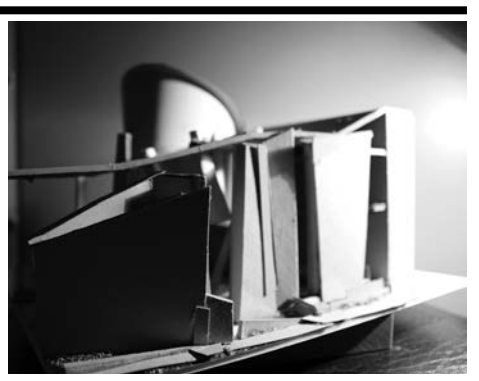




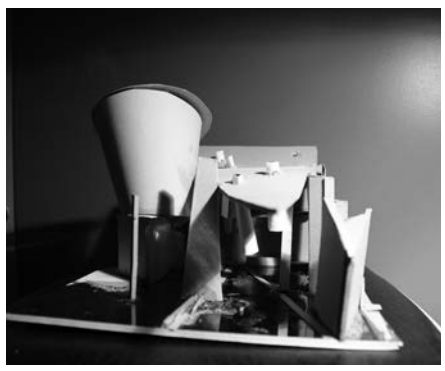


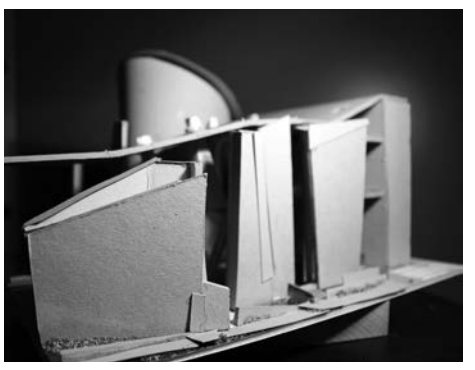
7am



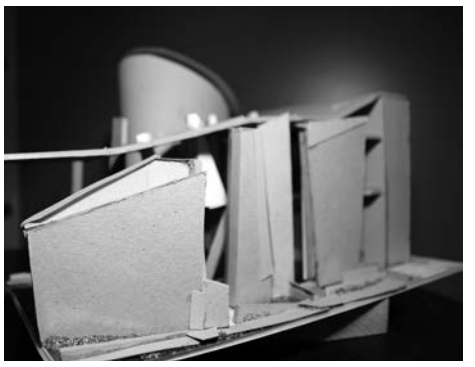


9am

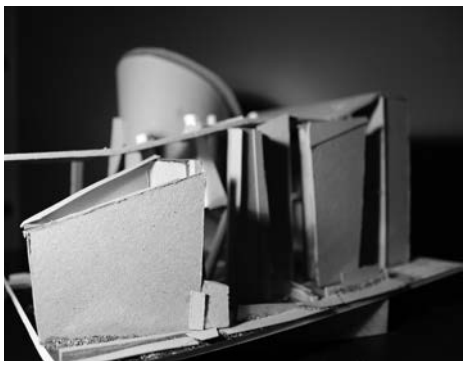




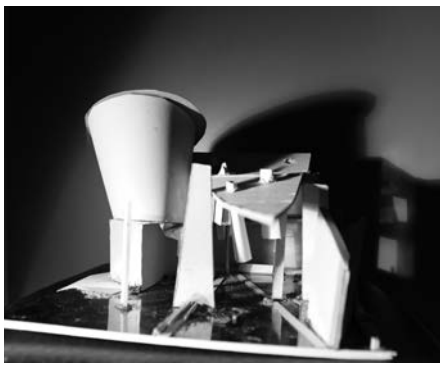
11am

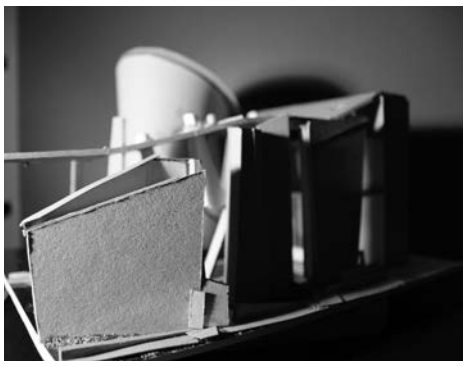


13pm



15pm





Tests

After conducting light tests on my digital model, it was found to be not giving the full picture of the lighting strategy. The lighting strategy relies upon the reflectance of the water to introduce water into the depths of the building, which my digital tests weren't showing.

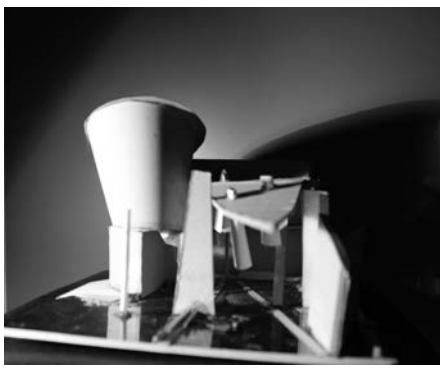
This led me to conduct a physical model test, where a reflective card was used as the water's surface. Here, this resulted in light being projected into the depth of the building. The tests were taken to study the variations in the light in the building's under roof canopy areas over a day in Marseille.

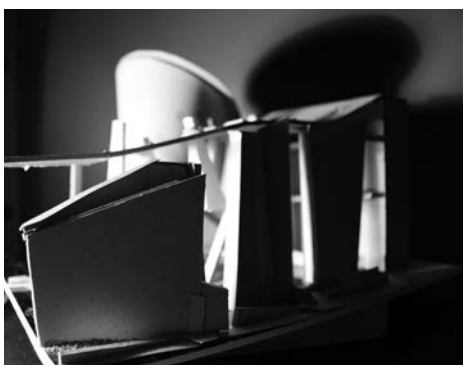
Conclusion

It was found that the roof canopy, which casts a shadow and blocks light into the building, is at its most shadow inducing at midday, when the sun is at its highest, and directly over the roofscape.

The side structures of concrete are also very massive currently, which creates blocks to sunlight in the morning when sun is facing this side of the scheme, which is a problem. The light glowing through them at afternoon however is a desired effect.

17pm



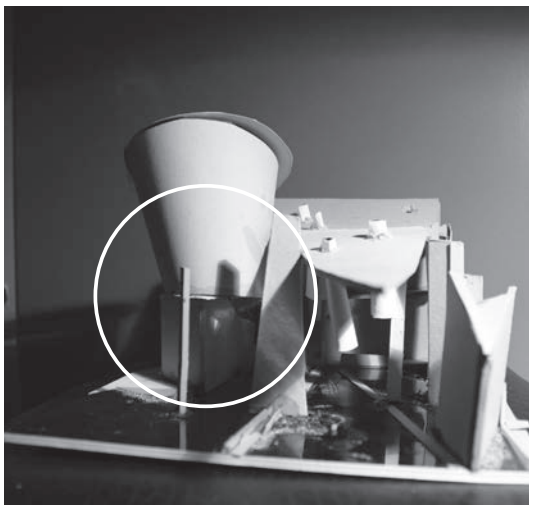


19pm

Auditorium

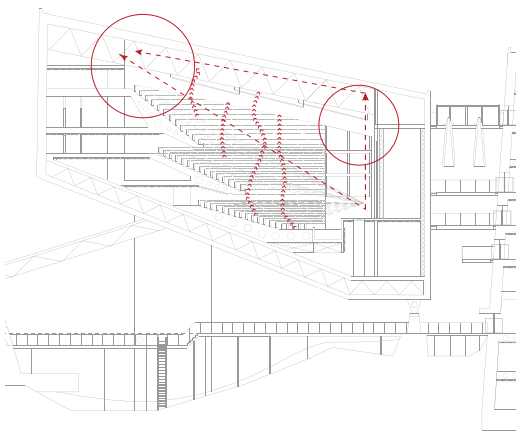
Designing an environment

So far the design of the Auditorium has featured a raked roof, with the space sculpted to create optimum viewing planes, with lobby and backstage spaces enveloped around this. However, in studying the environment this creates, there are a few problems in terms of overheating and light blocking below. This charts the process towards a more resolved design.



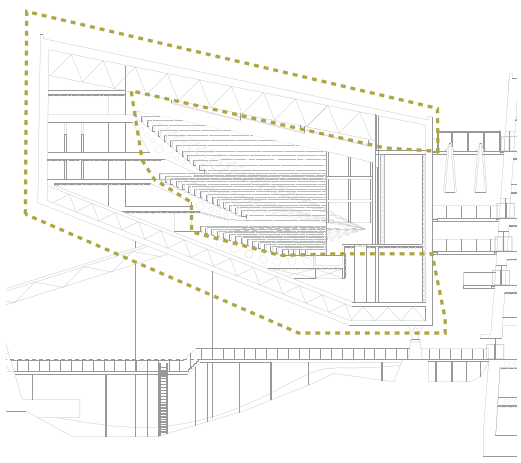
Light & Shade

The area beneath the auditorium is cast in shadow. This could be reduced if the form is stepped more, or if cuts are taken out of its large mass.



