Sally Dawn Taylor

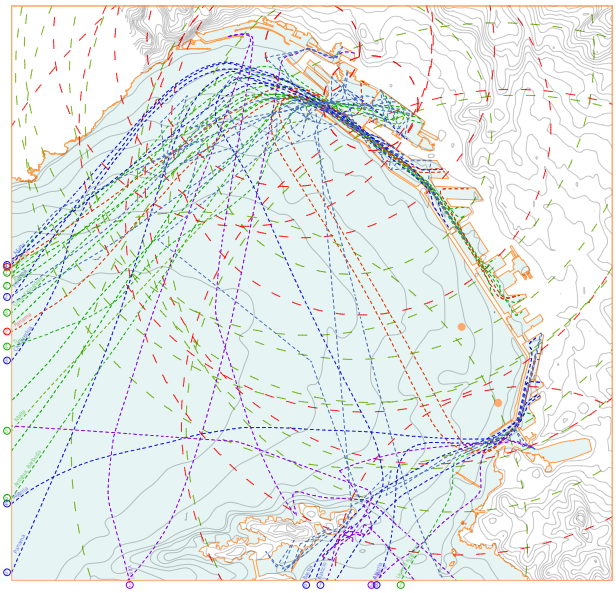
MARSEILLE FOS : REUNITING THE CITY WITH THE SEA

DESIGN REALISATION

Bartlett School of Architecture

UNIT 21

[Abigail Ashton, Andrew Porter and Tom Holberton]



YEAR 4: 2015 - 2016

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DR Module Leaders: James O'Leary + Dirk Krolikowski

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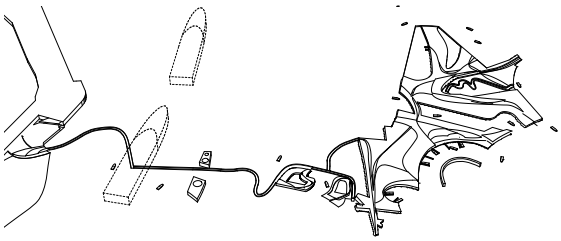
SECTION 01

// Building Form, Systems, Planning + Context



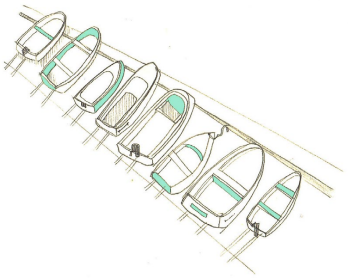
Marseille is located on France's south coast and has a population of 1,831,500. The city was historically the most important trade centre in the region and functioned as the main trade port of the French Empire. The city is France's largest on the Mediterranean coast and largest commercial port as well as a leading cruise port and freight port. The city also held the title of European Capital of Culture in 2013.

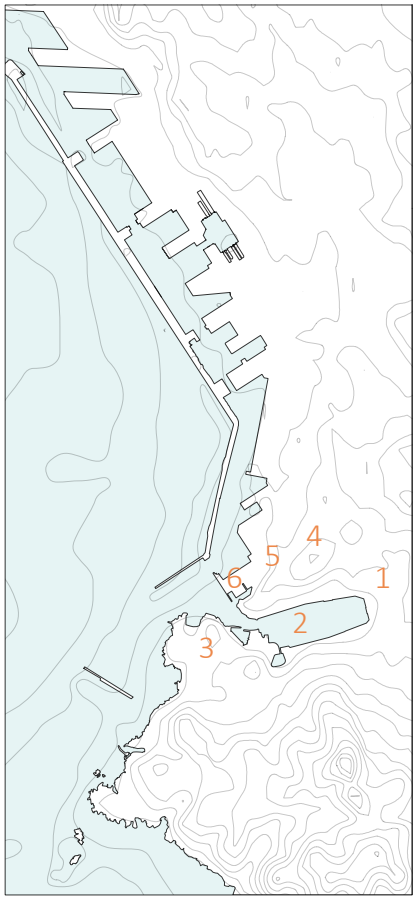
With a busy harbour and a vibrant urban energy, Marseilles appeals to visitors seeking an authentic tourist experience. This cosmopolitan city is France's oldest and the second largest after Paris and has much to offer, from ancient history and cultural diversity to gorgeous seaside scenery. Everywhere in Marseille, visitors are close to the serene blue waters-whether walking along a charming old street with a view, or feeling the refreshing sea breeze. The city's colourful, multiethnic heritage also makes Marseille a fascinating place.

Marseille France has many interesting tourist attractions, museums and famous city landmarks. With the unique combination of being the country's largest port and one of its oldest cities, there is much to offer visitors, although these two areas are separated with little connection between the two. The Vieux Port area has many historical buildings and places of interest, some of these have been listed below.

Basilique Notre-Dame de la Garde

Vieux Port (Old Harbor)





1

Le Panier (Old Town)

Le Panier is Marseille's oldest quarter, inhabited since antiquity when the ancient Greeks settled here in 600 BC. With its steep, narrow winding streets and quaint pastel buildings, this quarter offers a glimpse into the charming personality of Marseilles.

2

Vieux Port (Old Harbor)

The Vieux Port represents the birthplace of Marseilles. This is where the city began as a Greek port around 600 BC. Surrounded by serene blue waters, the Old Port is located in the west of Marseilles near the Canebière boulevard.

3

Basilique Notre-Dame de la Garde

In a breathtaking hilltop location, this spectacular church stands on the summit of Marseille as its most important landmark, visible from afar. The site was used in ancient times as an observation point, and during the Middle Ages, was the location of a pilgrimage chapel.

4

Vieille Charité

The Vieille Charité is located on the Place des Moulins that lies at the highest point in Le Panier. The building was created in 1640 when the Marseille Town Council decided to give the poor local inhabitants a decent place to reside, in compliance with a royal policy of "enclosing the poor."

5

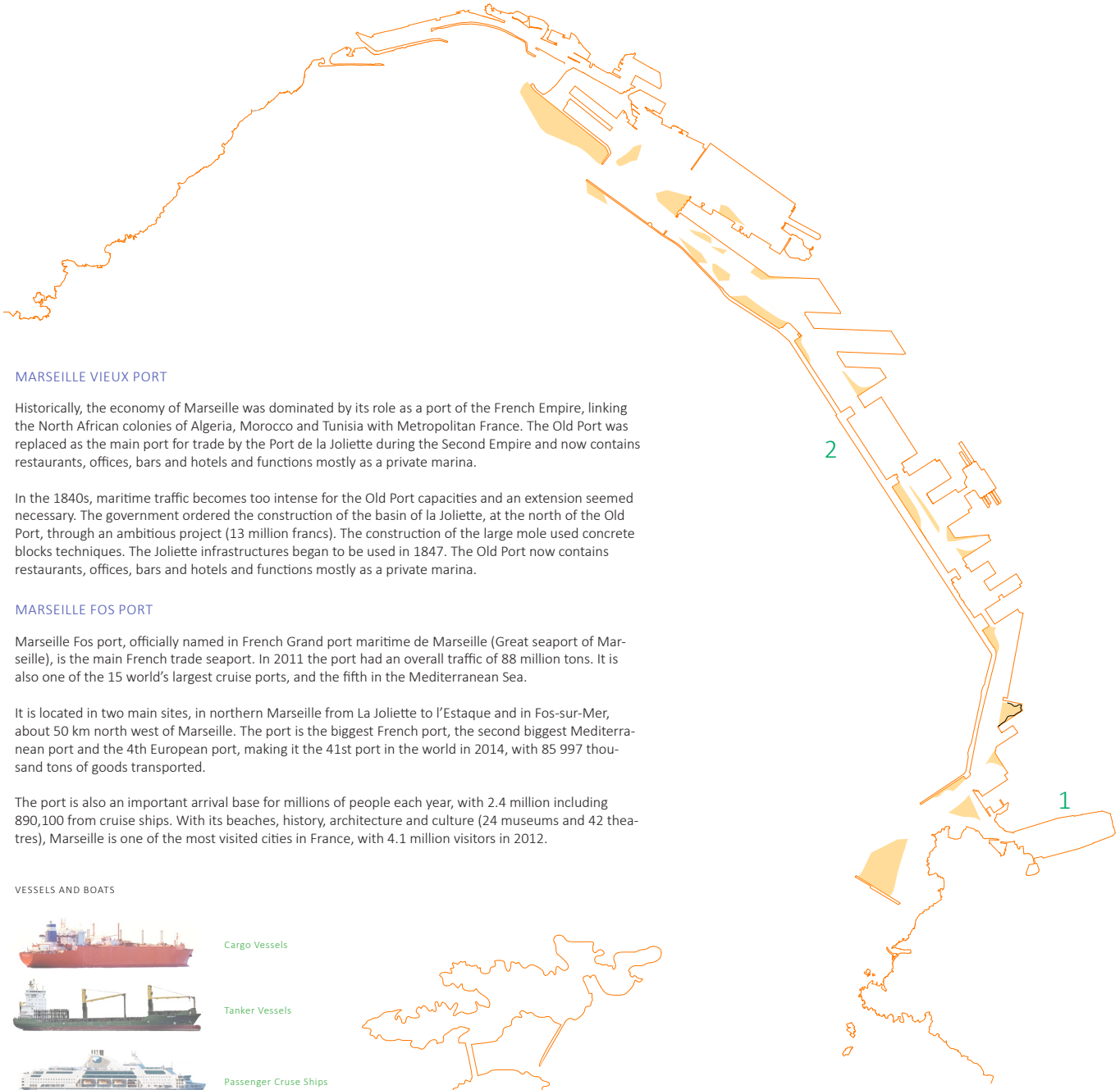
Cathédrale de la Major

Beside the sea on a terrace in the northwest of the Le Panier quarter, the Cathédrale de la Major of Marseille boasts a picturesque location fitting of this port city. The mighty cathedral stands high above the port installations, with its impressive domed towers-the highest rising 16 metres. Constructed between 1852 and 1893 using a mixture of white and green limestone, the Cathedral blends Romanesque and Byzantine styles to a harmonious effect.

6

MuCEM (Musée des Civilisations de l'Europe et de la Méditerranée)

The newest part of the museum is built on the former J4 Pier by the architect Rudy Ricciotti. The second stage of the museum is located in the vaulted rooms of the Fort Saint-Jean, a historic monument that dates back to the 12th century.



1 MARSEILLE VIEUX PORT

Historically, the economy of Marseille was dominated by its role as a port of the French Empire, linking the North African colonies of Algeria, Morocco and Tunisia with Metropolitan France. The Old Port was replaced as the main port for trade by the Port de la Joliette during the Second Empire and now contains restaurants, offices, bars and hotels and functions mostly as a private marina.

In the 1840s, maritime traffic becomes too intense for the Old Port capacities and an extension seemed necessary. The government ordered the construction of the basin of la Joliette, at the north of the Old Port, through an ambitious project (13 million francs). The construction of the large mole used concrete blocks techniques. The Joliette infrastructures began to be used in 1847. The Old Port now contains restaurants, offices, bars and hotels and functions mostly as a private marina.

2 MARSEILLE FOS PORT

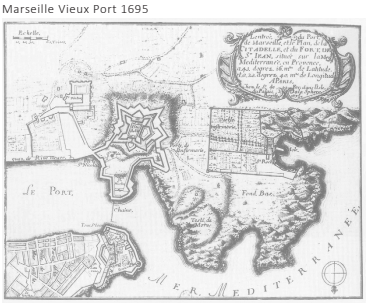
Marseille Fos port, officially named in French Grand port maritime de Marseille (Great seaport of Marseille), is the main French trade seaport. In 2011 the port had an overall traffic of 88 million tons. It is also one of the 15 world's largest cruise ports, and the fifth in the Mediterranean Sea.

It is located in two main sites, in northern Marseille from La Joliette to l'Estaque and in Fos-sur-Mer, about 50 km north west of Marseille. The port is the biggest French port, the second biggest Mediterranean port and the 4th European port, making it the 41st port in the world in 2014, with 85 997 thousand tons of goods transported.

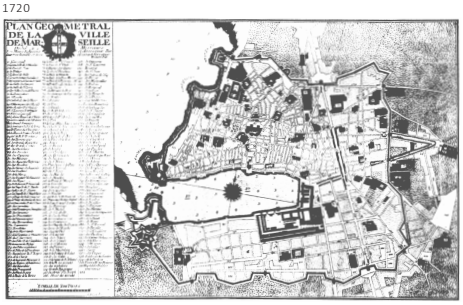
The port is also an important arrival base for millions of people each year, with 2.4 million including 890,100 from cruise ships. With its beaches, history, architecture and culture (24 museums and 42 theatres), Marseille is one of the most visited cities in France, with 4.1 million visitors in 2012.

VESSELS AND BOATS

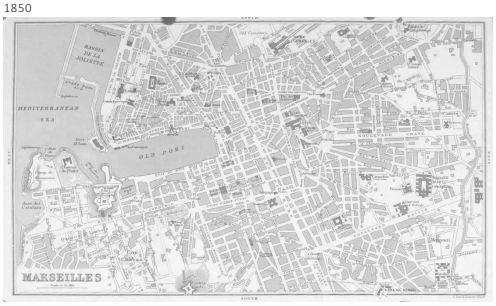
Marseille Vieux Port 1695



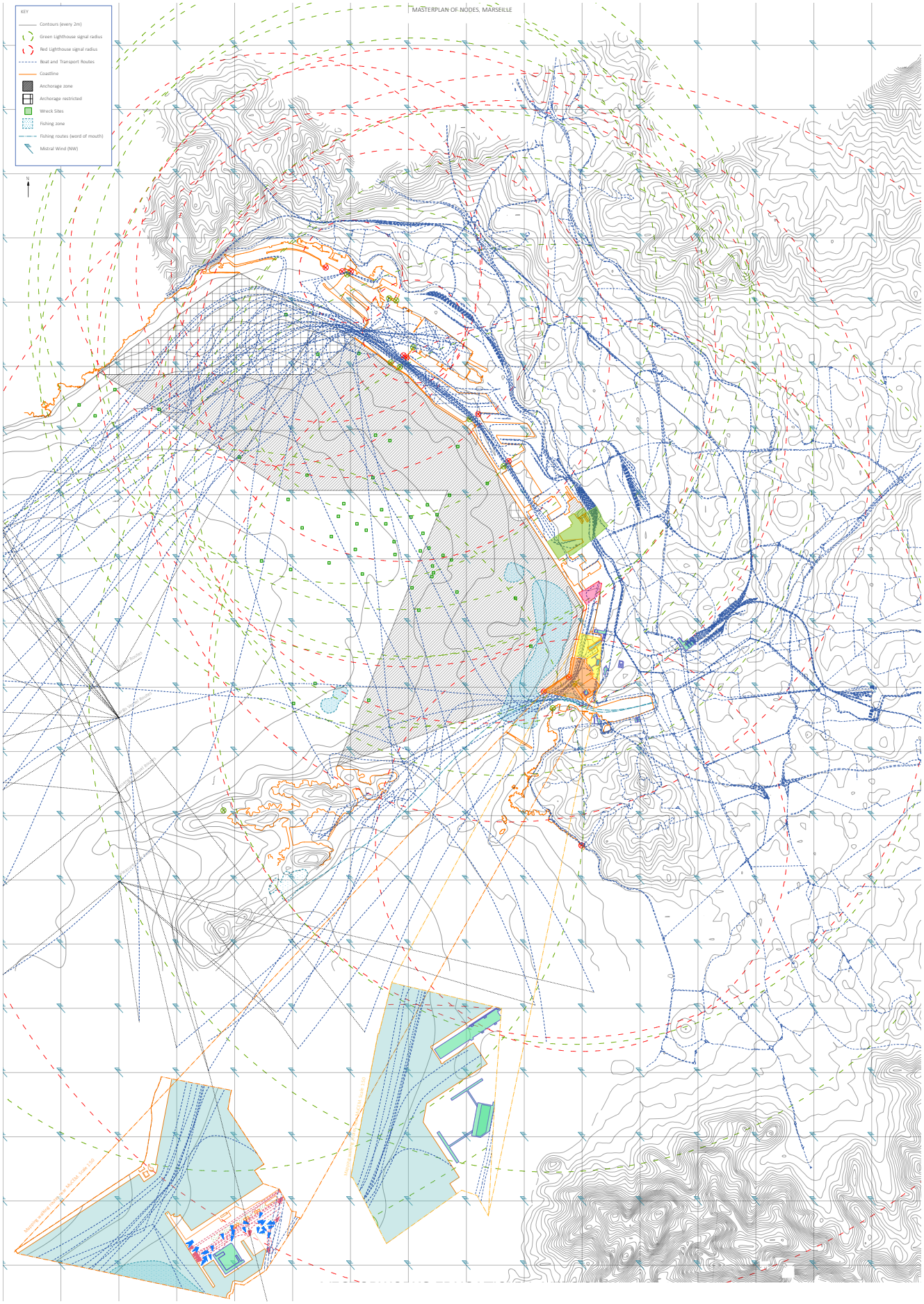
1720

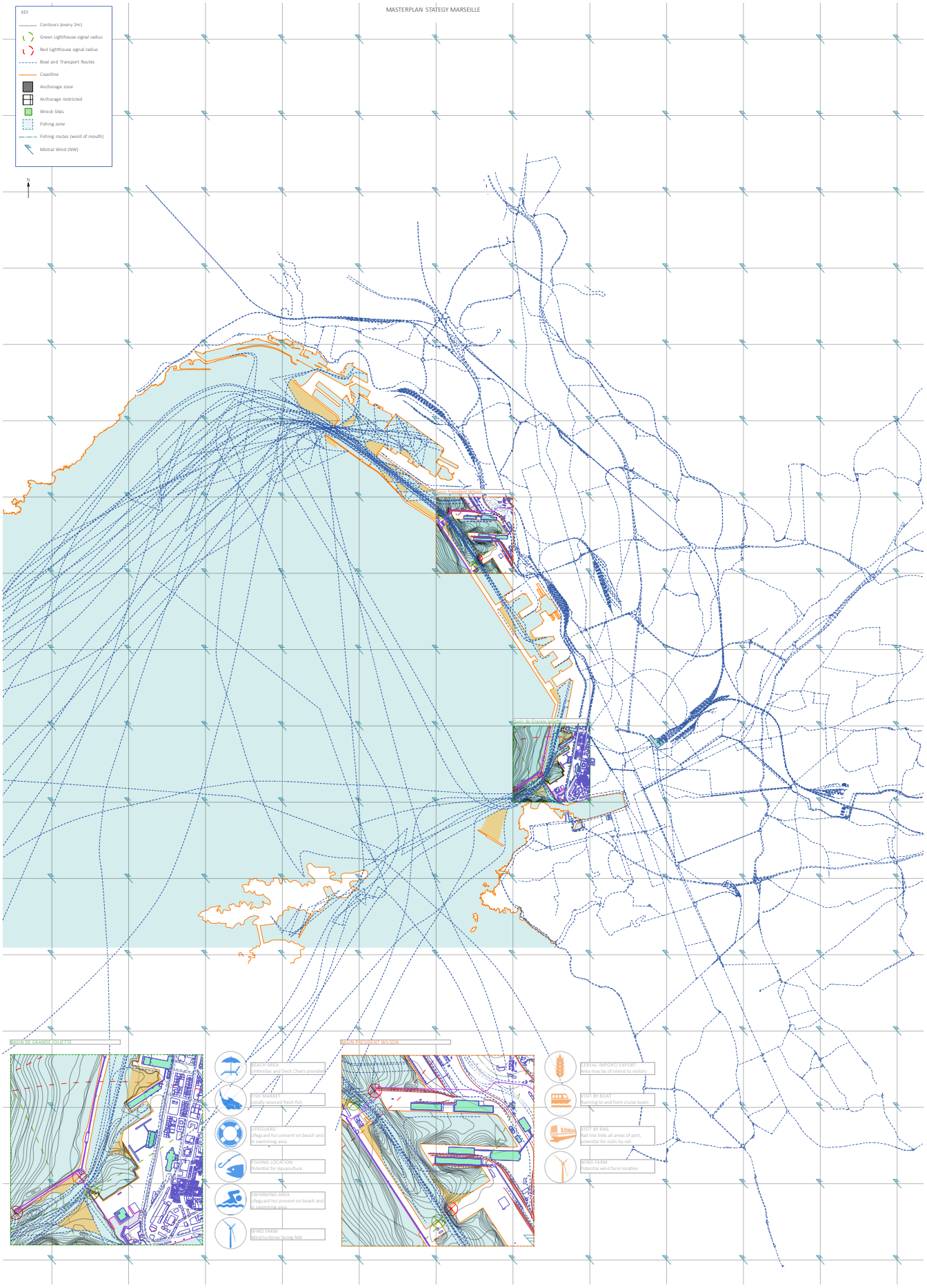


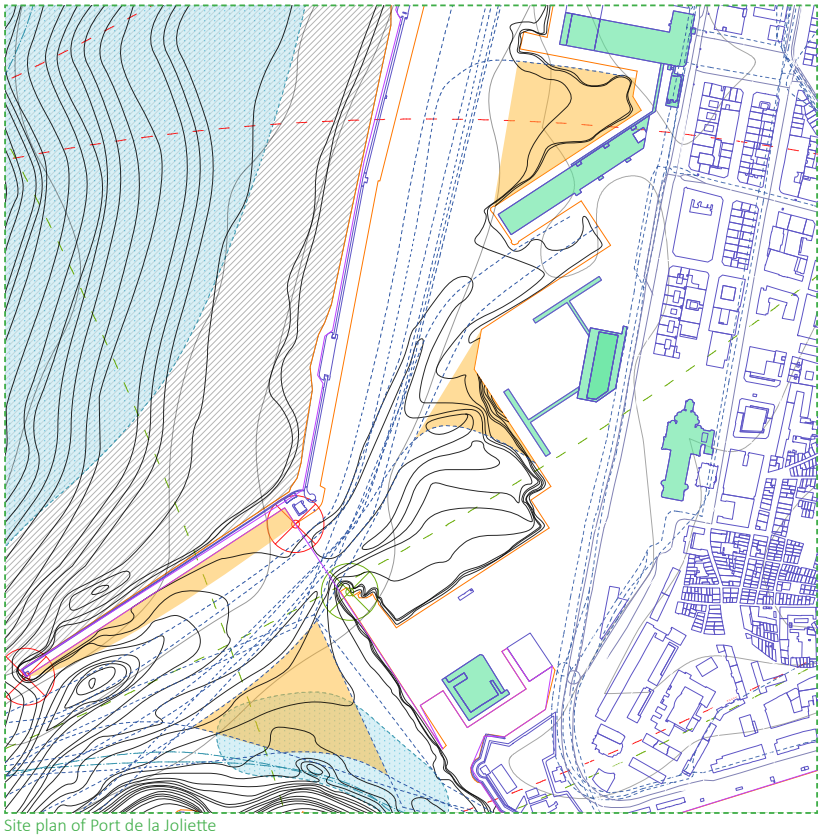
1850



SITE CONTEXT // Boat routes entering and leaving Marseille alongside Topography/ Infrastructure




MASTERPLAN STATEGY MARSEILLE
KEY
Contours (every 2m)
Green Lighthouse signal radius
Red Lighthouse signal radius
Boat and Transport Routes
Coastline
Anchorage zone
Archorage restricted
Wreck Sites
Fishing zone
Fishing routes (word of mouth)
Mistral Wind (NW)
N
BASIN DE GRANDE JOLIETTE
BASIN PRESIDENT WILSON
BEACH AREA
Umbrellas and Deck Chairs provided
FISH MARKET
Locally sourced fresh fish
LIFEGUARD
Lifeguard hut present on beach and in swimming area
FISHING LOCATION
Potential for Aquaculture
SWIMMING AREA
Lifeguard hut present on beach and in swimming area
WIND FARM
Wind turbines facing NW
CEREAL IMPORT/ EXPORT
Area may be of interest to visitors
VISIT BY BOAT
Running to and from cruise boats
VISIT BY RAIL
Rail line links all areas of port, potential for visits by rail
WIND FARM
Potential wind farm location



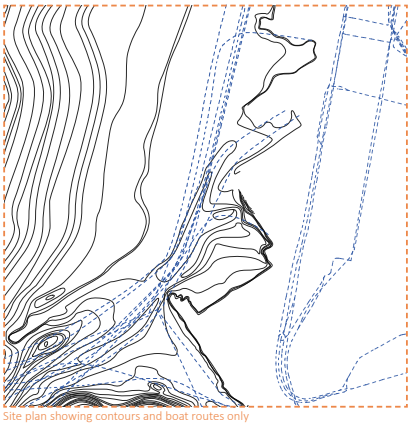
KEY

Blue	Mediterranean sea
Orange	Coastal outline
Red	Lighthouse radius
Purple	Buildings
Green	Key Buildings
Navy	Boat routes
Yellow	Boat route shadows

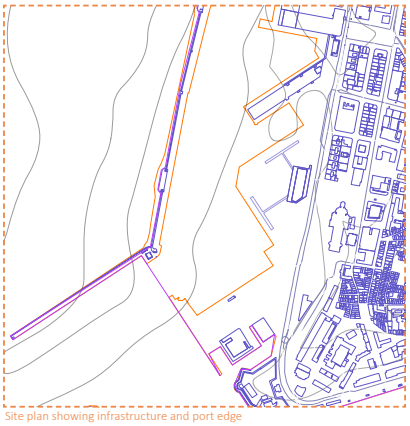
This site plan shows the Bassin de la Grande Joliette. Passengers cruise ships terminate in this area of the port and the area includes up market shops specifically for cruise ship passengers. Few tourists leave this area of the port and do not venture into Marseille's old town and port area. This creates division within such a small area of the city, between locals and tourists. Along the sea front are numerous security posts and large barriers and fencing.

It is not possible to reach the waters edge along this part of the coast. Marseille, with such a large coastal edge, would benefit from these barriers being broken down. Historically the city was very much integrated with the waters edge, but unfortunately this has been lost over time, with further construction of the port.

Site plan of Port de la Joliette
Scale 1:750

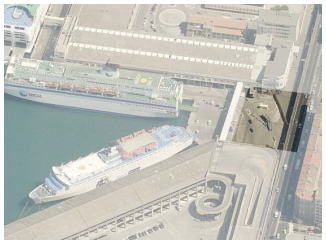


Site plan showing contours and boat routes only



Site plan showing infrastructure and port edge

Site photographs, the reality of the water-front



Currently there are very few facilities for foot passengers, to the left is a photo of a temporary terminal building. The building is equipped with a children's play area, nursary and a small waiting area.

Aerial photo of Port de la Joliette

Passenger cruise ship advertisement, no barriers

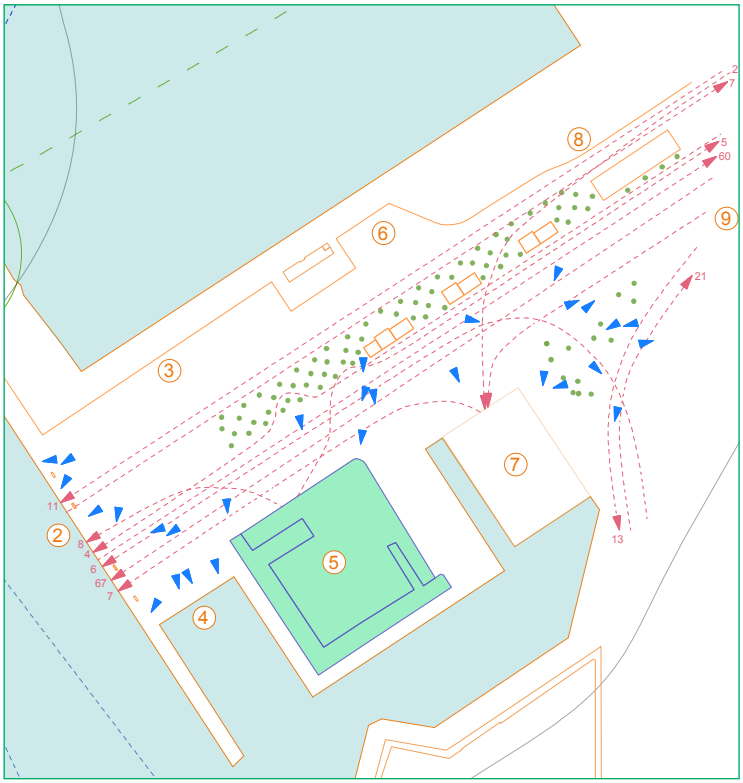
Passenger cruise ship reality, barriers and fencing

Fenced off water-front edge

Panorama overlooking Port de la Joliette

Mapping routes taken

This was carried out during one afternoon near the popular MuCem building



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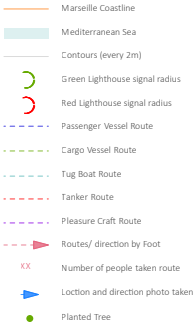
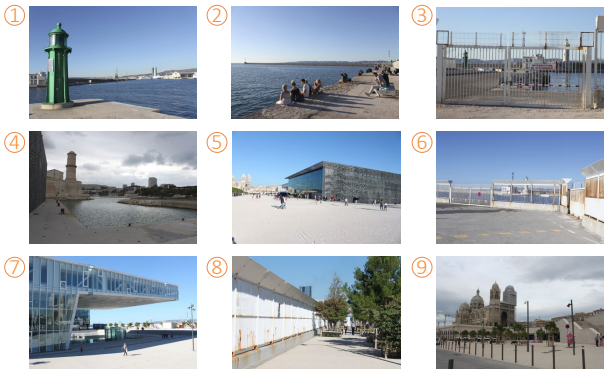


Points of interest within/ visible from this area



Scale 1:200

From the drawing above, it is clear to see that little interaction is taking place between the land and waters edge. Although this is a very popular area for visitors (visiting MuCem) and locals (fishing and walking) very few photos are taken of the sea, mainly of the striking buildings that dominate the scene. The culture and origins of Marseille have been lost and are no longer recognised by the people that live and visit the area. I hope to break down some of these barriers and divisions.