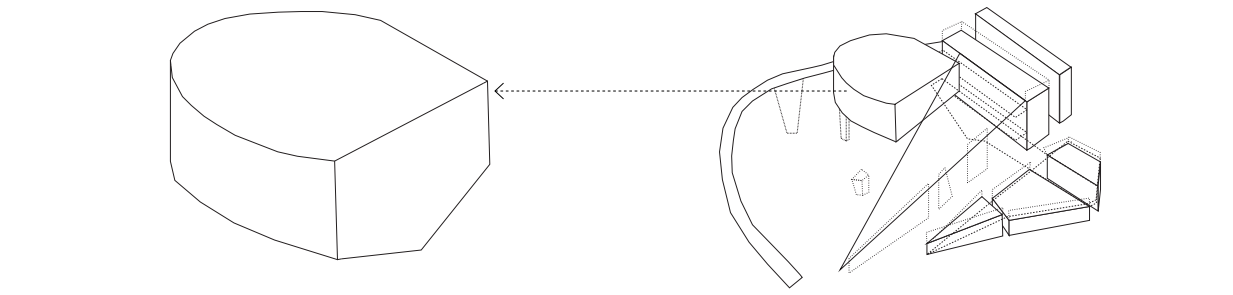
Heat flows

The audience will generate heat too, heat will gather at the upper gallery of seating, which would be quite unpleasant. Also lighting for the stage will create an overheating pocket near the stage.



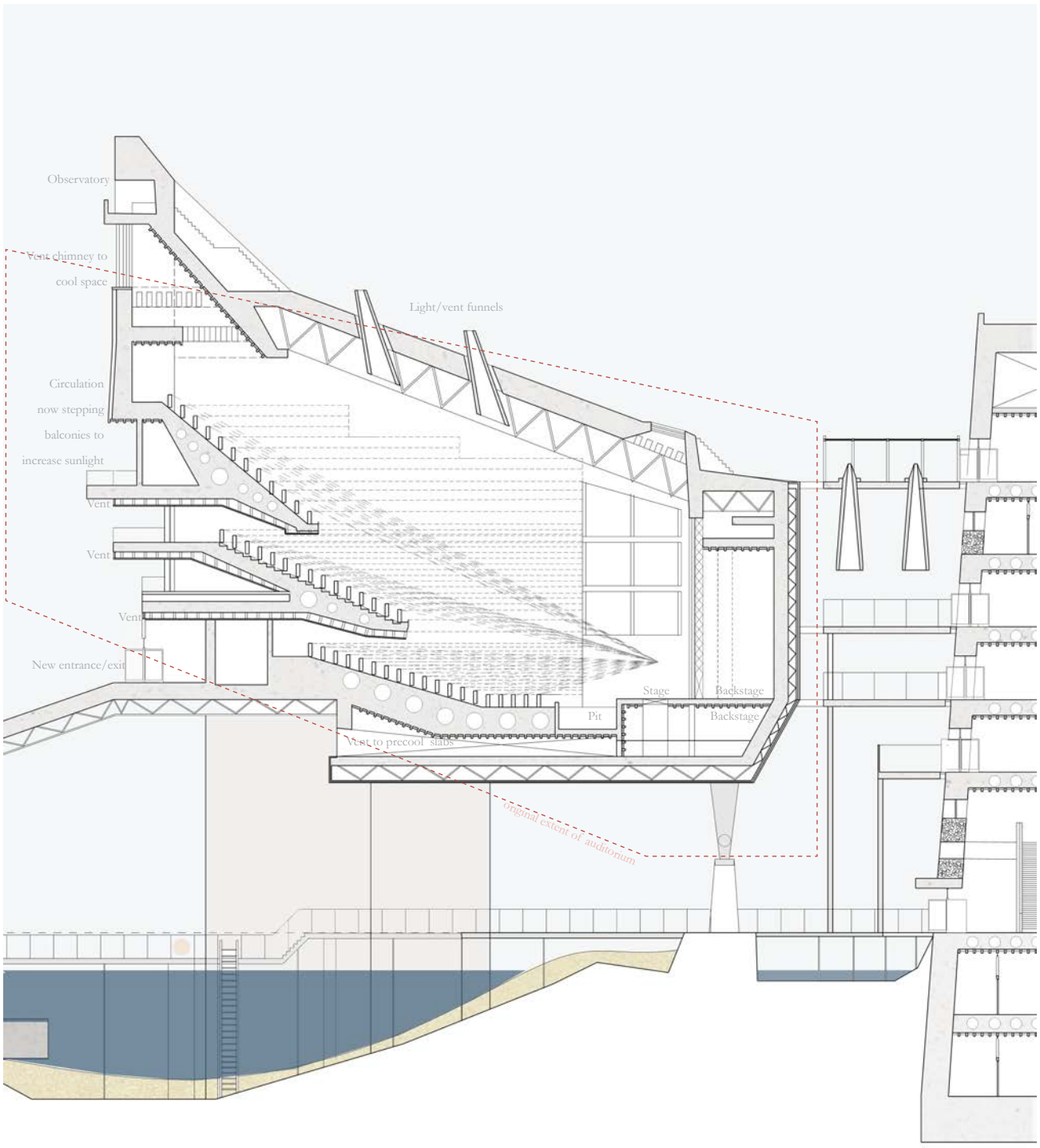
Opportunity for change

It will be possible to take "bites" out of the yellow zone and maintain the seating arrangement and stage set-up. By reducing the shadow footprint and adding openings, the space will be better ventilated and daylit.



Massing studies

Taking the original mass as a starting point, I started to experiement with distorting the proportions of the auditorium's mass and cutting chunks out of it.



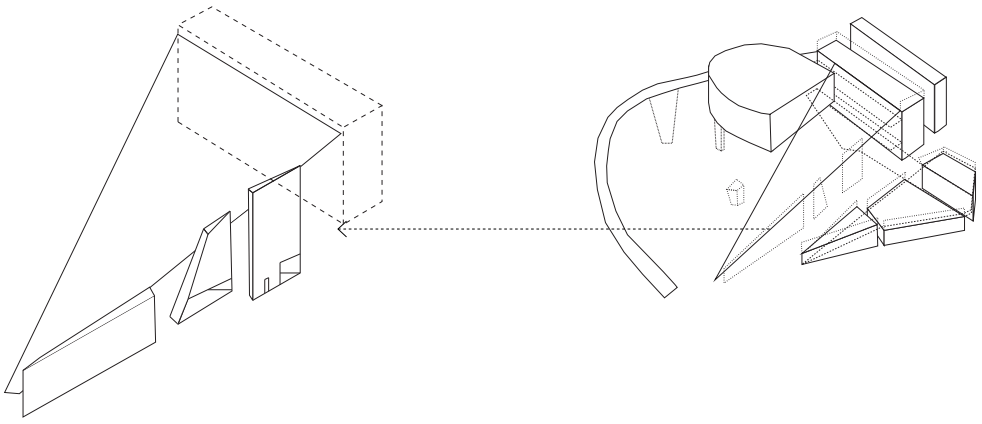
Auditorium Section

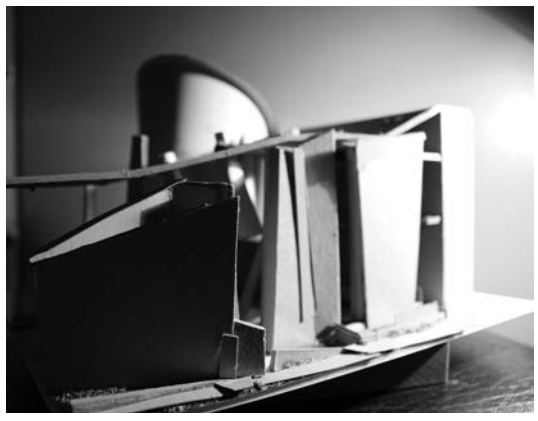
Based on work above, the design developed as shown here. The stepping cuts and voids enable ventilation and the upper gallery levels are now not the centre of a hotspot. The auditorium is now more compact in footprint and less intrusive on the waterscape space, by being raised higher and cut through..

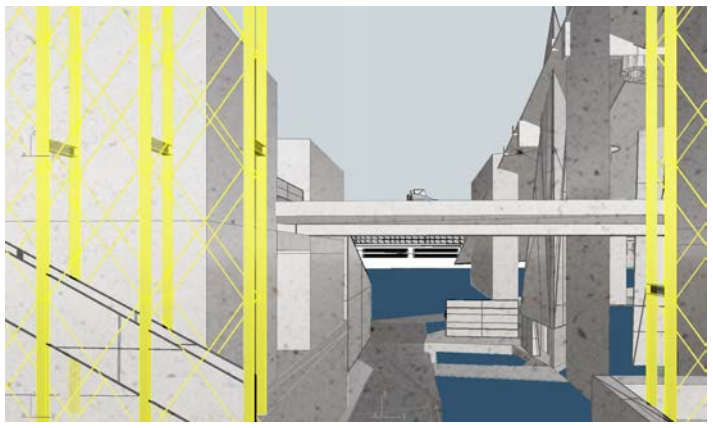
Edge condition design

Designing an environment

In the same light study, it was clear that the side massing of the concrete structure was prohibitive to allowing light into the waterscape in the morning. This study explores options for maintaining structural strength while allowing more light into the area beneath the roof.