Current use of single open water edge

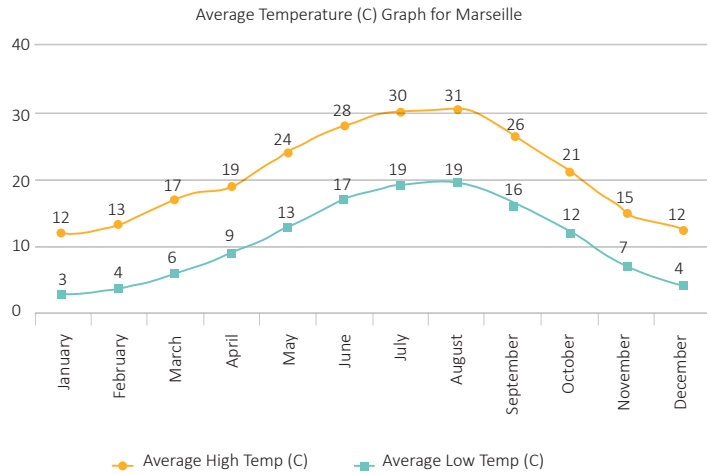
Locals fishing at waters edge

Tourists sitting on waters edge overlooking sunset

View of lighthosue blocked off by fencing

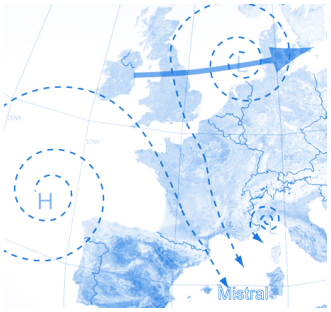
Popular view across water at sunset

Marseille has a Mediterranean climate with mild, humid winters and warm to hot, mostly dry summers. Below I have outlined the key weather conditions I will need to take into consideration within my design development.

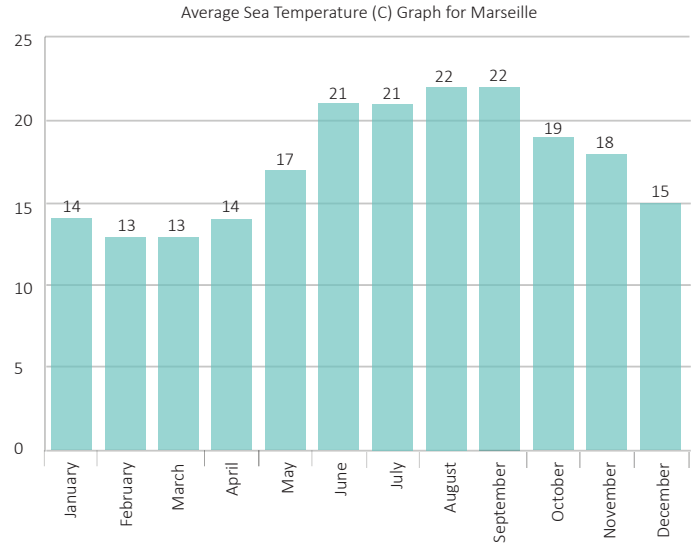


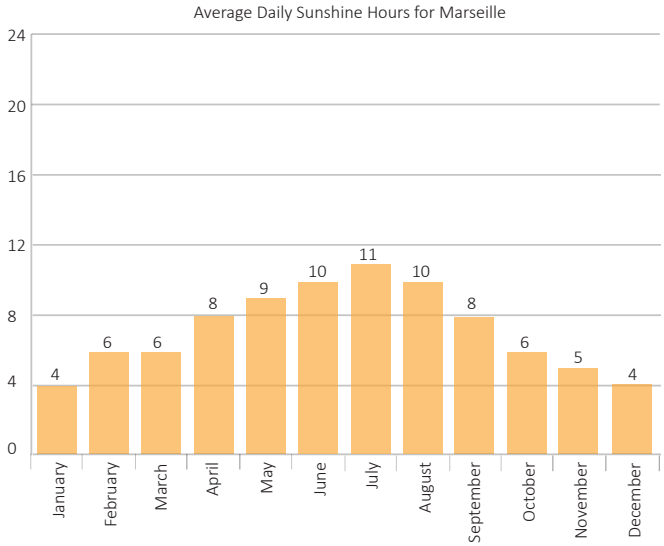
December, January, and February are the coldest months, averaging temperatures of around 12 °C during the day and 4 °C at night.

The driest weather is in July when an average of 13.7 mm of rainfall occurs.The wettest weather is in October when an average of 77.6 mm of rainfall occurs.



The major topic when locals talk about the weather is always the Mistral, a fierce, cold, dry wind from the north or north-west which roars down the Rhône Valley towards the coast.It can reach speeds of over 90 km (56 miles) an hour, can last for days and is usually, though not always, accompanied by bright blue skies and glorious sunshine.





How the traditional buildings of the Provence have evolved for the relentless summer heat and Mistral wind:

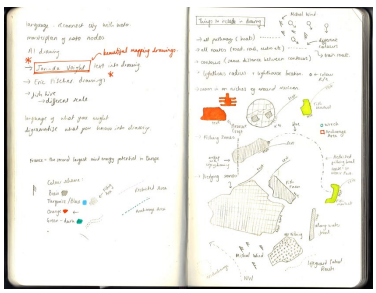
- Strong and compact, retaining warmth in winter and staying cool in summer.
- Roof - Terracotta tiles layered double or triple with mortar. Gentle slope to prevent blowing off. Channels created for water run off.
- Stone chimneys, built low and squat to prevent wind damage.
- South east facing to reduce wind impact.Rarely windows on North facing walls.
- Shutters - keeps out wind and sun.

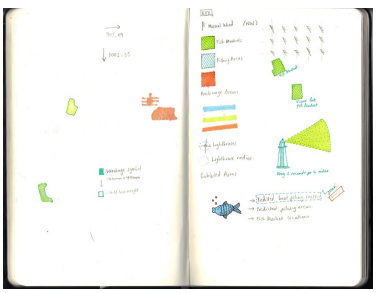
PROGRAMMATIC ORGANISATIONAL CHARTS

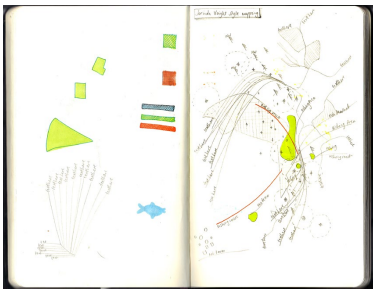
Defined Users	Requirements	Estimated numbers
Passenger Cruise tourists from various locations	Viewing areas, Seating, Pathways, Toilets, Changing facilities, Shop/ Restaurant, Disabled access	Total number of cruise passengers per year = 1750 per day = 157/hr maximum during peak season
Locals from Marseille and Provence surrounding	Viewing areas, Seating, Pathways, Toilets, Changing facilities, Shop/ Restaurant, Disabled access, Harbour/ Boat access, Fishing pontoons, Fish market	Total number of local visitors based on Marseille population = 2000 per day = 160/hr during weekends and national holidays
	To be used throughout the year	Therefore total number of visitors is approximately 317 per hour
	Indoor and outdoor areas will be required - shading during summer and shelter during winter/ summer storms as well as rain	

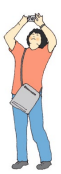
Facilities	Requirements
Urban Beach	Sun Loungers, Towels, Umbrellas, Swimming area, Lifeguard
Beach Shop	Watersports rental/ swimming and bathing essentials
Viewing Tower	Lookout point and accessible way to reach the top for view
Fishing Pontoons	To be integrated with walkways over water, hardly any tide
Fish Market/ Harbour	Fish stands, Shading, Drainage, Close to Harbour/ Fishing Boats
Swimming Pools	Cafe, Changing facilities, Toilets, Showers, Lifeguard, Plant area
	Estimated numbers
For Design Realisation I will be focusing on the Swimming Pool Area	2 Pools (1 Adult and 1 Children), 1 Cafe, Male and Female Changing facilities, Toilets (5 Male, 5 Female and 1 Fully accessible), 8 Showers, 1 Lifeguard post, 1 Plant area

Initial Sketch Ideas

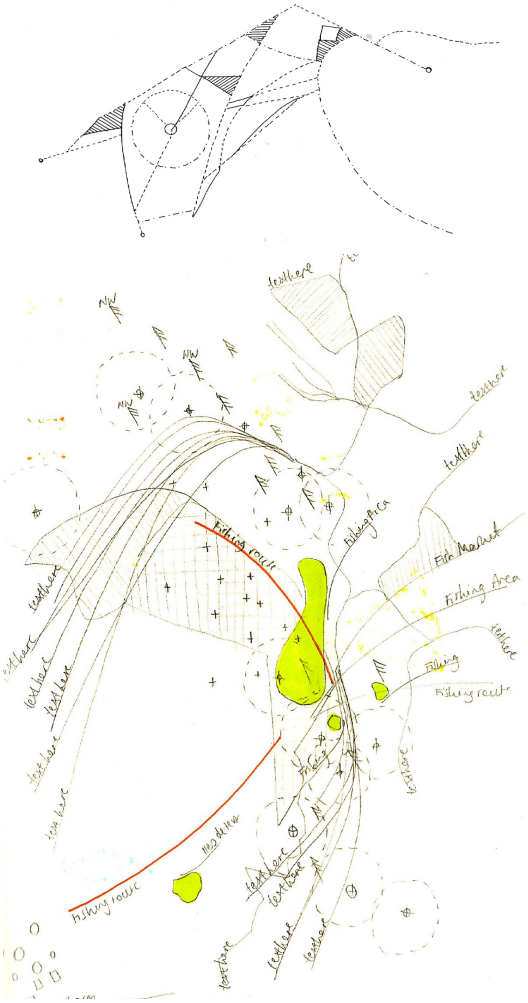




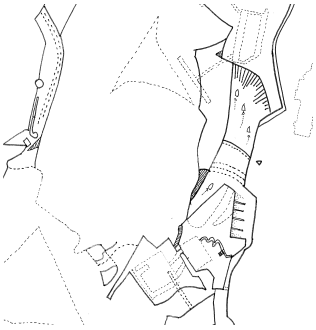




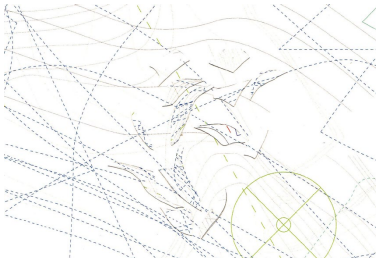
Sketch Drawings

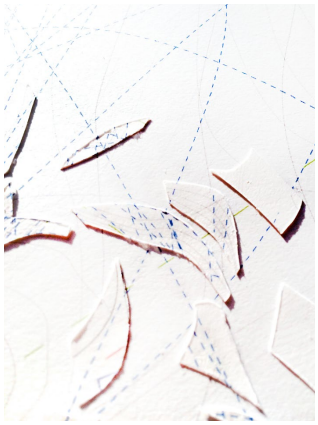


In order to break down the vast landscape of Marseille's Fos Port, I overlayed the series of boat routes I recorded earlier in my design project. Thes series of intersections create cuts and routes which may be carved out of the landscape. I shaded in areas of land and reintroduced water-ways, which once existed in the city of Marseille. New waterfronts will be created as well new pockets of landscape, inspired by the original boat path shadows.



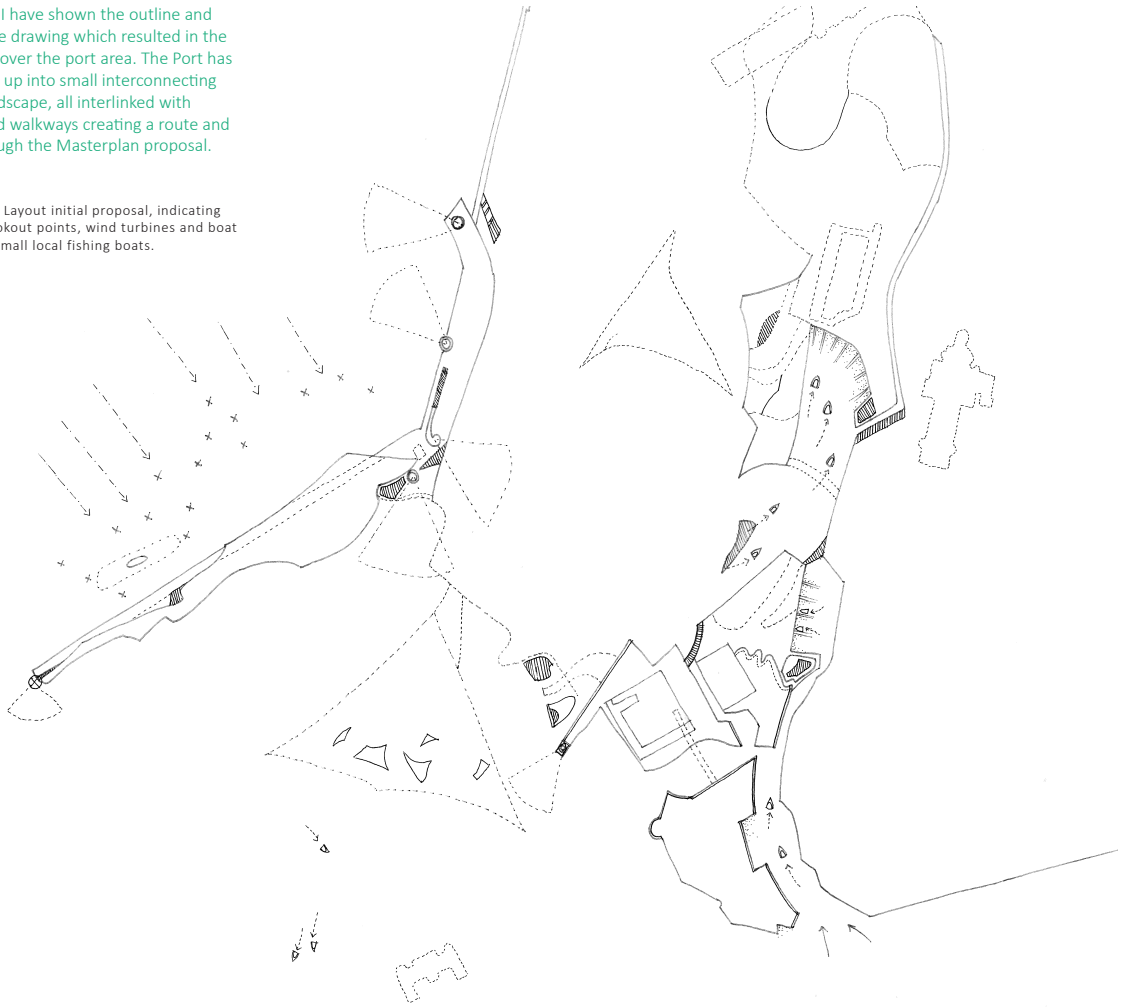
Sketch Modelling





Here I have photographed my sketch model, which show how the routes have been extended through spaces, and sometimes blocked off at various points. This is a method I wish to continue in order to define my Masterplan. This will allow for public, as well as more private spaces within my landscape and building designs.

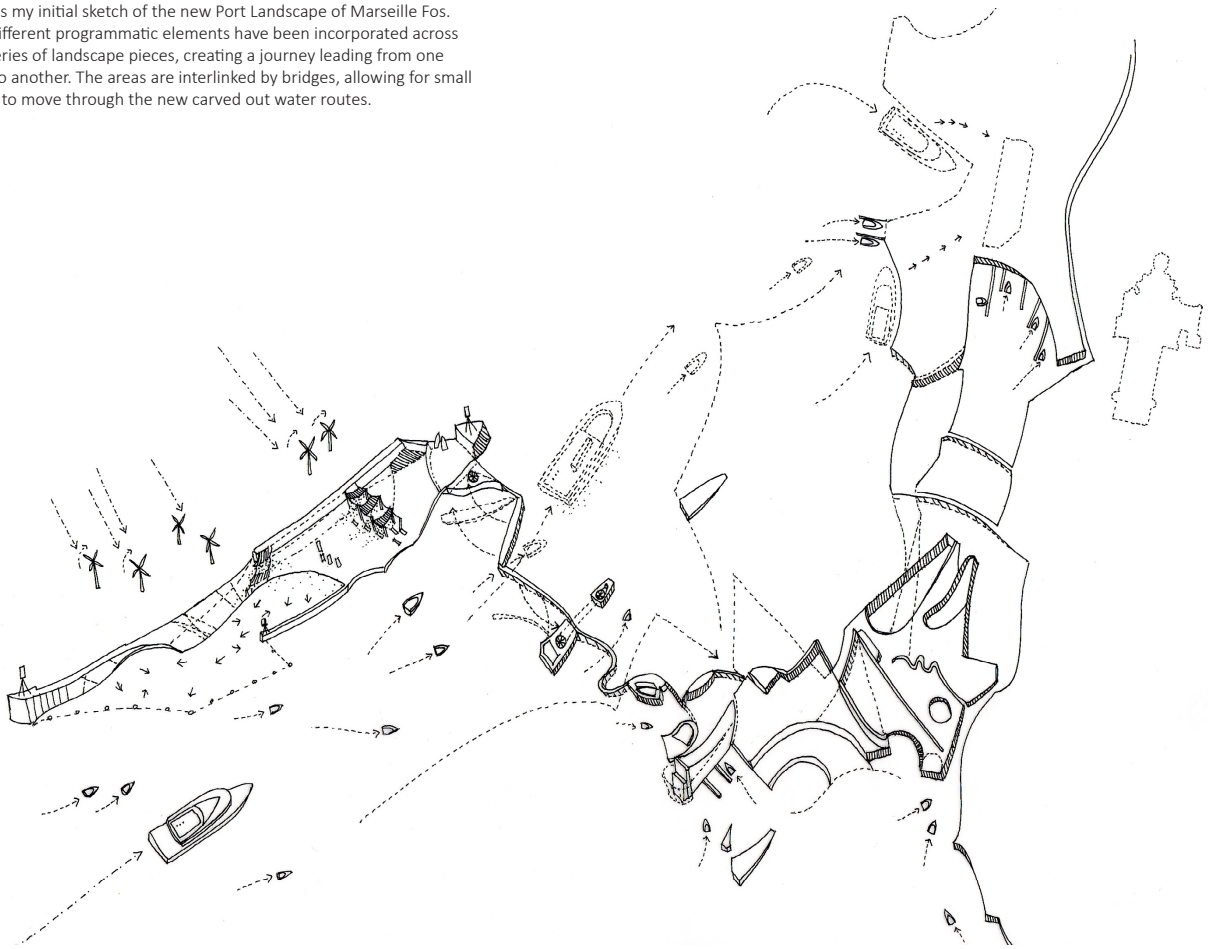
On this page I have shown the outline and simplified line drawing which resulted in the initial sketch over the port area. The Port has been divided up into small interconnecting pieces of landscape, all interlinked with pathways and walkways creating a route and journey through the Masterplan proposal.

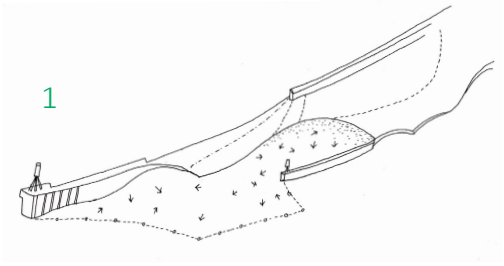


1 Masterplan Layout initial proposal, indicating possible lookout points, wind turbines and boat routes for small local fishing boats.

2 Here the initial Masterplan has been broken up using the same method, in order to show routes and possible access pathways through the land-scape.

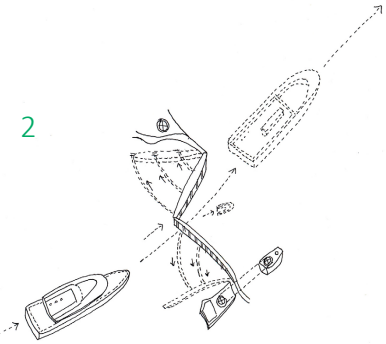
Here is my initial sketch of the new Port Landscape of Marseille Fos. The different programmatic elements have been incorporated across the series of landscape pieces, creating a journey leading from one part to another. The areas are interlinked by bridges, allowing for small boats to move through the new carved out water routes.





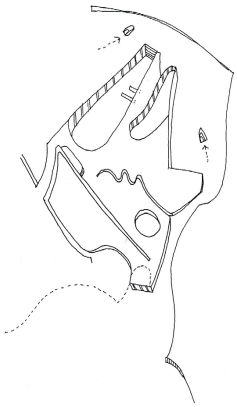
1

BEACH
Sun loungers and watersports available



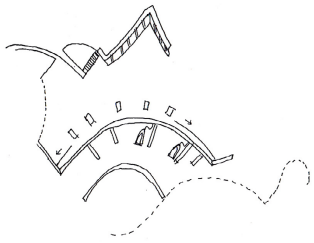
2

BRIDGE
Rotates to allow boats through



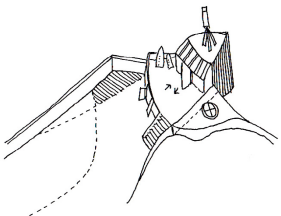
3

SWIMMING POOLS
Outdoor pools with lifeguard present



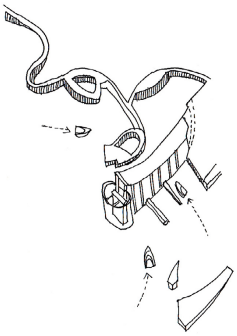
4

FISH MARKET
Harbour for boats to anchor



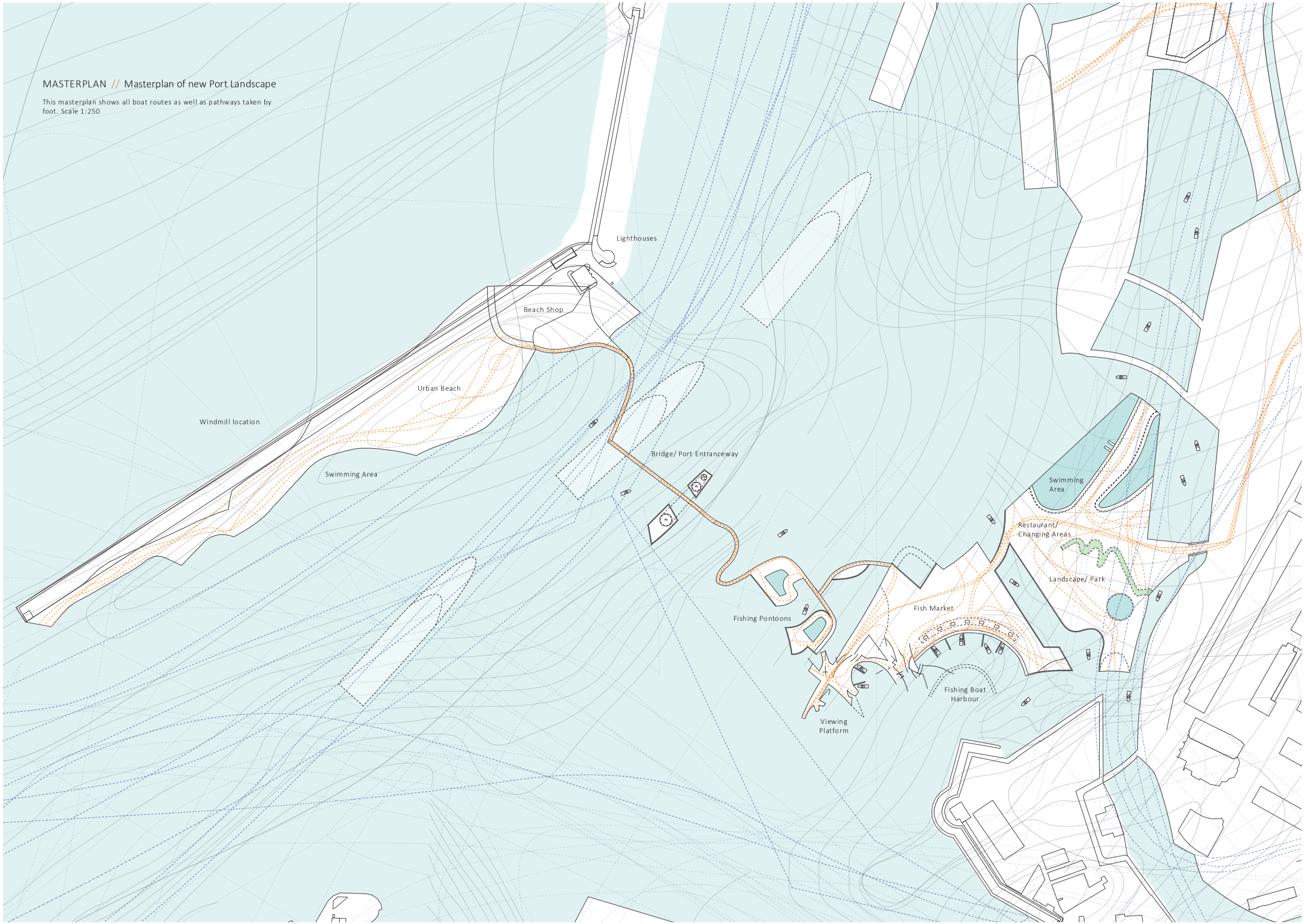
5

BEACH SHOP
Sells all items required for a day in the sun

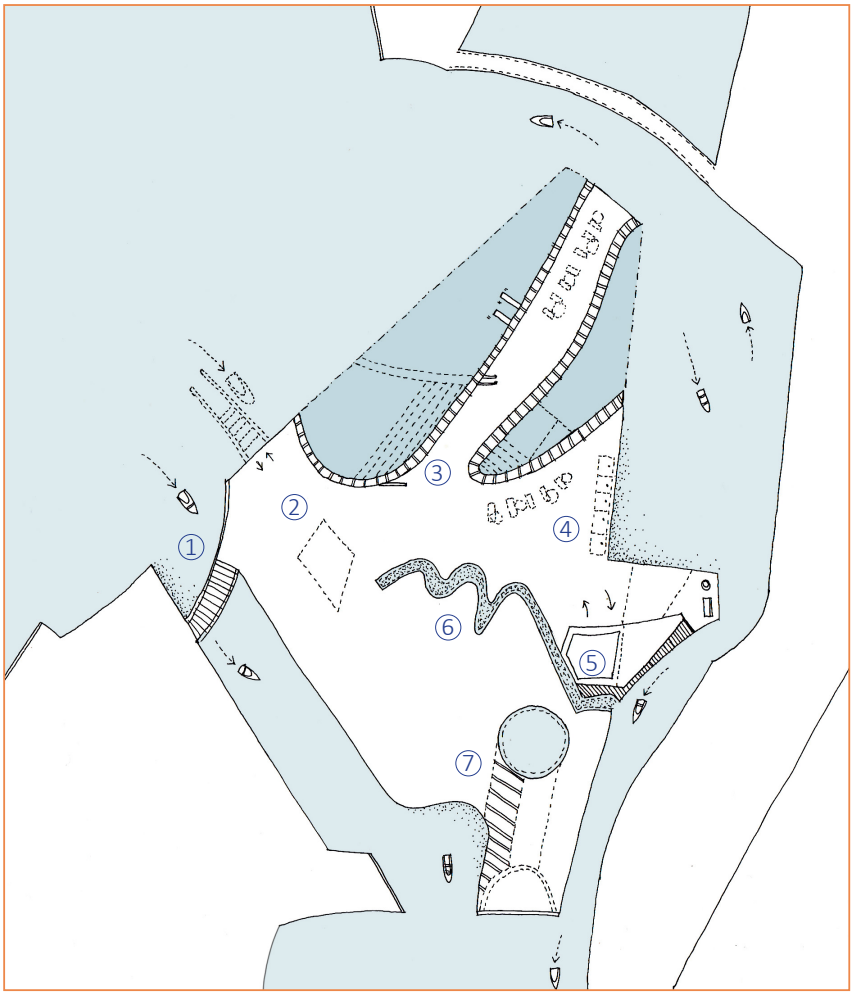


6

VIEWING TOWER
South west views across the sea as well as fishing platforms


MASTERPLAN // Masterplan of new Port Landscape
This masterplan shows all boat routes as well as pathways taken by foot. Scale 1:250
Lighthouses
Beach Shop
Urban Beach
Windmill location
Swimming Area
Bridge/ Port Entranceway
Swimming Area
Restaurant/ Changing Areas
Landscape/ Park
Fish Market
Fishing Pontoons
Fishing Boat Harbour
Viewing Platform

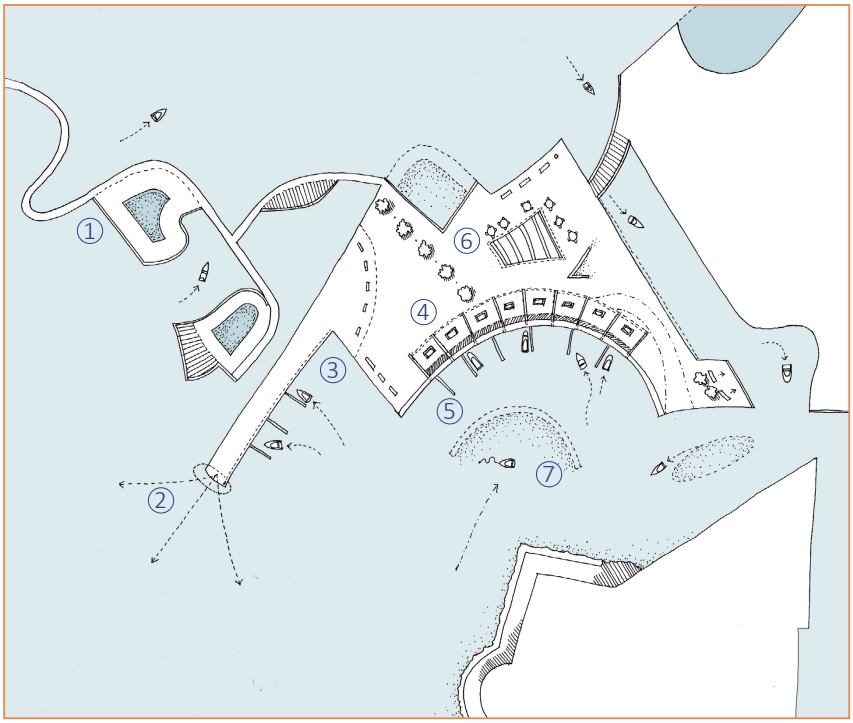
I began to zoom into my initial Masterplan, adding more detail and programmatic elements. I have broken this down into separate phases.



SWIMMING POOL KEY

1. Foot bridge crossing over to fish markets
2. Lifeguard hut location
3. Two pools provided with diving area
4. Sun loungers and showers provided
5. Changing room location
6. Water channel with planting
7. Children's play pool

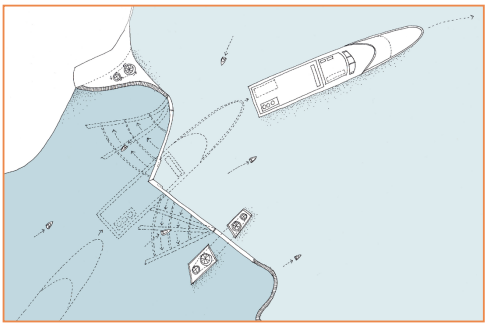
In order to encourage both cruise passenger visitors as well as locals to the new port landscape, I have incorporated different programmes into one single journey through the site. All visitors will share the same entranceway onto the series of islands and this mixture of people will flow through each aspect of my proposal. Swimming facilities, fish markets, harbours, fishing pontoons, shops, cafes and large beach will hopefully attract people on a local as well as national and international level.