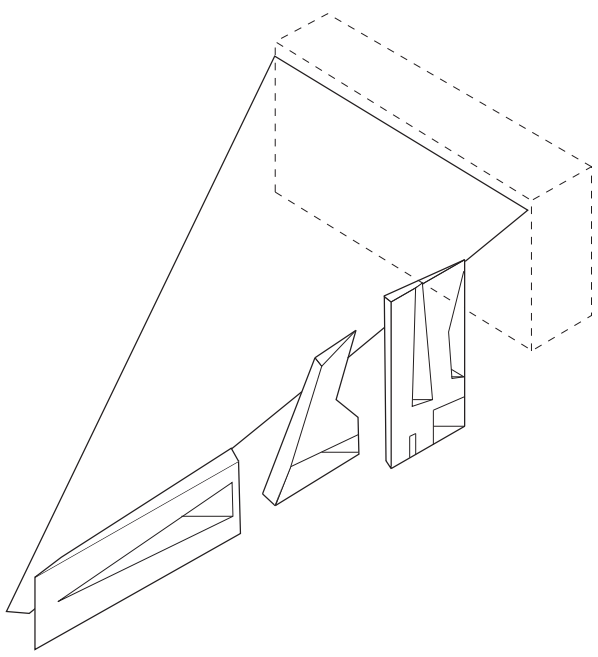


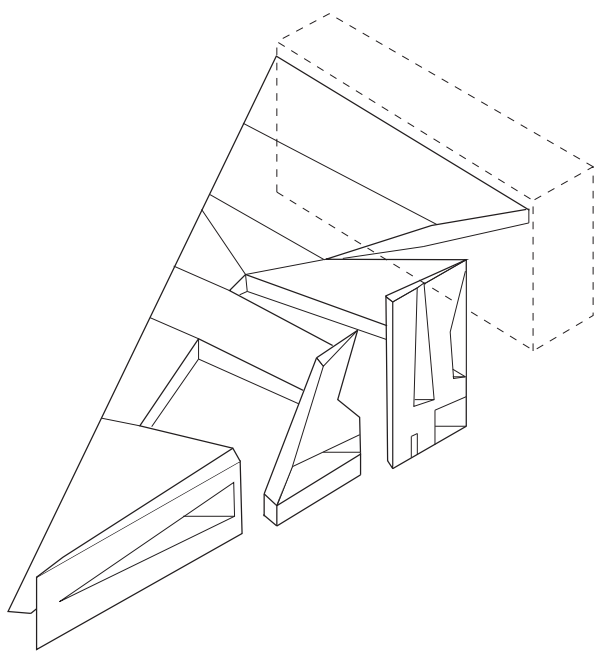
Light & Shade

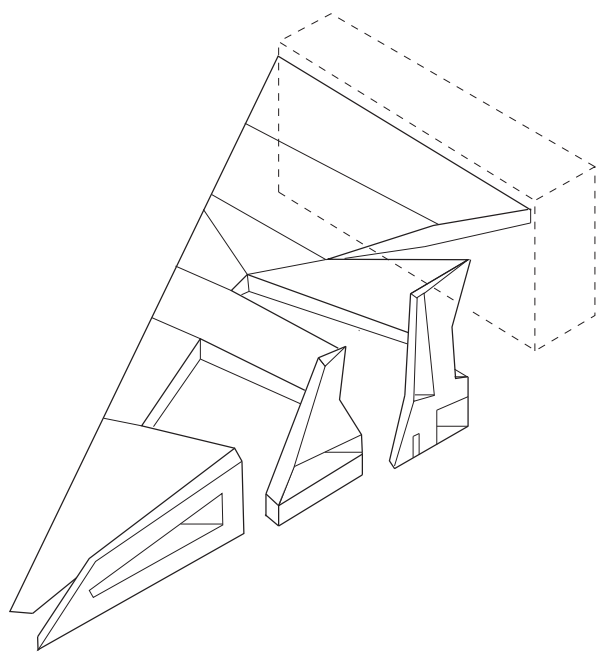
The walls are in the sunniest position of the site for most of the morning. This means behind them is very dark. The roof causes most shadowing at morning-midday.

Opportunity for change

The bottom and internal spaces of the concrete masses are used as inhabitable space - for example, with a stair up some of them and swimming changing facilities in one. However, this doesn't limit the possibility of "biting" into the concrete outside of these areas and to introduce more light beneath the roof.

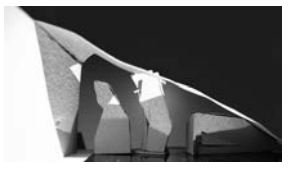


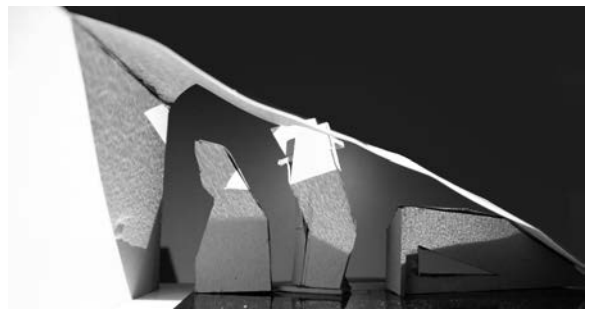




Massing studies

Taking the original mass as a starting point, I started to experiement with distorting the proportions of the roof and edge condition by cutting chunks out of it.

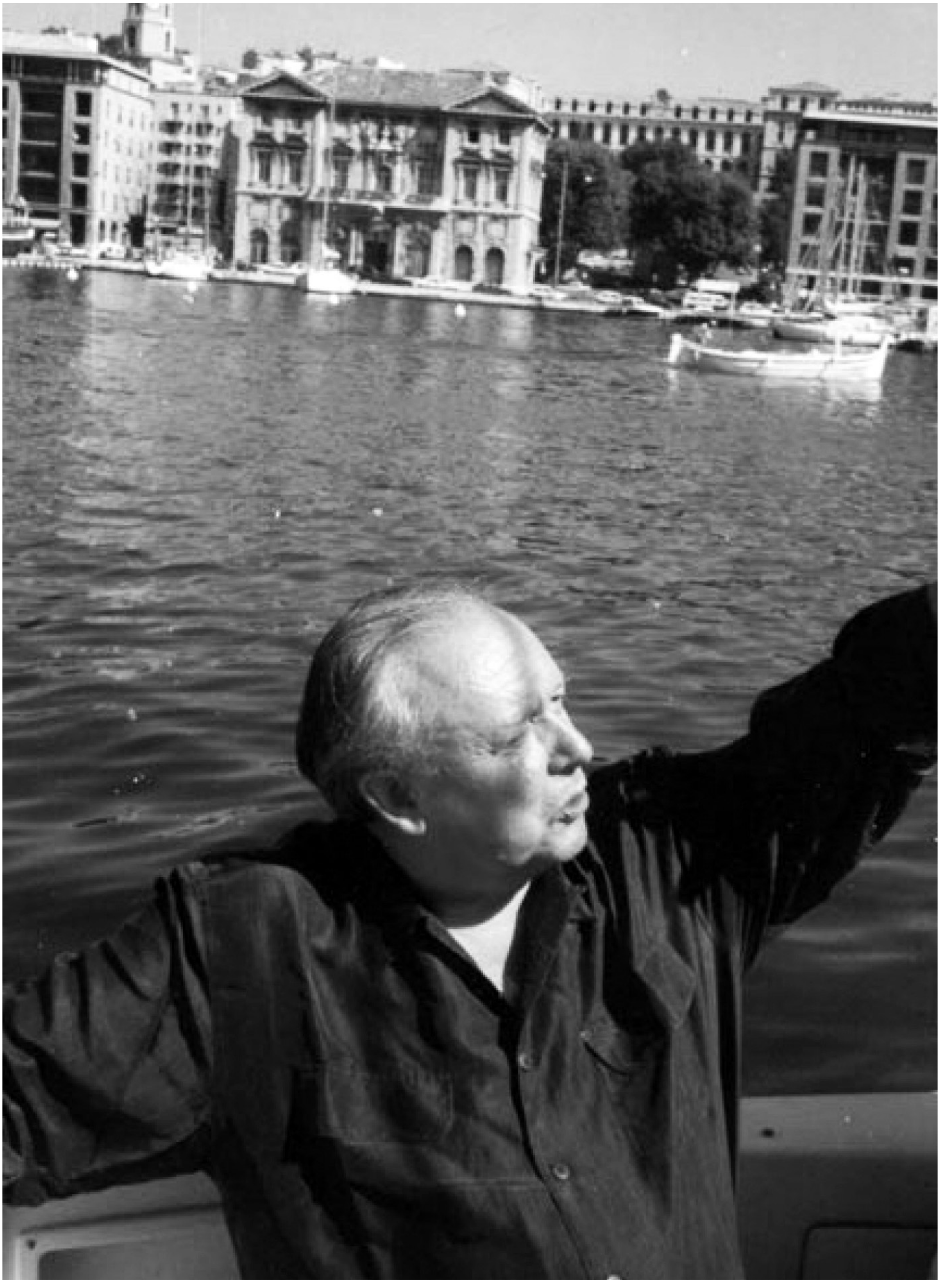




Light testing new edge condition

The light test shows that this has improved the impact of light blockage by the side elevation and made for a more exciting form at the same time.

04 *Building Delivery*



Client, Delivery and Building

Client values informing design

This project makes a comment on the Marseille planning system neglecting the role the port plays in the city and seeks to untap this potential by bringing a new [urban] beach and Metropole hub to this area. The client represents both private interests and the public interests and reflects the complexities of Marseille's political territories.