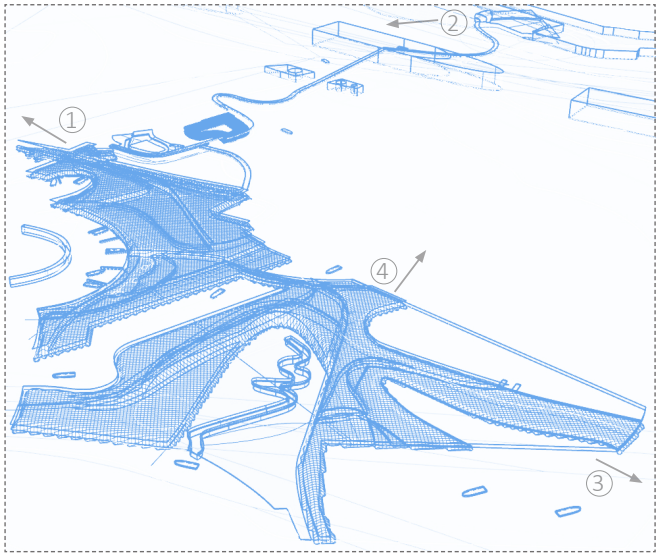
FISH MARKET KEY

1. Fishing platforms off pathways
2. Viewing tower, facing west
3. Boat anchorage area
4. Fish market location
5. Anchorage area for small fishing boats
6. Cafe with outdoor seating
7. Shallow water for lobster pots and nets

Passenger Vessel Entrance



Here I have shown the resulting masterplan and sketch plans, having broken up the concrete landscape using boat path routes, in order to create a succinct design which follows through from the surrounding context. I have begun sketching in programmatic spaces, which includes all spaces discussed earlier in this section.



1 View of Palais des Congres du Pharo

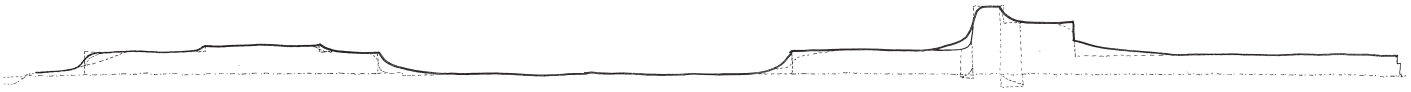
2 View of Palais des Congres du Pharo (right) and Fort St-Jean (left)

3 Cruise ship along with Cathedrale de la Major

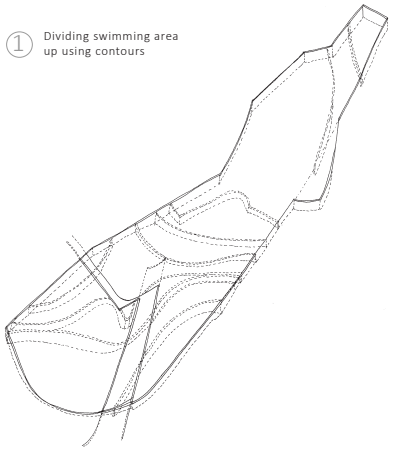
4 Lighthouse Phare de Sainte-Marie

1) Dividing up the Pool landscape area in terms of programmatic spaces and the correct order these routes and spaces are placed in.

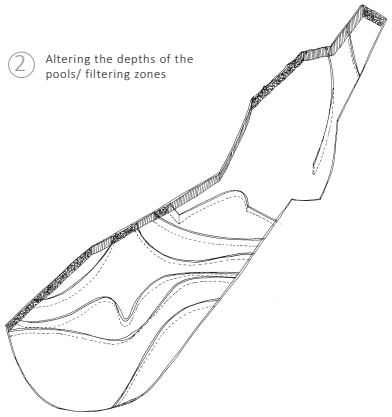
2) Building up these programmatic areas and considering the heights from the overall Masterplan scheme (shown above) and viewpoints



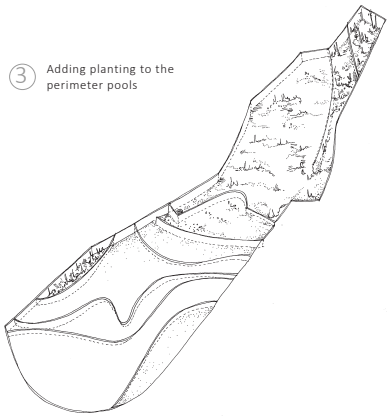
In order to encourage both cruise passenger visitors as well as locals to the new port landscape, I have incorporated different programmes into one single journey through the site. All visitors will share the same entranceway onto the series of islands and this mixture of people will flow through each aspect of my proposal. Swimming facilities, fish markets, harbours, fishing pontoons, shops, cafes and large beach will hopefully attract people on a local as well as national and international level.



1 Dividing swimming area up using contours

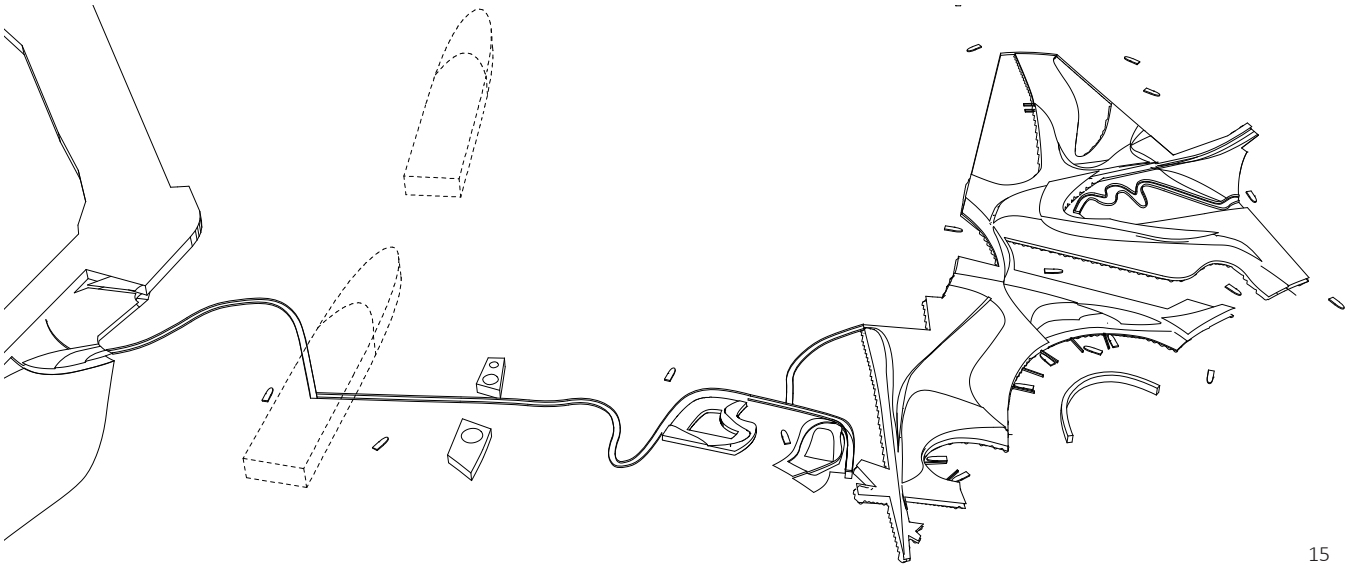


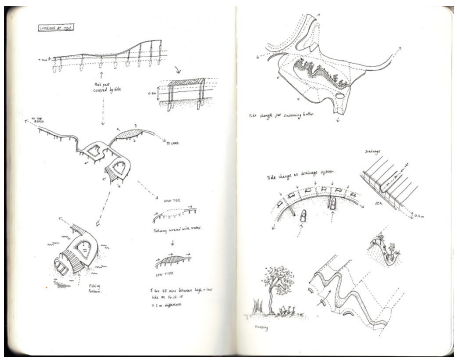
2 Altering the depths of the pools/ filtering zones



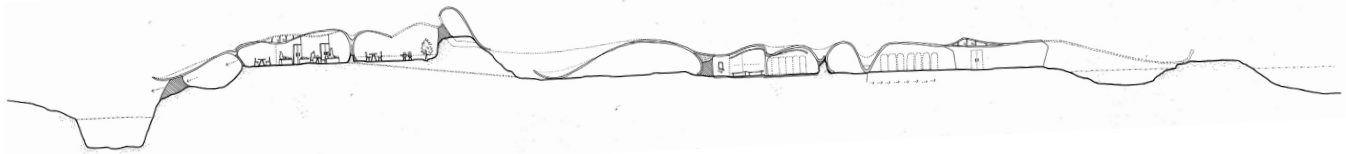
3 Adding planting to the perimeter pools

Three Dimensional landscape modelling development

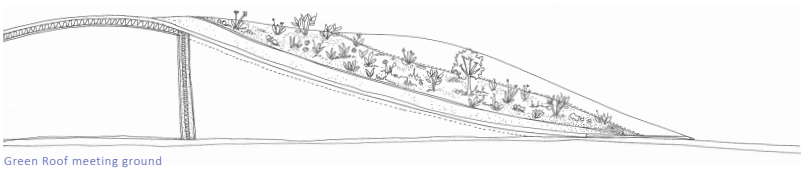




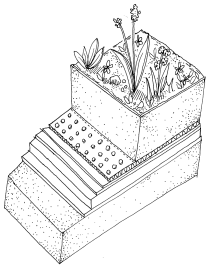
In order to develop my plan and section further, I decided to continue the boat path routes along through the landscape, creating water channels and pathways through the site. These link different areas of programmatic spaces through to one another, producing a more unified and coherent design, using the same characteristics as my initial site drawings.



Below I have sketched out a series of roof-scape ideas and uses within the landscape. This includes pathways leading onto roof allowing public to gain views over landscape and Marseille; Curvature of roof to act as gutttering in order to collect rain water for pool-side showers; Roof to lead down into landscape and used as slides and green roof as part of children's play area. I have also created a sketch model of the undulating roof structure which I hope to develop further as part of Section 2 within this report.

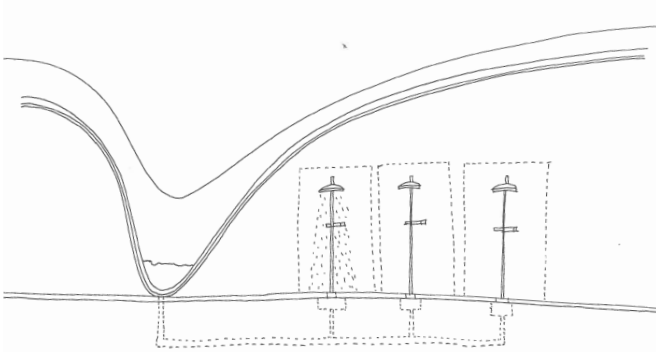


Green Roof meeting ground

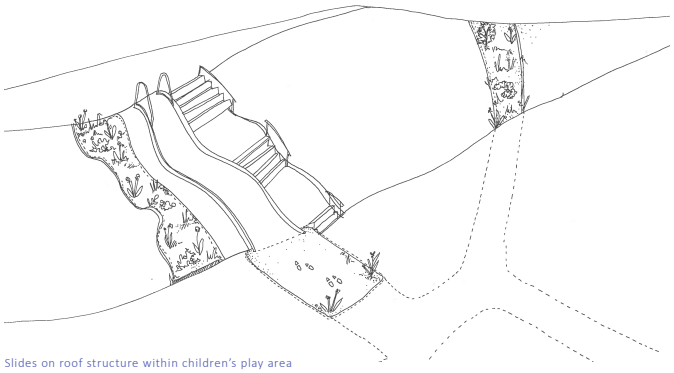


GREEN ROOF AXONOMETRIC DETAIL SKETCH

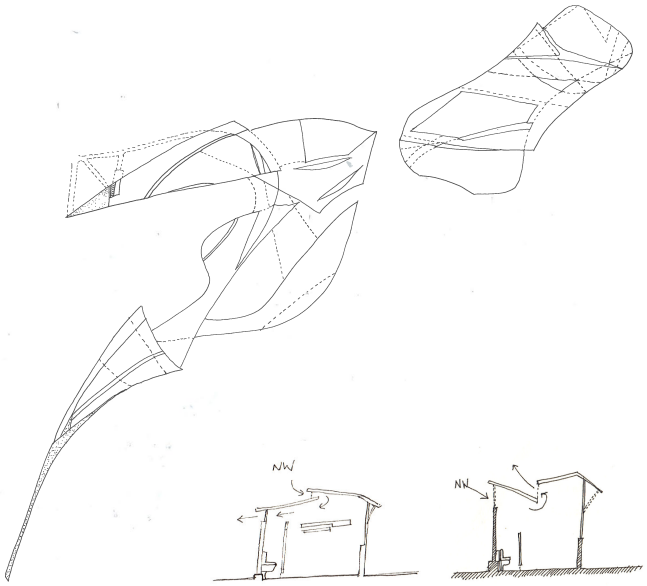
1 Vegetation
2 Multi course growth media
3 Granular mineral drainage layer
4 Fabric
5 Root barrier membrane
6 Separation layer
7 Insulation layer
8 Vapour barrier
9 Concrete



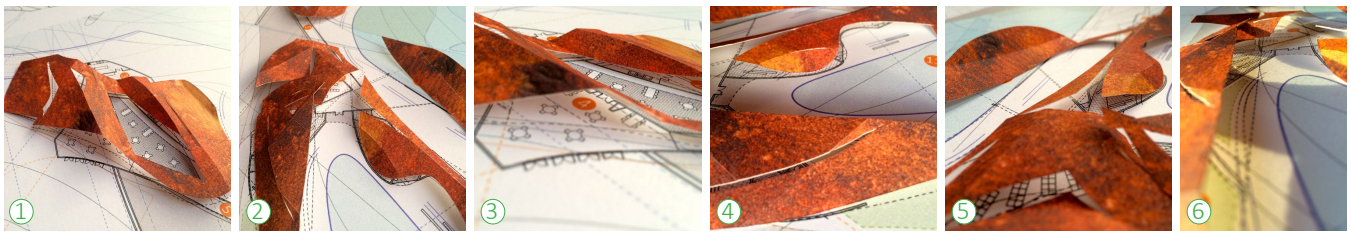
Water collection for showers



Slides on roof structure within children's play area

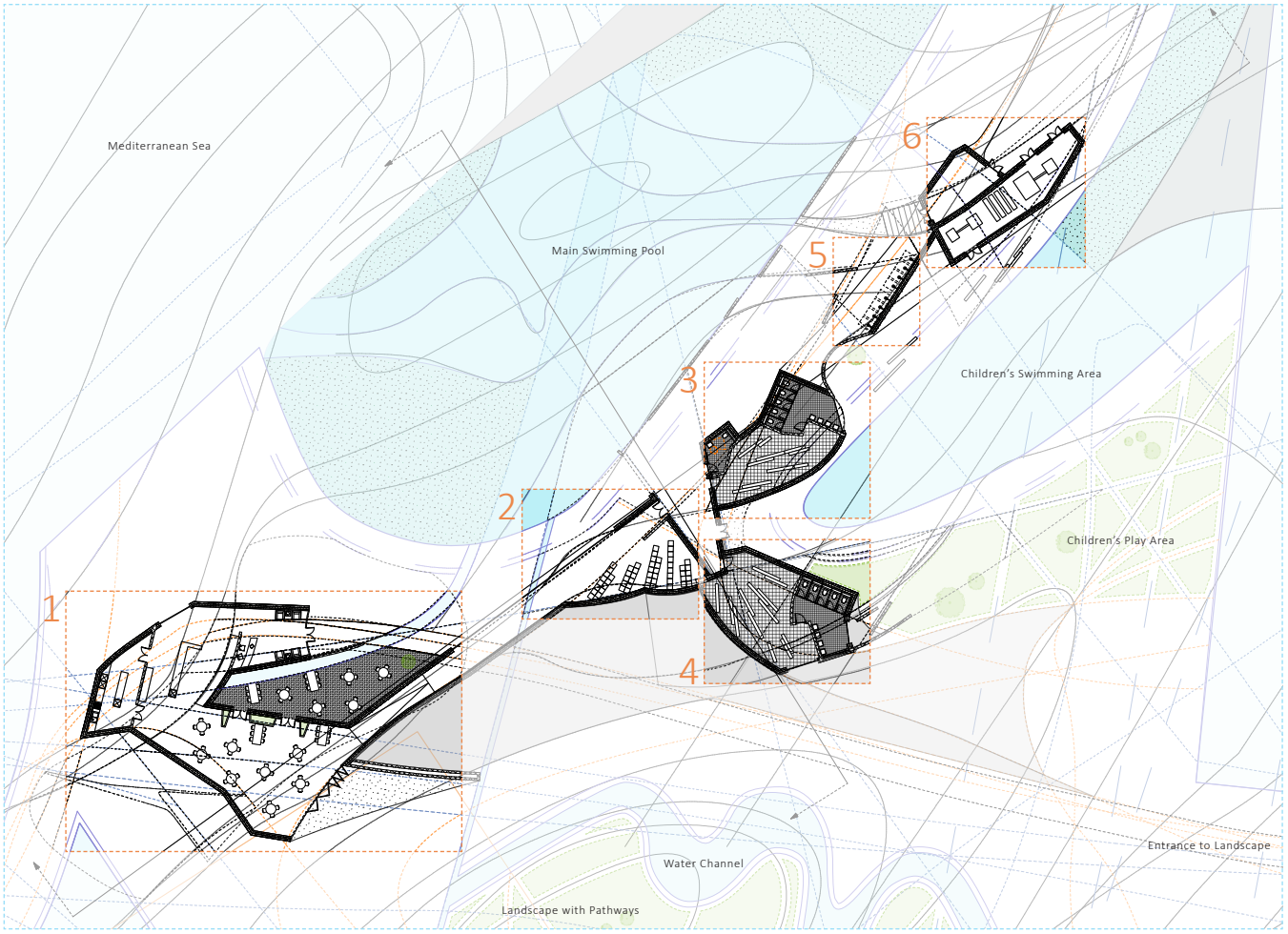


Detail images of Sketch model



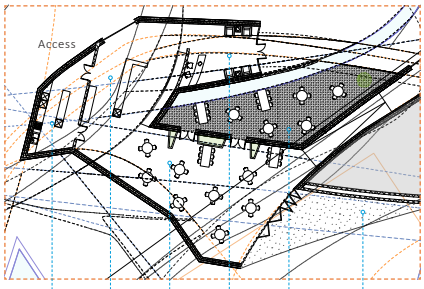
1. Opening created in roof for outdoor seating area
2. Roof structure creates shading around pool area
3. Indoor and outdoor seating required to cater for all weather
4. Windows long and narrow to allow changing room privacy
5. Slits in roof structure to allow for natural ventilation
6. Poolside shading tailored for south facing sun

Below I have clearly shown the various spaces and different areas of programme that the Swimming Pool landscape comprises of.



PROGRAMME OF SPACES KEY

1



Entrance - Reception - Restaurant

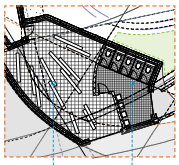
After entering the recepton visitors are able to choose from a selection of locally sourced food, with fish provided by local fishermen.

The kitchen can accept delivery by boat and doors open inside and outside.

There is a choice of indoor and outdoor seating available, depending on the weather and time of year. Planters are filled with local flora, common in the Provence area.

The outdoor seating and terrace overlooks the landscape as well as views across Marseille from the built up point of the site.

4

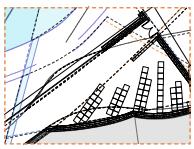


Female Changing Area/ WC

Here I have highlighed the Female changing area and WC's.

Again, this area comprises of both an open plan changing area with benches, as well as a separated WC area. The bathroom overlooks the greenery of the landscape behind. Natural ventilation will be used as much as possible for this area.

2

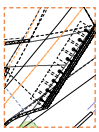


Locker Room

Visitors may continue from the restaurant down the ramp through to the area containing swimming pool facilities. The ramp is a gradient of 1:12 at the steepest parts and therefore wheelchair accessible.

The reception desk provides all visitors with a token to be used in the locker room. The lockers are positioned near both male and female changing rooms as well as being near the entrance to the pool.

5

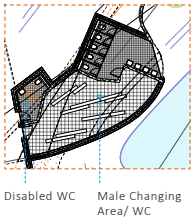


Showering Area

The Showering area is located directly next to the exit of the main pool area, just behind the children's pool.

These showers will be supplied by collected rain water from the roof guttering. Should there be a shortage, the mains water supply is also connected to the showers.

3



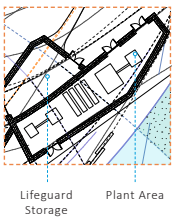
Male Changing Area/ WC - Disabled WC

Just next to the locker area is a doorway leading to both Male and Female changing rooms. To the left I have shown the Male changing area. This contains a large open changing room with benches and hangers to place items of clothing and towels.

Beyond the changing area are toilets and wash basins. The WC's are partitioned from the main changing area, allowing more privacy and more air flow in this area.

Positioned to the left of the Male changing area is a unisex fully accessible WC. Both changing areas are fully accessible, but the separate WC will cater for all needs.

6



Lifeguard Storage - Plant Room

The lifeguard has his/her own area for storage of swimming eqipment, first aid kit, safety equipment etc.

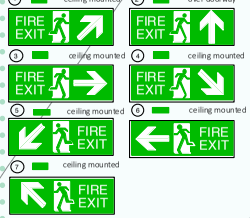
The plant area is to be used for any additional equipment that may be required for pool cleaning. This will be enclosed by a thick concrete wall.

STRATEGY PLAN // Fire, Access, Maintenance and Safety Diagram

FIRE PROTECTION KEY

- Means of Escape Exits - final exit or alternative exit
- 60 mins (minimum) fire resisting construction
- 30 mins (minimum) fire resisting construction
- 12m — direct travel distance (for means of escape)
- FD 20 — FD20 doors
- FD 30S — FD30S doors
- FW 30 — Fire-rated Window with 30 minute integrity insulation
- FW 60 — Fire-rated Window with 60 minute integrity insulation

1. ceiling mounted
2. over doorway
3. ceiling mounted
4. ceiling mounted
5. ceiling mounted
6. ceiling mounted
7. ceiling mounted



All signage to be positioned max 2.5m from FFL to base of sign in accordance with BS 5499:Part 4

FIRE PROTECTION NOTES

- 60 minute separation to vertical and horizontal structural elements (including columns)
- Plant areas should have 60 minutes free protection (FD30S Doors).
- Any service penetrations on structural elements to be fire protected and maintain fire resistance of structural elements.
- Escape/emergency lighting provided along the common escape route within the protected hallway and the main entrance hall on ground floor
- Fire alarm and detection system provided as agreed with Building Control. All associated elements (eg. smoke detectors, heat detectors, sounders, etc.)
- All windows below 800mm from FFL to have safety glass.
- All doors to be provided with concealed overhead selfcloser
- Cavity barriers to be provided in accordance with part B,3 section 9
- Provision and location of fire extinguishers subject to review by building control and fire and rescue service.

ACCESS AND MAINTENANCE KEY

- ACS — Access controlled door key via Budget Lock / Key Lock
- RTE — Request to exit button
- Eyebolt on floor (number and position of eyebolts to be confirmed by specialist contractor
- Eyebolt in wall
- CCTV camera

ACCESS AND MAINTENANCE NOTES

SCOPE OF WORKS

General: BS 8560 - Code of practice for the design of buildings incorporating safe work at height, BS 7985 - Code of practice for the use of rope access methods for industrial purposes, Code of practice for the design, selection, installation, use and maintainance of anchor devices conforming to BS EN 795, BS 8213 - Windows, doors and rooflights. Code of practice for the survey and installation of windows and external doorsets

Cleaning of Windows:

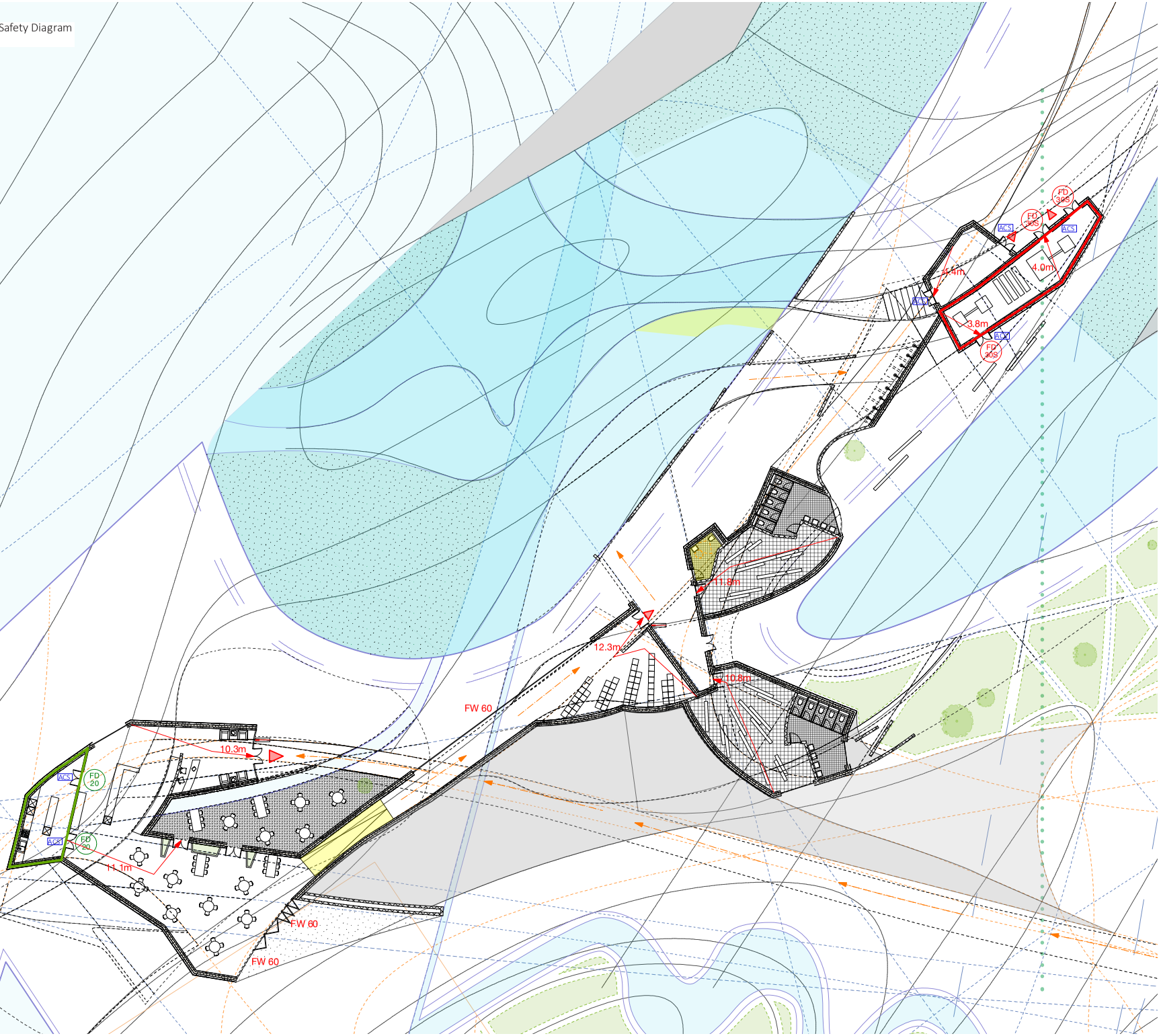
For secondary glazing cleaning strategy, please refer to the manufacturer's instructions and recommendations.
All windows with cill height below 800mm are to be fitted with window restrictors to be openable only 100mm.
Eye bolts to be installed mainly to the floor construtin, to the inside of masonry walls.

All windows are to be cleaned and maintained from the inside of the building by a specialist contractor. The specialist contractor must carry out an independent risk assessment and method to confirm exclusion zones around the building to minimise risks to the public whilst these works are being undertaken.

All gutters should be checked and cleared once a year by a specialist contractor. The specialist abseiling contractor should carry out an independent risk assessment and method statement before commencing the works.
All operatives shall wear the necessary safety/ protective clothing at all times. Weather conditions and winds speeds are to be assessed by the contractor before commencing the works and monitored throughout the works. Generators and combustible materials shall be stored as far away from the building as practically possible. The specialist contractor should first carry out an inspection of the gutters and remove any blockages. The gutter should be cleaned using specialist equipment.

Decoration:

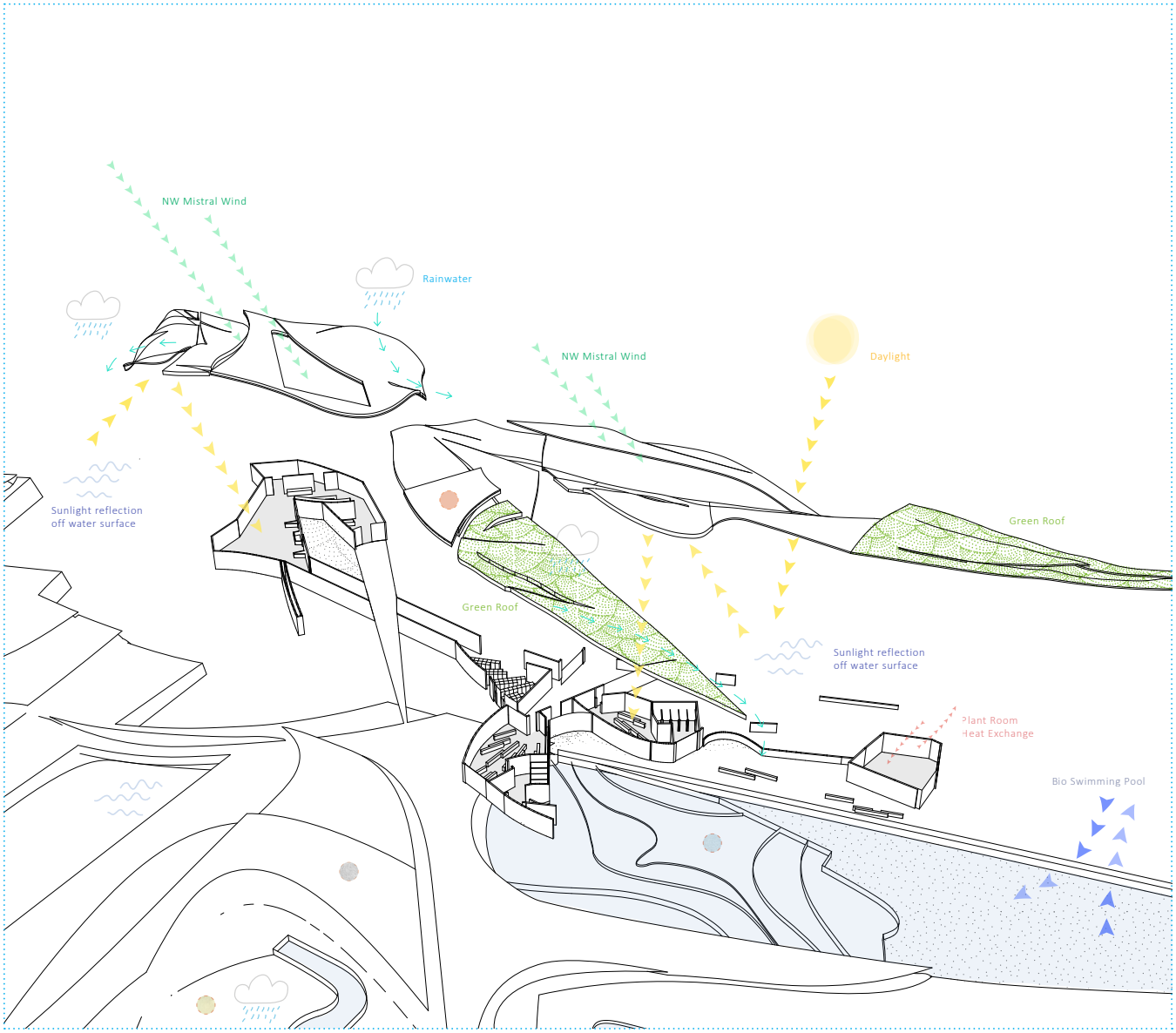
A dedicated cleaner's store has been provided with cleaner's sink and point of delivery of heater. All cleaning products will need to be stored in a 60 minutes fire rated cabinet for chemicals. The cleaner should ensure that when washing stone flooring the floor is left without sitting water and that warning signage placed in a clearly visible location until the flooring has completely dried.
All maintenance work should be carried out by a competent person/ persons. The contractors should carry out a risk assessment prior to commencing the works. Due to the high ceiling levels in the common spaces mobile platforms or ladders will be required to carry out the works. Operatives should follow the HSE guidelines "Safe Use of Ladders and Step Ladders – A Brief Guide' and the HSE guidelines on working at heights 'Working at Height – A Brief Guide".
Note: Cleaner's storage room is access controlled.