Jean-Claude Gaudin

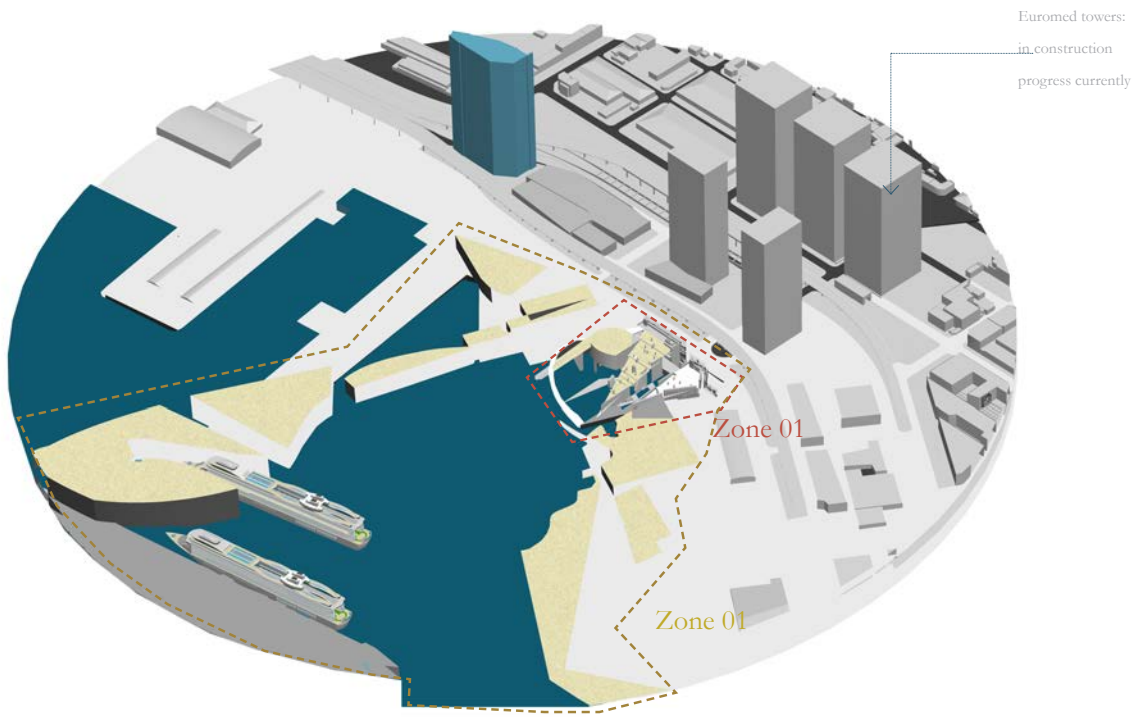
Client

This scheme will be delivered as part of Euroméditerranée. Euroméditerranée value the role of architects in the reshaping of the city both physically and as a place associated with international fame and modernity - so far having recruited Zaha Hadid, Jean Nouvel and Kengo Kuma to design buildings.They desire a Marseille made of landmark buildings and commericial successes to boost tourism and their economy.

This massive development of Marseille has been massively important in boosting Marseille's employment rate, by encouraging investment within Marseille, creating jobs in construction and has transformed the North of the city.

The site sits within the zone indicated as phase one of Euroméditerranée, however no proposals have yet been made for the site, with the Port not yet included in any of the renders or proposals. This scheme is therefore begun as part of a tender process initially asking for proposals for this as yet untapped site in the city. Additional finances may need sourcing, however so far this hasn't been a problem for Euroméditerranée, with the investment made by French taxpayers totalling €600m so far committed to the 25-year redevelopment project being outdone by the €2.9bn offered by private investors. Investors are already seeing returns, with Les Docks redevelopment of old dock buildings into workspaces and retail units full.

Jean Claude Gaudin is elected President of the Metropole. Mr Gaudin is also President of Euroméditerranée. He therefore, despite labels of groups such as "Euromediterranee" and "Metropolitan Aix-Marseille-Provence" will be the overarching client, acting on behalf of both the Private interests of investments in Euroméditerranée and the Public interests of the Metropole who will invest cover the costs of public sector buildings. He therefore acts on behalf of characters such as Lole Izzo and Jill and Steve who I have investigated so far. He will have a team working for him, as a busy 74 year old man he needs support, especially with existing heart conditions. He will establish a group who he will oversee to run the client side of the project.



The site's location as part of Euroméditerranée Phase 01

The site's location within current stratefies for Euroméditerranée Phase 01 & 02

The site's proximity to the Euroméditerranée scheme's CMA CGM HQ, by Zaha Hadid

Quais d'Arenc, new towers to be constructed soon

Delivery

The "Political City [Epi]centre" scheme is being delivered in two zoned phases. The first phase is the Parliament itself [which is the focus of this report] as a standalone scheme in order for it to complete in time for 2020 - when the Aix-Marseillaise-Provencale Parliament is fully in control of the region. This gives the project a 4 year span from Stage C to completion. This contains the programme of workspaces, cultural and commerical outlets.

Jean-Claude Gaudin takes a personal stake in the project's delivery - he wants it to be his swansong, at 74 he is aware that this is his last showpiece to offer to Marseille and reflects his work over the last 50 years as a politician. Time is of the essence in that respect. He very much plans to be personally involved in its delivery, with its finish vital to its success.

Interests

Jean Claude is keen that what is delivered is internationally reflective of Marseille's role as the Capital of the Mediterranean. The aim is to rival Paris as a major trade hub in France, which is already seeing some signs of evidence, with the French property market on the decline, with Marseille the exception to this.

There too is importance in who delivers the scheme. So far, Marseille has a reputation for innovations in concrete in the last 15 years, with the recently built Mucem described by Lafarge "A symbol of Marseille showcasing concrete". This scheme aims to continue in this vein, with it acting as a showpiece of the limestone resources in Aix-Marseille-Provence and to reawaken the dormant cement and concrete industries and craft to former glory.

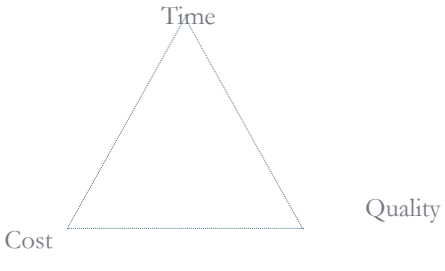
Building

The aims of the client are of creating a political standing of Marseille that is on an internationally important level, with a hub that is created by the quality of the urban space of the Beach and brings people to interact with the politics of the city. Therefore the stakes for the Metropole are high on this large-budget, large-scale project. It is to be seen as an investment for the city and wider Metropole and to offer a sign of hope for what has historically been a neglected city in France. It is to be modern, Provencale and Marseillaise.

Procurement

Public & Private interests

The architect is a London based team, awarded the project through a tender to the client, Jean-Claude Gaudin and the based in Marseille, France. What is most interesting here is the relationship between public & private roles and finding a procurement method which allows the optimisation of the time, quality & cost trade-off.



Existing Contractual Arrangements

Euroméditerranée is already a contractual arrangement. Its finances are mostly funded by private investors, with the public's contribution making up only 20% of the total funds so far. It is in essence a Special Purpose Company, only set up for the duration of the design and delivery of the redevelopment of the two Phases in Marseille. Euroméditerranée's two phases are invisigined to take 25 years, having commenced in 1996.

Potential Procurement Routes

There are several options:
[01] With Euroméditerranée as a SPC, it can then act as sole client in projects with common construction contracts. This would suggest an equal weighting between public and private interests in the scheme and mean disputes held are seperate to the construction contract, at a step above it.

[02] It can combine this with procuring a PPP contract that restates the individual parties in order to ensure resposibilities are held in documentation for the length of the building and for a period of its lifetime.

Using the matrix, I determined that using a combined PPP and management contract is the best route. With PPP to determine top level contractual relationship for the project, a Construction Management between the established network of parties is established. This way, Public and Private interests are declared fully in a new contractual relationship for this construction and to ensure that all parties are declared too in terms of their risk liability and responsibility for the building's lifetime.

PPP Parties & Aims

Important to the PPP are first and formost the Metropole and Euroméditerranée. The Metropole has two significant bodies - first is 'Metropole Aix-Marseille Provence' , which is the governing body itself, and second is Mission Interministeri-elle Projet Metropolitain: Aix/Marseille/Provence. The latter body is the steering group who have established investments and policies for the coming together of the Metropole, while the former is just the everyday running of it.

Lafarge is already seen to be a highly important player in the role of managing the Concrete works, and ensuring the buildability and attainment of the goal of declaring Marseille as a concrete showcase. They will inform the design team working through stages D-F and act as a vested party, as they too will benefit from the success of the scheme, by investing in new concrete equipment and funding research, they will aid the private side of investment.

Parameters	*Objectives*	*Standard Contracts*			*Public-Private Partnership*
		Traditional	Design & Build	Construction Management	PPP
Quality	World-class quality, showcasing Marseille's unique concrete excellence and making real the political strength of the new Parliment and prestige.	●	○	●	●
Complexity	A complex scheme - with many different packs of work: precast, insitu concrete, steelworks, glazing, public and private finish systems and so on. Technically challenging.	○	○	●	●
Timing	Completion of building in 4 years, with overall project lasting 10 years	○	●	◐	●
Public vs private	Contract that administers the multiple parties to ensure all voices are weighted in a manner that does not prohibit the project	○	○	◐	●
Buildability	Bringing on Lafarge at an early stage as an investor/ collaborator to help pioneer concrete solutions that are cutting-edge and buildable to showcase Marseille's concrete	○	○	●	●
Cost	This scheme is an investment - there needs to be price certainty enough to be able to estimate a return, however given the timescale and desire for high quality, the client and investors understand that cost is not the most restricting aspect.	◐	●	○	●

MISSION INTERMINISTÉRIELLE
PROJET MÉTROPOLITAIN
Aix/Marseille/Provence

MÉTROPOLE AIX-MARSEILLE PROVENCE
Territoire d'Allauch, Carnoux-en-Provence, Carry-le-Rouet, Cassis, Ceyreste, Châteauneuf-les-Martigues, Ensuès-la-Redonne, Gémenos, Gignac-la-Nerthe, La Ciotat, Le Rove, Marignane, Marseille, Plan-de-Cuques, Roquefort-La Bédoule, Saint-Victoret, Sausset-les-Pins, Septèmes-les-Vallons

EUROMÉDITERRANÉE

LAFARGE

Implications of Procurement

Contrat de Partenariat

By electing a PPP contract, this has implications for the lifetime of the "Political Epicentre" in Marseille. These repercussions are to be understood and to have a reaction in the construction finish of the building and its usage. It also has financial, political implications for the liability of the building and its uses.