01

ENVIRONMENTAL DIAGRAM // Axonometric diagram showing key Environmental aspects

Summary diagram of all environmental aspects and strategies I will need to consider.



Ventilation

Natural ventilation, using the strong and very local North West Mistral wind, as well as sea breeze through slits in roof structure. This will help keep internal, as well as external areas cool, especially during warm summer months.

Drainage System

Guttering in the roof will allow for the draining of rainwater during the heavy showers in Marseille, which take place throughout the year. This rainwater will be collected at certain points, in order to be used for the shower water supply. Storage will be required for this.

Daylight Mix

Sunlight will provide the majority of lighting within the building, diffused light will be reflected from the surface of the sea onto the polished concrete underside of roof in some areas. In order to achieve a constant level of lux, a series of LED's will be installed which will adapt to any change in daylight.

Outdoor Shading

Thin concrete roofs will overhang at various points, creating shaded areas on pathways as well as in the shallower parts of the swimming area.

Plant Room with Heat Exchange

In order to keep the plant room at the required temperature during all months of the year, a shell and tube heat exchanger will be used, cooling the fluid in the sea before flowing over the surface of the pipes.

Bio swimming pool

Naturally filtering and cleaning the swimming pool areas will require a series of processes, including building up an edge surrounding the pool, introducing planting and making sure that all debris and algae on the waters surface is removed.

Green Roof

A few roof components will have green roof build ups, with local Provencal flora as well as pathways on this surface. The thickness of the structure is made up of a series of components that mean the plants grow and flourish.

Thermal Mass

The thermal mass of the concrete landscape and wall structures will help regulate a more constant internal temperature. The thermal mass of the concrete landscape base below the pools will also provide less fluctuation in water temperature throughout the year.

Damp Proofing

The concrete landscape has been built up over the existing gridded strcucture. In order to prevent damp creeping up into my buldings, suffiecint damp proofing and prevention of structure damage will be required.

Materiality

Pre-fabricated red coloured concrete elements put together on site. Calculation for volume and amount of pigment required to be calculated. Components to be delivered by boat.

Two pools naturally filtrated with porous rock. Additional planting will help with this filtration and will help keep the sediment stationary during low and high tide.

Services Connections

Within my scheme, the services I require are foul water disposal, fresh water supply and mains electricity supply. Within my Master plan scheme wind turbines will be placed accross the harbour wall.

In-situ concrete landscape with steel reinforcement along with pre-cast concrete elements. Building to be placed on top of this landscape, again, using pre-cast elements that will be shipped in.

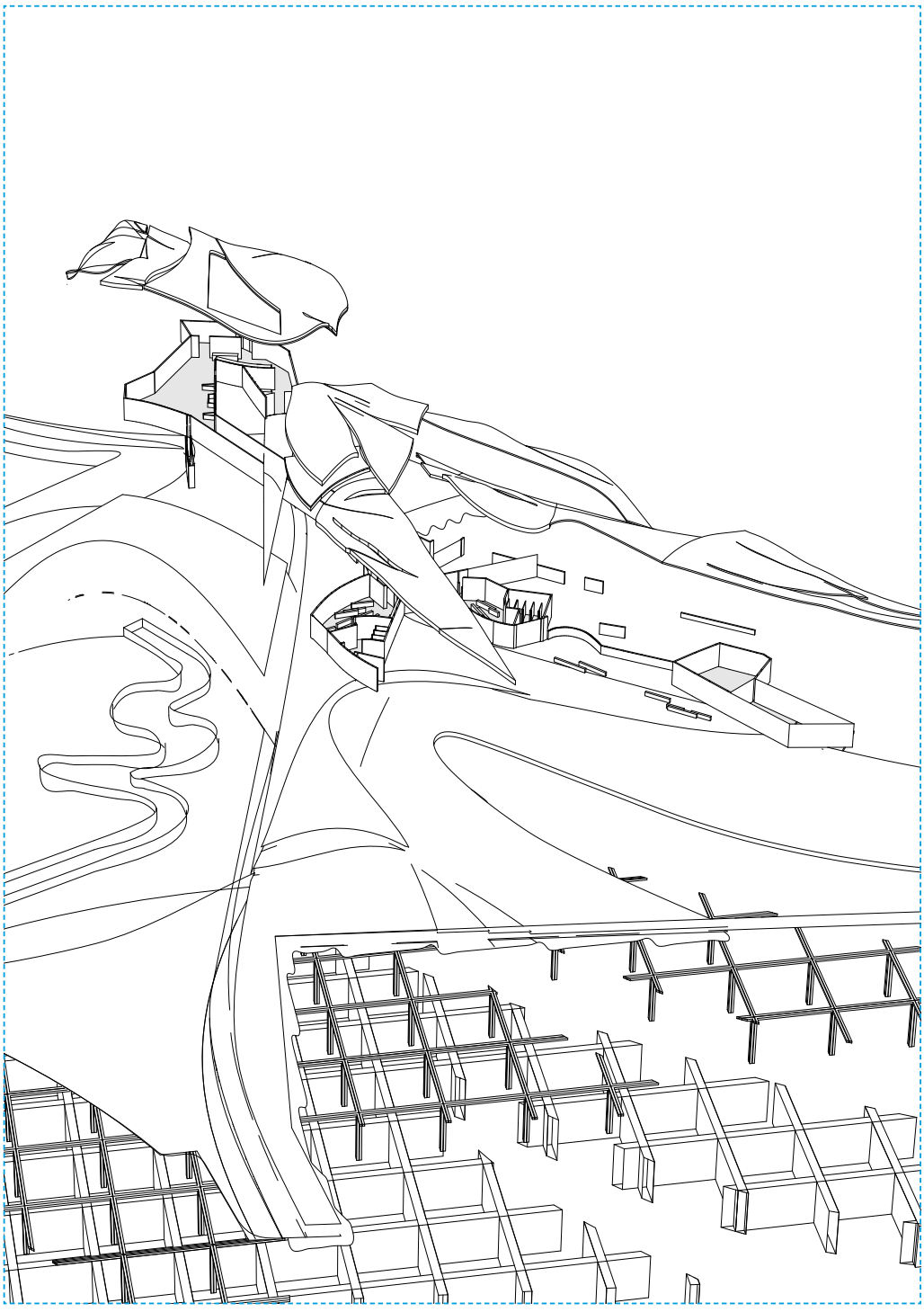
Landscaped park area with provence flora, where visitors may walk around and overlook various viewpoints from the site. A childrens play area to be situated by the shallow pool.

01

COMPONENT DIAGRAM // Axonometric diagram showing structural components

The main structural elements within my scheme have been outlined on the drawing below. This includes the coloured roof structure, supporting structural walls, cast concrete landscape and the original existing grid structure of the Fos Port.

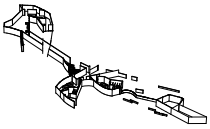
COMBINATION VIEW



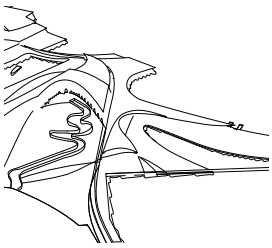
ANALYSIS OF STRUCTURE

1 Roof Structure

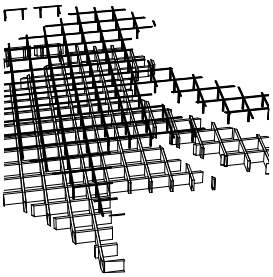
2 Building Structure

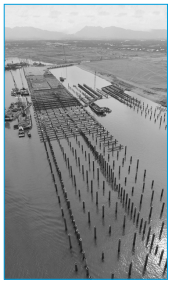


3 Landscape



4 Existing Grid Structure



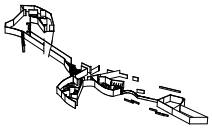


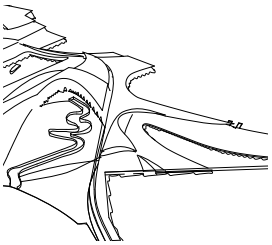
STRUCTURAL AXONOMETRIC KEY

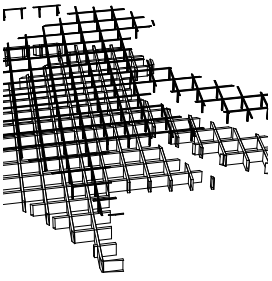
1. Existing concrete grid structure of port landscape with steel grid framework. This provides further structural support and rigidity within the ground below my proposal.
2. Concrete landscape cast in-situ with variant levels. The concrete covers an area of 19637 m2, individual components will therefore need to be slotted together to reach this area.
3. Structural walls to support some parts of roof. I would like the concrete landscape to meet the roof in other areas meaning fewer walls may be required.
4. Undulating red concrete roof (coloured with Bayferrox pigments). Two larger elements to be cast in-situ and lifted into place. Other pre-cast elements will slot into this framework.

SECTION 02

// Building Construction

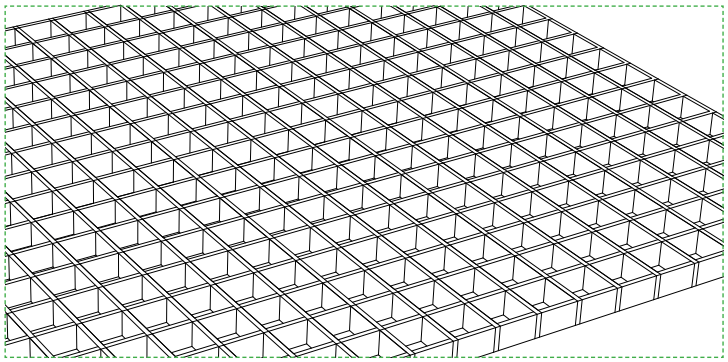






Construction sequence from existing gridded concrete port through to new port landscape scene

1



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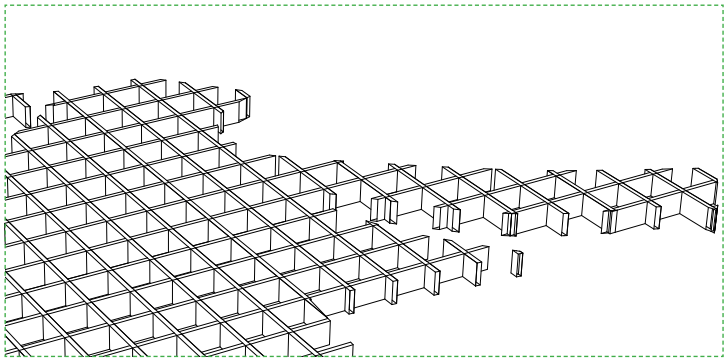

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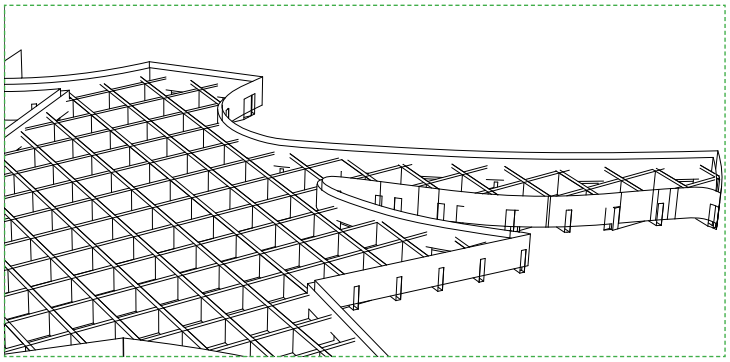
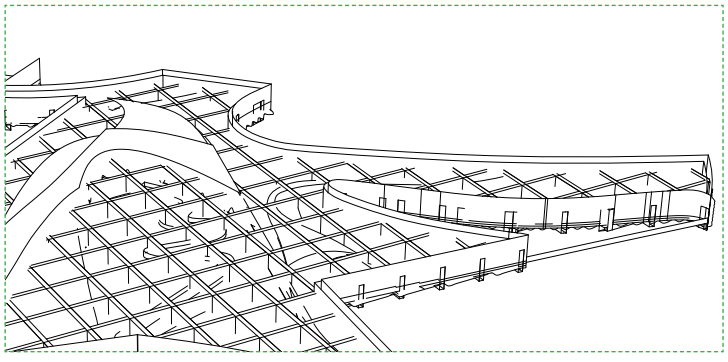
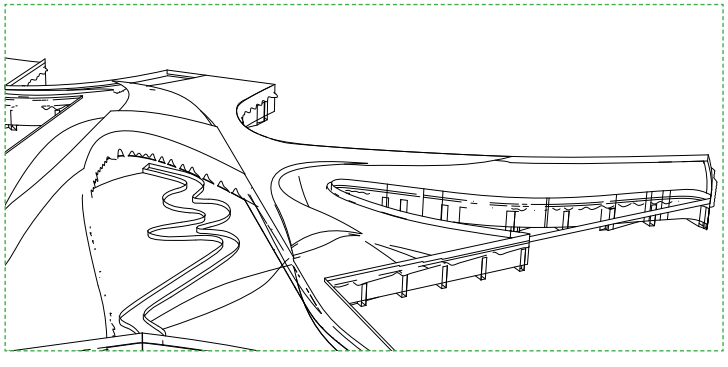
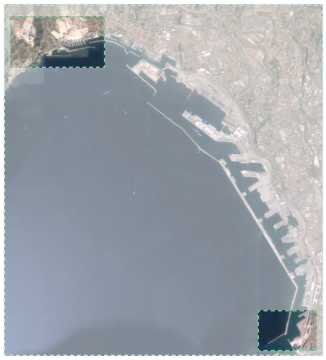


4



5





WASTE DISPOSAL SITE

Satelite map showing the location of my site (bottom right) as well as the waste disposal site for any, non recyclable, left over waste (top left)

CONSTRUCTION SEQUENCE KEY

1 The existing concrete surrounding the gridded structure is removed and disposed of, exposing the existing concrete grid structure of port landscape with steel grid framework. This is built up over a larger area than the new Port Landscape and some parts will therefore need to be removed.