PPPs in France

In France, PPPs are relatively new, introduced in 2004, having been introduced in England in the 1990s. They are known as Contrat de Partenariats. They are complex arrangements, designed to introduce finance and management approaches from the private sector into public projects. The goal needs to be clear at the offset to ensure a smooth process, with design quality and end result specification built into contracts. Long-term management is included from the offset and taken on by a private group, in this case Euroméditerranée, for usually 25 years.The lifetime of a contract under a CP is 99 years, or the life of the asset, whichever is shorter

Aiming to boost economic growth and to minimize the effects of the financial crisis, the Government of France adopted a stimulas plan in the beginning of 2009. This is geared at supporting investments in public infrastructure and comprises a State financial guarantee for public private partnerships, which the French Ministry of Economy can award at its discretion. This project can take advantage therefore of additional investment as a result of opting to become a PPP contract.

Implications on project

As can be seen by the project organogram, there a large numbers of parties involved at all stages of the process. This can cause a bureaucratic nightmare, with too many people wanting to input to the project. As such, it is key that at the stage of writing the AMP Euromed Partnership contract, that the levels of involvement of each party is declared so as not to slow down the project if there are disputes.

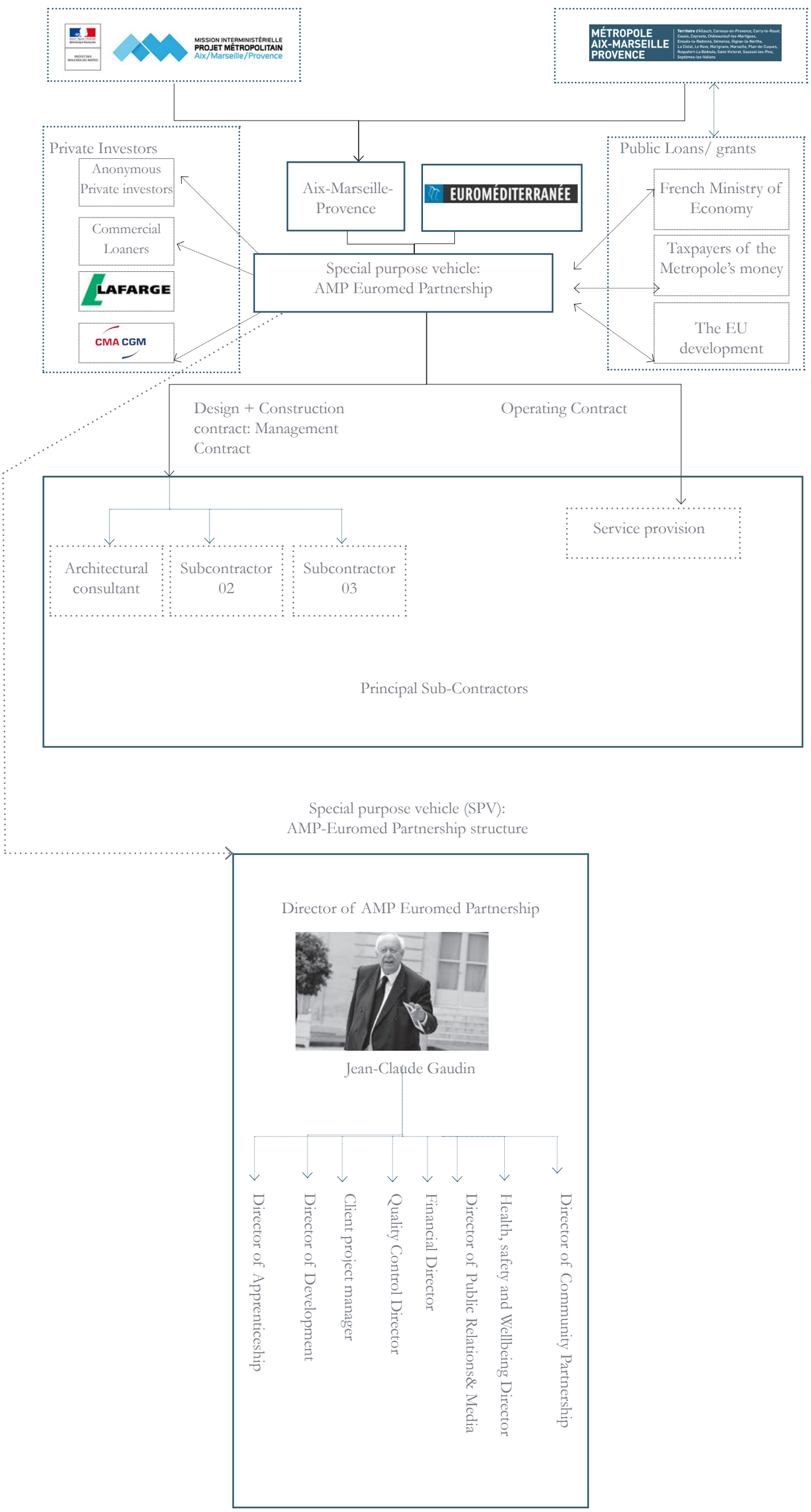
The client, the Special Purpose Vehicle is the overall manager of the project. Jean Claude will sit within this, as well as a team of experts; with a project manager, a client side health and safety officer and those able to negotiate between the subcontractos and enable active collaboration and effective working processes.

Market of PPP

PPPs are funded largely by private investors, a relatively new series of contracts with until recently, unknown return. The French PPP market is starting to boom, with investors seeing good returns on buying bonds in PPP developments. This has its advantages - that it weathered the storm of the 2008-9 recession is a good sign, however a drawback of this is that the investors can be as fickle as the market is.

It is important that therefore Jean-Claude Gaudin raises the profile of this project publicly as much as possible, declaring it to be a Significant National Project and marketing the financial benefits of a more united Aix-Marseille-Provence, collaborating in politics and of giving Marseille a coast again to encourage tourism. But equally, it is vital that the original design intent is not dwarfed by commercial interests. The role of the SPV is to manage this negotiation and to ensure the design is delivered to an optimal, world-class standard.

Organogram of Contrat Partnerait



[1.2.b]

Plan of Work Sequence

Phase 01 Plan of Work

This plan of work is based upon the 2013 RIBA plan of work, with the addition of 'publicity drops'. As this is a public-private partnership project, transparency of process is key, but equally the interests of the project must not be conflicted with premature public statements.

January 2016-September 2017
Disruptions to note: French summer of *pont de* series of several bank holidays in a row will interrupt Summer work activities on Developed Design

Three months
December 2015-January 2016

Three months
September-December 2015

One month
September 2015

Tasks / *Stages*	*00 Strategic definition*	*01 Preparation & Brief*	*02 Concept design*	*03 Developed Design*
Core objectives	Business case: To create a city hub for both politics and leisure. Financial gain to be made from leisure aspect short term, long term for politics as Marseille is increasingly perceived as a political hub of international standing. Competition opened for ideas for the site and how to use it.	Project objectives are determined in the briefing package. The overarching goal of creating a place that is unique in architecture and constructed in pioneering concrete construction to showcase Marseille. Jean-Claude Gaudin briefs the team on his vision for the scheme. Feesability studies are undertaken with the initial brief. Review of current site information.	Architecture Team from London is to prepare more informed concept design, along with two other candidates, in a shortlist after being decided upon by Jean-Claude's team in the SPV. Preliminary cost information is included in the submitted concept design works, as well as issuing a Final Project Brief by the SPV. The London team is selected for their concrete scheme.	A developed design is worked on by the Team from London, with fortnightly reviews with the SPV by Skype, and with Monthly meetings in Marseille or London with the appropriate Directors. Other subcontractors working in tandem - with collaboration sessions held every 10 weeks hosted by Jean-Claude Gaudin in the media's eye - showcasing the design in the press.
Procurement	Assembling the SPV team: bringing together an accomplished client side team to work for Jean-Claude Gaudin in delivering his vision for a new Parliament and new beachscape.	The organogram for the structure of funders - private and public is underway. Initial work to attract investors, by holding a celebrity attended Gala Ball hosted by Jean Claude-Gaudin. Roles within project are made clear over a glass of Provencale wine.	Signing of contracts by Architects and the SPV, as well as additional subcontractors. A publicised dinner is held, as well as an exhibition in the Mayor's Office in the Vieux Port showcasing the concept design alongside shortlisted designs that were not submitted.	Further funding raised on submission of Developed Design, as more investors see the potential of the cultural and commerical outlets to generate income. An investment Yacht Party is held by Jean-Claude Gaudin in the Vieux port, to rival Cannes' festivities and attract investors.
Programme	Site investigations and feasibility studies are undertaken at this stage, in order to create a scope of works package of site information. Establishing a project programme takes place by Director of Development.	Public opinion is gauged on what they would like to see in their city and how they feel about uniting with Aix-Provence. Director of Development receives feedback on project programme from Client Project manager, with negotiations regarding ambitions of timescale vs cost to be ongoing.	Feedback from public is incorporated into brief. Funding milestone at this stage is to acquire €20 million in order to begin works, pay the architects. Payment from Concept phase onwards is made to all subcontractors. Shortlisted architects not successful are awarded €10,000 as a goodwill gesture.	Consultants are added to teams at this phase - with specialists in Concrete, Steel, Glass and other packages hired. Directors each interrogate the design and ensure they have had input in it, in order to achieve their goals in the SPV. Renders are produced for press purposes, with information packs prepared for final investment drive.
Town Planning	Euromed to hand over information regarding masterplan and to help guide the discussions regarding masterplanning of the site. Beginning conversation with CMA CGM and other key stakeholders.	Pre-application discussions with Euromed, CMA CGM and other stakeholders regarding programme conflicts and needs. Jean-Claude to host a business lunch to discuss the programme with stakeholders and to attempt to iron out any disagreements in a face-to-face, friendly manner. Masterplan is begun for the site. Encouragement from Development Director to move faster.	A no fly zone is submitted for planning permission across the site. This is to be unnoticed in the public realm, however a ban on non-government drones is made across Euromed as a new planning policy, in order to cover the scheme. Policing drones will patrol the site and report any squatters, vandals or youths tresspassing.	The SPC submits the planning for the scheme to the Mayor's office for planning authorisation, where Jean-Claude Gaudin then authorises the scheme. The public are unimpressed by this loophole, however unable to intervene in the planning system due to its watertightness under the Euromed scheme, take to tweeting their unhappiness. Rappers take to youtube.
Key support tasks	Reviewing feedback from previous Euromed projects. In projects where criticism was drawn from the public, there is to be a study drawn up in order to try to this time engage the public of Marseille more positively this time.	Handover strategy and risk assessments - SPV to agree set of Common Standards for Quality and Design Assurance and determine the Project execution plan with information drops timetabled. French lessons commence for English Architecture team, whose language skills are poor, having learned Latin, not French at school.	Rearch and Development into concrete in Marseille commences, with investigations into its role in the wider territory of Aix-Marseille-Provence. Strategies are devised by all Directors for their scope of work henceforth, with strategies for all areas defined.	Sustainability has been noted to be absent from the Directors Board, so a new post of Environment and Context Director is appointed, and required to produce a report for the scheme. Fortunately, the London architects had already accounted for this in their design. Handovers are prepared, risk assessments done.
Publicity drops	The press is made aware that there is a new SPV established and that its role will be to develop the neglected Arenc. Rumours are fuelled by the PR Director tweeting mysterious statements regarding the ambitions of a new project in Marseille.	The public are able to see photos of Jean-Claude meeting with wealthy financiers, with speculation and excitement bubbling. The PR Director decides to launch a viral media campaign in hope of tapping into the youth culture of Marseille - a coded message about 'da beach' is released by Marseille rappers Iam on youtube.	Reviewing feedback from previous Euromed projects. In projects where criticism was drawn from the public, there is to be a study drawn up in order to try to this time engage the public of Marseille more positively this time.	In order to establish better public-project relations, the apprenticeship scheme is launched, whereby young Aix-Marseille-Provencians are entitled to apply for a well-funded concrete apprenticeship, training in constrcution of concrete and with a promising career in the burdgeoning construction scene in Marseille.
Information	Strategy brief is concluded and handed to Jean-Claude Gaudin for authorisation	Initial project brief is concluded and handed to Jean-Claude Gaudin for authorisation.	Concept design package, Project strategies, Final Project Brief are handed to Jean-Claude Gaudin for authorisation.	Developed design is concluded, with the sign-off of Jean-Claude Gaudin before he goes on a long September break abroad.

September 2016-December 2017
Technical design to begin as part of Developed Design for some elements to ensure buildability. To continue into construction phase for bespoke elements that need to be specifically designed for tolerance purposes and to offer reviews of drawings.

January 2017-Summer 2020
Construction commences during technical phase, for foundations and demolition works. Construction period of 2.5 years.

2020 Autumn term of Parliament handover - Grand Opening and large events to celebrate launch with celebrities, public events and press

2020-2022
2 years of monitoring for defects and making good

2020-2110 onwards
Life time of building > 99 years

04 Technical Design

05 Construction

06 Handover & Close out

07 In Use

The team from London relocates to Marseille in order to coordinate better with the French, now that they have learned enough French language the process is improved. A developed set of details is drawn up, with the input of other subcontractors in terms of buildability. Director of Quality control becomes very hands on at this stage, under watchful eye of Gaudin.

During the construction phase, a couple of architects from London remain in the site office, overseeing the construction as reviewers. Their role is to approve or comment upon drawings, which takes approximately 2.5 years. Their role is undervalued by the contractors, deeming it prohibitive to project time, however the Director of Quality overseeing their work is indebted to them.

The end of the Building Contract. Gaudin treats all the architects to a hearty bowl of Bouillabaise in front of the media.

The team from London moves out of Marseille, apart from those recruited to join the Operational Architects team, to oversee the Making Good defects process.

Service operation of building contract commences, with the BMS run by a team.
The architects must set up a working 3D model guardeed in top secrecy that maps the entire building, with all its “assets” tagged and able to be tracked in terms of performance. Making good of assets within warranty periods.

Specialist subcontractors to produce mock-ups at 1:1 scale to test construction technique. Jean Claude Gaudin to visit site and these piecees.

Subcontractors each delivering their packages on site. The building contract is being administered by Client Project Manager, with frequent site inspections and reviews of progress. The Director of Development queries their frequency, as it slows development when there are changes.

Contractors to each have finished their worksite to the desired finish on time and on budget. Clean up operation of site and dressing of interiors ready for photoshoots and openings.

Contractors of Service operation commenced services.

Foundations commence work on site and demolitions, in preparation for scheme. As packages are completed, this information is passed onto construction contractor to commence works, in order to be efficient on site. Gantry hoarding line is constructed - public are forbidden from site and all photos are to be organised by the SVC.

Construction in full process: careful coordination of delivery of components, ships bringing materials, lorries and so on is achieved by the Client Project Manager. CMA CGM are particularly helpful funders at this stage, offering to aid the movement of ships and control of goods arrival to site.

Construction complete, final checks, feedback and Handover strategies are implemented. The Board of Directors are treated to a holiday in Provence as a reward for the project’s tidy completion.
Project information is updated to be as built, with fire drawings and the like distributed in the building.

Building in operation. Operative contracts commence.

Project makes first moves to going to site - in order to ensure planning is maintained, foundations are dug and site is inhabited.

Masterplan is split into two zones. Zone one commences first, to much fanfare.

Planning officers check that the project is being constructed as per drawings and uses 3D scans in order to do this given the complexities of the project.

Town planning officers visit the site and check against final 3D model. Sound monitoring is undertaken to confirm the success of the Acoustic Facade. This may be rolled out in other parts of the city.

Town planning officers to roll out some of the success - by constructing more beaches along the Marseille North coastline.

Directors of Sustainability, Client Manager and Development all issue reports covering the Risk Assesments and concluding research and development studies undettaken thus far. Building regulations submission is prepared.

Handover strategy commences, as project winds down as does each Director’s role. With documents prepared and targets measured, financial rewards are given to those deemed to have aided a swift but high quality construction by Mr Gaudin and the Financial Director.

Directors of Sustainability, Client Manager and Development all issue reports covering the Risk Assesments and concluding research and development studies undettaken thus far. Building regulations submission is prepared.

Directors Board still to be held account for any issues, but now working on next project - Euromed 3.

Planning granted, the project goes to site with a publicity launch, of Jean-Claude pressing the button to trigger a series of controlled explosions of the current cruise ship terminus, coinciding with a firework display and the second Netflix series of ‘Marseille’s release - maximising publicity to Marseille,. Gaudin is also filmed digging the first footings and planting a baby tree.

Site visits by Mr Gaudin on 3-monthly basis to fuel the press with hotly anticipated images from site - with the Gantry hoarding still in place and drone ban fully implemented, with eagles now trained to catch rogue drones and dispense of them in the Mediterranean Sea. The inaugral Gala Ball takes place again, to fill in investors with progress on site and to drink Provencale wine while networking.

Grand opening of the building is done in several stages; a soft launch for investors and family and friends of the construction teams, with then a massive public celebration of the coming together of Aix-Marseille-Provence, with big cauldrons of Bouillabaise served alongside onion soup. Plaque is unveiled. More fireworks from the man who does Bastille day in Paris and a performance from Iam.

Public announcement of Jean-Claude Gaudin’s retirement to his penthouse due to old age. At 76 he wants to just watch over the Territory he has created and go for a swim everyday.
The publicity team still trying to keep the building ‘hip’.

Concept design package, Project strategies, Final Project Brief are handed to Jean-Claude Gaudin for authorisation.

As constucted information - procured by 3d scans of the site.

Updates to as built information. Jean Claude to sign off design and building.

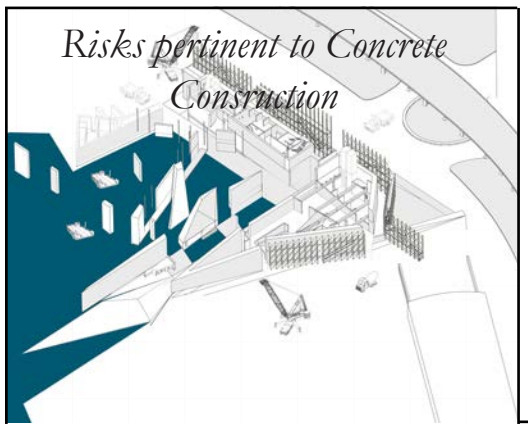
Sign off by Jean-Claude Gaudin and contractors after 2 years of full completion.

Safety, Health and Environment Risks

Risk Assessment

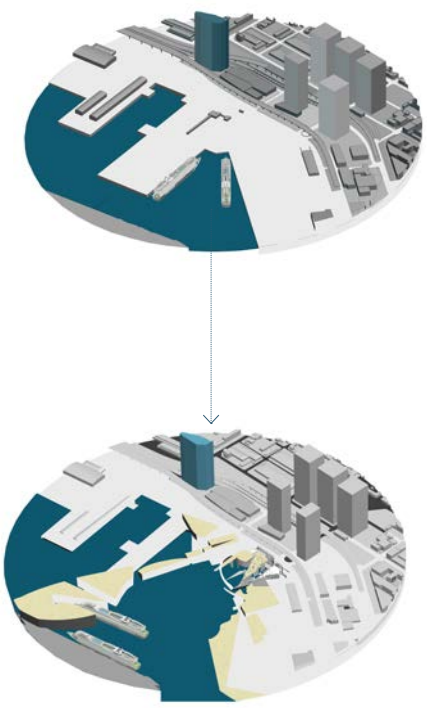
CDM roles have changed, with the 2015 CDM regulations. The architect as 'lead designer' is responsible for risk management, ensuring their design can be built safely and highlighting any risks. This table highlights main risks of this scheme, with some pertinent to particular constuction sequence moments highlighted in more detail.

	Risk	*Risk Possibilities*	*Strategy*	*Responsibility*
01	Contamination of site due to history as industrial port	Toxic waste, oil leaks and physical remnants of industrial port could prove health risk.	Remove all physical remains of industry on site, environmental health officer to identify any areas in need of clean up, or areas which the hardcore cannot be reused as aggregate	Client to ensure that the site is a safe working condition, enivronmental health officer to act upon this with their expertise. Contractor to agree to work within advise of client and EHO.
02	Proximity to water's edge	Risk of falling into water, drowning in water	When working in extreme proximity to water's edge, workers will be given hi vis lifejackets and to be harnessed on. An edge barrier should always be in position to prevent accidental falling and only workers experienced in swimming should work near water's edge, or should be supervised if they are not. This is especially important with working on boat craft cranes.	Architect to ensure that works package includes hoarding line for water's edge and edge condition meets the BS. Contractor to ensure workers abide by guidance regarding water's edge and to be responsible for any misdemeanours.
03	Risk of falling & tripping	Risk of falling when working at height, risk of falling into basement structure and other large digs on the site, risk of tripping on site.	When working at height, workers should be safely within a scaffolding system with appropriate barriers to prevent falling. Where there is additional risk, for example when constructing external gantry at height, workers are to harness onto the structure.	Owners, managers, contractors, and laborers should be aware of specific height sources on a project as they are virtually unavoidable in construction. Contractor to ensure workers abide by guidance and to ensure they are careful to keep a tidy worksite and keep routes of access clear to prevent tripping that could cause a fall. Fall prevention barriers to be constructed as a temporary works for construction.
04	Operating machinery and tools	Accidents can be severely dangerou, especially when involving heavy machinery. Vibrations, noise can affect worker's health, especially hearing.Hand tools can be dangerous too, all tools are capable of causing bodily injury.	Medications that cause drowsiness, alcohol, drugs are to be banned from being within workers' systems on site as a precaution, to ensure everyone is fit for work.Spot checking for these can be done to increase effectiveness of policy. Workers and those within close range of heavy machinery are to wear headphones, appropriate goggles and safety hat. Supervision to ensure equipment is being used correctly and by only those with suitable level of training.	Contractor to ensure workers are fit for work and appropriately attired for both operating heavy machinery and for working alongside them. High vis wear is neccessary to be observed by drivers. To ensure apprentices in particular are given extra supervision and training to ensure they learn to use tools correctly and safely.
05	Demolition of the existing buildings on site	Risk of collapsing buildings, asbestos and falling objects	Hard hats to be worn at all times, survey of buildings to be demolished and sensible demolition procedure taken. If unexpected Asbestos is found, work is to stop until it has been removed by a licensed asbestos contractor. Adequate PPE must be worn on site as a precaustionary measure at all times.	Client to undertake surveys before site works commences. Contractor to ensure correct demolition procedure, to work with architect plan of work in order to prevent falling building into new built works.
06	Disruption to locality	Noise disruption, traffic disruption and inconvenience to local area. Disruption to local businesses and use of port.	The site is adjacent to important businesses in Marseille and on the port. It must operate any noisy activities such as drilling piles, outside of weekends and within windows agreed upon with local businesses during day. Port activities to be relocated to temporary site. Traffic to be minimised by efficient use of materials and use of boat delivery where possible.	Client to work with neighbouring businesses from planning stage to ensure they are aware of the extent of disruption possible and to resolve any issues from as early a stage as possible. Contractor is to work within the framework set out by the client and neighbouring businesses, that will be included in tender phase to minimise disruption.
07	Political visitors, VIPs and other guests on site	Invitations to VIPs and political visitors to the site for special campaigning coverage in the press and to drum up investment can mean that un-trained persons will be on site, unaware of site risks	As VIPs and political guests are unaware of site risks, they should attend a briefing before being permitted entry to site. There will need to be a locker room with Visitor PPE kits available for these purposes, and a space to give a training session. They will be supervised on site and made aware that they are putting themselves and others at risk if they do not follow guidance. Political posturing may be risky behaviour on site if trying to take the perfect campaign photo.	Client to work with contractor for these events to ensure that safety is optimised at all points. Supervision to be provided, extra provided when film crew/cameras are on site, to ensure no dangerous attempts to capture "perfect shot" are made. Also to ensure trip hazards are clearly marked/removed and safe walkways are in place for those un-practised in traversing construction sites.



Risks pertinent to Concrete Consruction

	Risk	*Risk Possibilities*	*Strategy*	*Responsibility*
01	Crane usage for lifting precast pieces into position	When lifting heavy pieces of precast, there is a risk of injury in twofold: collapse of the crane itself and of dropping of the load. The risk too of moving heavy objects on a busy site is to be considered too.	The law says that all lifting operations involving lifting equipment must be properly planned by a competent person; appropriately supervised; and carried out in a safe manner. The site must be managed responsibly, with persons aware of crane usage and to be in appropriate PPE kit at all times on site.	Architect to help design a constructable facade, working with contractor to ensure loads of lifting for each piece are reasonable. Furthermore, to ensure that the contractor ensures workers are competent to operate a crane, with appropriate supervision and that all on site are in appropriate PPE.
02	Cement useage and hazardous substances	Cement is a hazardous substance - causing skin corrosion and can trigger allergic reactions. Wet mortar is highly alkaline, with workers exposed to this most at risk. A serious burn or ulcer can rapidly develop if it is trapped against the skin. In extreme cases, these burns may need a skin graft or cause a limb to be amputated. Cement can also cause chemical burns to the eyes. Dermatitis can be triggered by cement powder. It can also cause respiratory problems when it is dry, when being drilled into or worked with post curing.	There are preventory steps that can be taken. Limiting contact with wet mortar is key, by increasing distance between workers and any wet concrete. This can be done by using longer handled tools for example. Using pre-mixed concrete can limit exposure to cement powder. rotating cement bags to ensure they are used before the shelf date. The ingredient added to reduce the risk of allergic contact dermatitis is only effective for a limited period. Workers should always wear a mask when working with cement, as well as gloves, eye mask, appropriate footwear and waterproof trousers.	Contractor to ensure that controls such as work methods, PPE and welfare are effective and used by the workers. Health checks on workers skin to ensure that the controls in place are working, monitoring any symptoms of dermatitis and keeping a log of any health-related problems to concrete construction. This can then be used to implement better working practices on site.



CDM 2015 Regulations

The role of an architect is a little ambigous in the 2015 CDM regulations. It depends on the particular contract if an architect is labelled as a Designer or Principle Designer, as the contractor can assume role of 'Principle Designer', for example Lafarge delivering the precast concrete pieces. In this case, the architect assumes the role of Principle Designer as follows, but on packages where a contractor has significant design input, the subcontractor assumes role of Designer:

Principal designers - Designers appointed by the client in projects involving more than one contractor. They can be an organisation or an individual with sufficient knowledge, experience and ability to carry out the role.
Plan, manage, monitor and coordinate health and safety in the pre-construction phase of a project. This includes:
identifying, eliminating or controlling foreseeable risks, ensuring designers carry out their duties.
Prepare and provide relevant information to other dutyholders. Liaise with the principal contractor to help in the planning, management, monitoring and coordination of the construction phase.

Construction & Quality

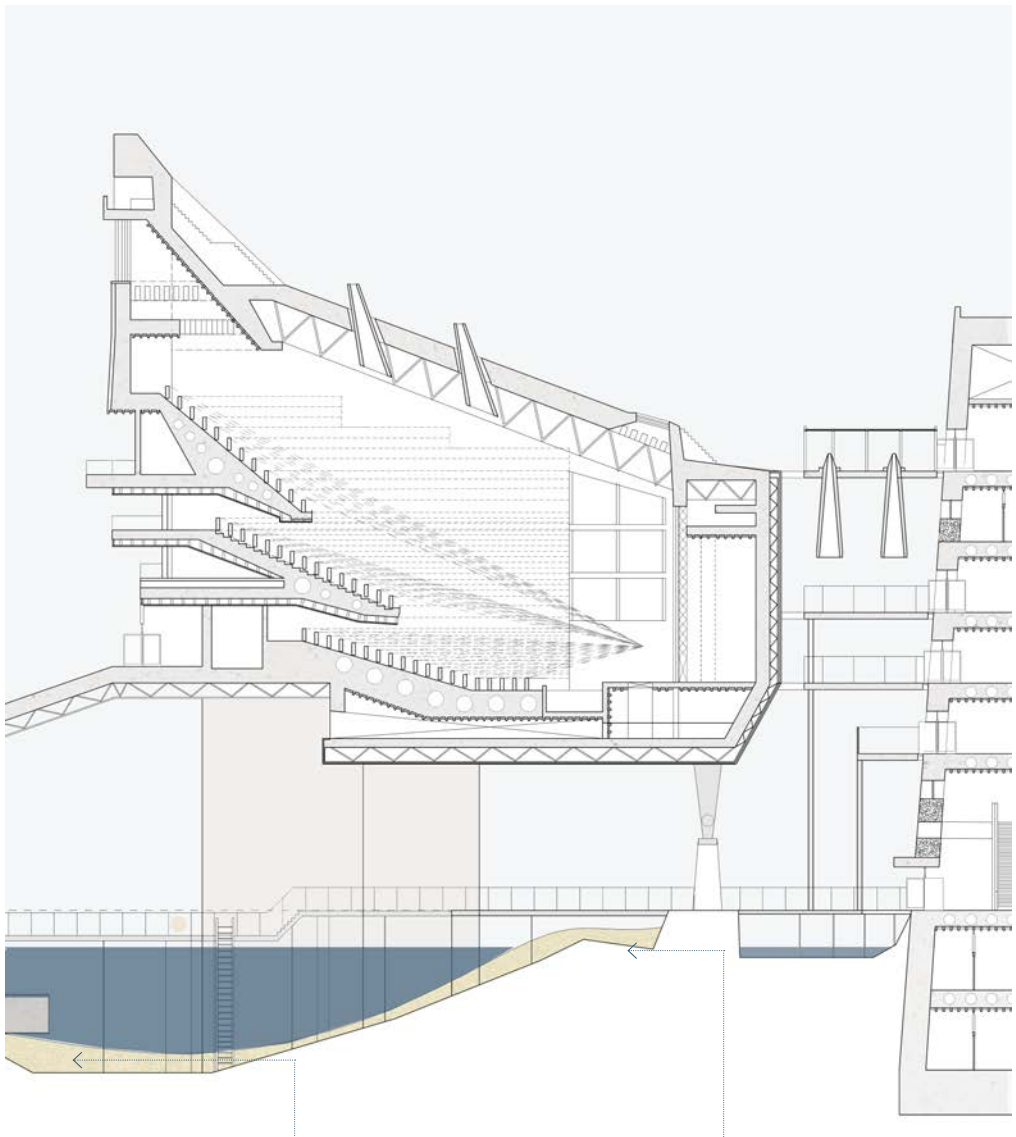
One material, many outcomes

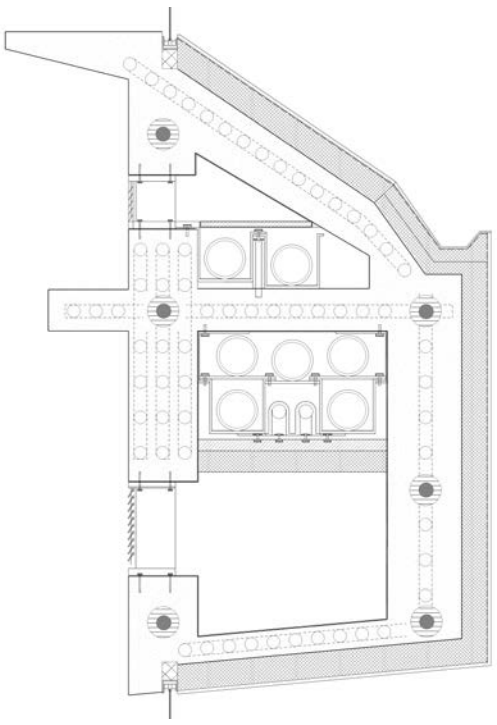
The multitude of finishes that can be produced by concrete has been a focus of this study. When going to site, there must be a tolerance, construction quality specification designated for every element, as simply labelling 'concrete' can vary so broadly.

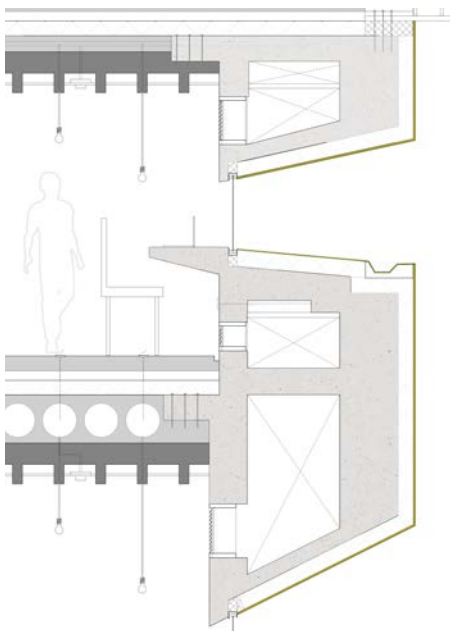
The architecture team and client must be rigourous in their specification and detailing for concrete if they are to achieve the range of finishes desired.

Ranging from rough, weathering concrete landscape pieces, to well coordinated, multi-purpose facade pieces, the use of concrete has been applied in a wide manner. This is to celebrate Marseille's history in concrete innovation, suggesting political innovations and strength to come in the future.

The coordination particularly of junctions is interesting - where insitu meets precast. Tolerances must be determined and detailed for. Where there are bespoke sculptural elements that are rough and loose tolerance wise, they will require 3d scanning and analysis after casting in order to create a junction with a precast piece, as the two disciplines are entirely different.







Conclusions

Exploring the scale of the project, from masterplan to detail has been massively informative to the design. Working through sections and details, the overall scheme has changed massively as a result of this piece of study.

The next steps for studio will now be to investigate further the interrelationship between the precast and insitu pieces and to determine a means of bonding the two. This will provoke more complex design junctures in the landscape and help to resolve the waterscape in particular.

LA FIN

References

Books & Journals

AJ Specification, **Roofing and Drainage,** February 2016

BROOKS, Christopher. N., **Architectural Acoustics,** (2003), McFarland & Company Inc Publishers, North Carolina

EDWARDS, Brian, **Rough Guide to Sustainability**, 2010, RIBA Publishing, London

IZZO, Jean-Claude, **Garlic, Mint & Sweet Basil: Essays on Marseilles, Mediterranean Cuisine and Noir Fiction,** 2013, Translation French to English by Howard Curtis, Europa Editions, USA

KOTZEN, Benz and ENGLISH, **Colin, Environmental Noise Barriers: A guide to their acoustic and visual design**, (1999) E & FN SPON, Routeledge, London

MACKENZIE, Robin, **Auditorium Acoustics,** (1975), Applied Science Publishers Ltd, London

OLTHUS, Koen, KEUNING, David, **FLOAT! Building on Water to Combat Urban Congestion and Climate Change, (**2010), FRAME publishers BV

PARKIN et al., **Acoustics, Noise and Buildings,** (1979, 1958), 4th Edition, UCL, London

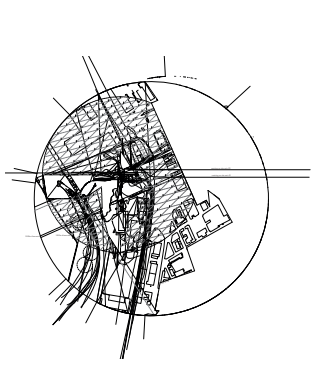
PELSMAKERS, Sophie, **The Environmental Design Pocketbook,** (2012), RIBA Publishing, London

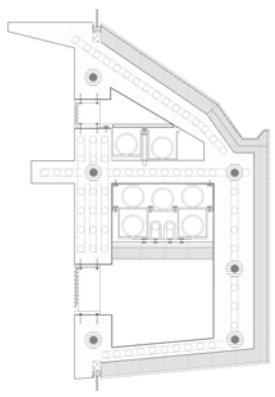
STACEY, Michael Philip, Prof., **Concrete: A studio Design Guide,** (2011), RIBA Publishing, London

TEMPLETON, Duncan, SAUNDERS, David, **Acoustic Design,** (1987), The Architectural Press: London

Websites

http://www.worldfinance.com/wealth-management/real-estate/redeveloping-marseille
http://www.euromediterranee.fr/
http://carto.marseille-provence.fr/geowebMPM/portal.do
http://www.designingbuildings.co.uk/wiki/Public_private_partnerships_PPP
http://www.worldfinance.com/wealth-management/real-estate/redeveloping-marseille
http://www.citymayors.com/mayors/marseille-mayor-gaudin.html
http://www.euromediterranee.fr/topics/architecture/une-ville-nouvelle-aux-allures-modernes.html?L=1
http://www.eib.org/epec/resources/epec_france_public_en.pdf
http://webarchive.nationalarchives.gov.uk/20110118095356/http:/www.cabe.org.uk/files/free-schools-procurement.pdf
http://www.building.co.uk/procurement-construction-management/3072705.article





Aix-Marseille-Provence is a new political territory in Marseille. This report charts the process of designing a new Parliament building for this new territory, from the Masterplan stage the project began at, to the detail design of components to construct the Parliament.