2 Large areas of the exisitng port are removed in order to create the new landscape. Boats to be used to carry the waste materials to the chosen disposal site. further north (as highlighted in the satellite photo above)

3 Sheet piling added to the surround of the existing grid to add support. The landscape can then be built up and the new barrier created by the sheeting will prevent materials sliding into the sea. The steel sheet sections have interlocking edges, to be installed in sequence, each to the same depth.

Transporting sheet piling to site on large barge

Lifting sheet piling from the barge into place using crane

Once positioned, sheet piling is pushed into sea bed using machine

4 First series of concrete elements, mainly larger and higher areas of the site are cast in-situ, over the gridded framework. Some parts of this initial build up will emerge above the grid, and other parts may set within the existing structure.

Rock/ waste from dredging is collected from underwater and lifted using crane on barge

The rock and silt is placed into container barge for draining and storage

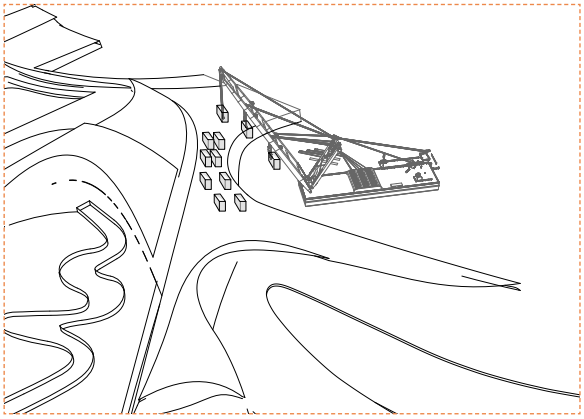
5 A second series of concrete elements are cast on site and built up on what has already been built. These elements will be smaller and will cause the landscape to be more undulating. Some parts, such as where the ground rises to meet the roof, will be cast at this stage.

Rock and silt is collected from floating container and poured over landscape using crane. This is then flattened out by machinery on the land.

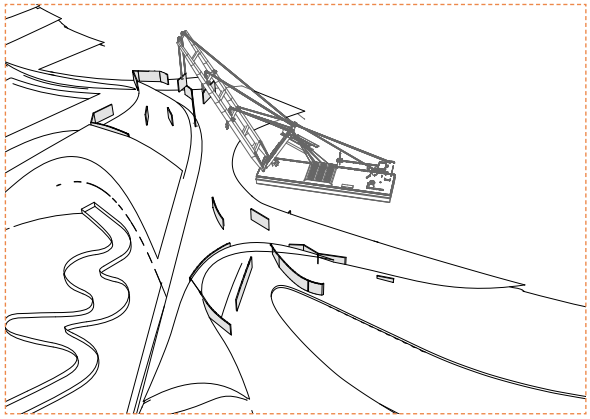
Concrete is then poured/ cast on top of this.

Concrete landscape area = 19637.14 sqm
Average depth of components = 2.5m

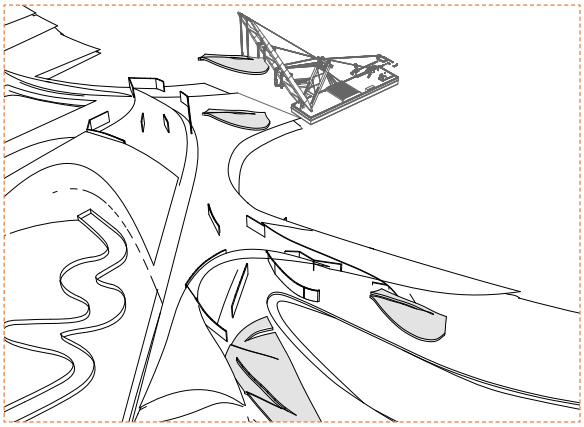
Volume = Depth x Area
= 2.5m x 19637.14 sqm
= 49,092.5 m3 of concrete



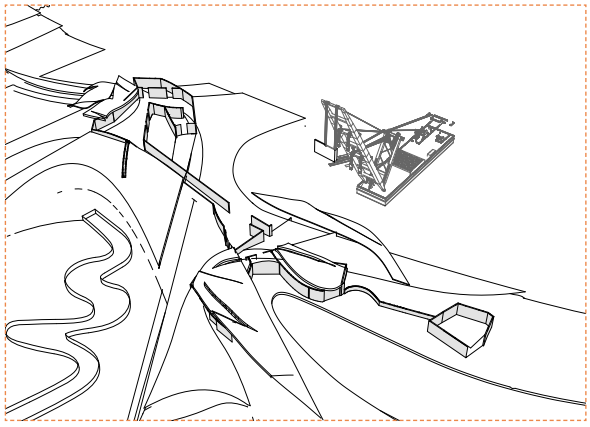
1 Once the first phase of the construction is complete, the building up of the landscape, building construction can begin. A crane vessel transports concrete mixture and aggregate to the site in order to smooth off, as well as build up on any rough edges from the initial stage.



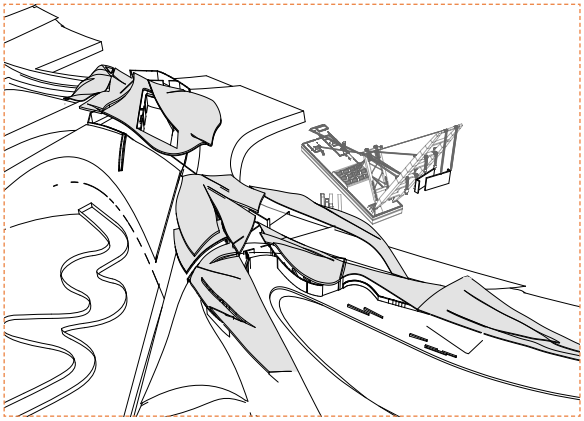
2 Prefabricated panelling for the structural walls are the first to arrive to the site, providing a rigid structure, slotted into the landscape, to which other components can be added.



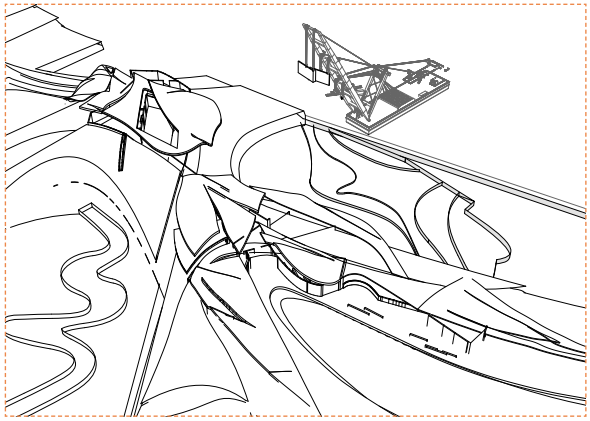
3 Surrounding the initial structural walls, in-situ elements of the roof are cast into the new concrete landscape, which acts as a mould to these select few pieces (these have been shown within Section 2). These pieces are then lifted using the crane vessel which can lift these into place, resting on the landscape and structural walls.



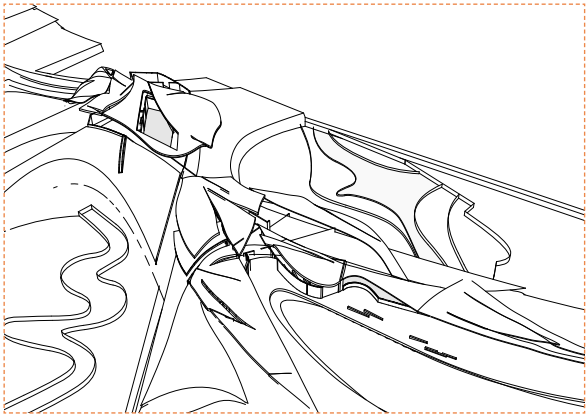
4 Once these roof pieces are in place, the rest of the concrete panelling is transported to site, then slotted into place. These walls vary in thickness, but average thickness is 450mm. A detail of this build up is shown later in this section.



5 The rest of the roof components are all small enough to be pre-fabricated and carried by barge to the pool landscape. These pieces cover internal and external area, again, varying in thickness. Specific junctions allow for each piece to be slotted together, as well as with the landscape and structure that sits on it. Each roof piece will be numbered to allow for easier construction.

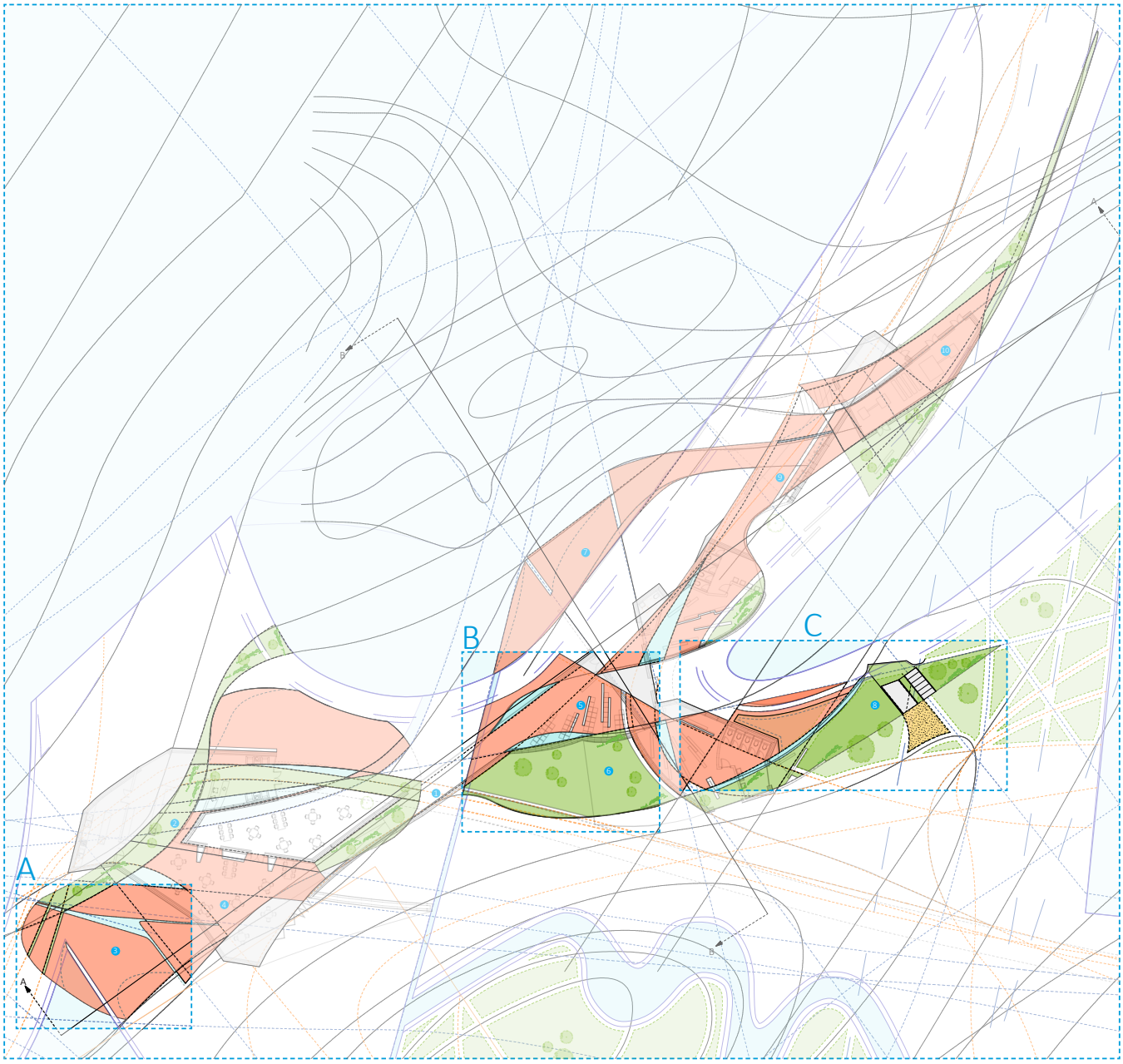


6 Once the landscape and building construction has been completed, and the crane vessel does not need to reach the building, the pool can begin to be constructed. A concrete wall surrounds the majority of the pool length, with various build ups allowing for natural cleaning of the port water. Please refer to Section 3 for more detail on this.



7 The final concrete landscape, building and roof-scape create a seamless organic looking structure, with little evidence of the construction visible to the visitor. A large amount of accuracy and organisation with transporting all elements to site, as well as constructing in the correct sequence will be vital to achieve this outcome.

Within Section 2 I will be focusing on the organic roof structure of my scheme. I have chosen three parts of the roof (Components A, B and C), which all vary in terms of the structural systems they use. I will show the development and detailing of each example.



A ROOF COMPONENT A

This part of the roof is overhanging over an external pathway, which connects the pool landscape with the adjacent harbour area. The purpose of this thin roof (150mm in depth) is to create shading for the exterior area, as well as framing the view across to the urban beach in the distance. The structure will be supported by the concrete landscape which will meet the roof at one point, making it appear lightweight due to minimal support. One larger part is to be cast in situ, the rest to be pre-fabricated and delivered to site.

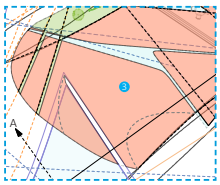
B ROOF COMPONENT B

This component covers mainly internal spaces. Due to the heat of Marseille, this section will require insulation to keep the internal space cool during summer months, and warm during cooler spells. This will result in a thicker roof build up (450mm) compared to the external lightweight structure. This roof will be supported by structural walls as well as the built up landscape, if possible.

C ROOF COMPONENT C

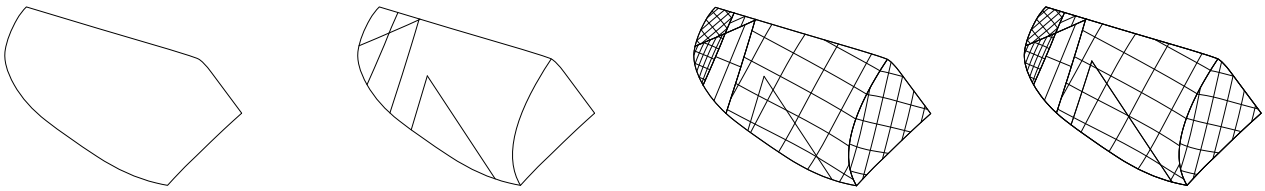
The roof meets the landscape of the children's play area at this point. It is possible for people to walk on the green roof here, this will have an effect on the build up of this section. I have also used the roof slope for childrens slides, the maximum angle for this is 60 degrees at any point and an average overall of 40 degrees (BS EN 1176/7).

A



Here I have shown the process of developing this section of the roof from a simple geometry outline of Roof Component A, through to a 3D structural component. Certain considerations were taken into account when designing this element which have been outlined in the series of diagrams below.

PLAN VIEW



PERSPECTIVE VIEW

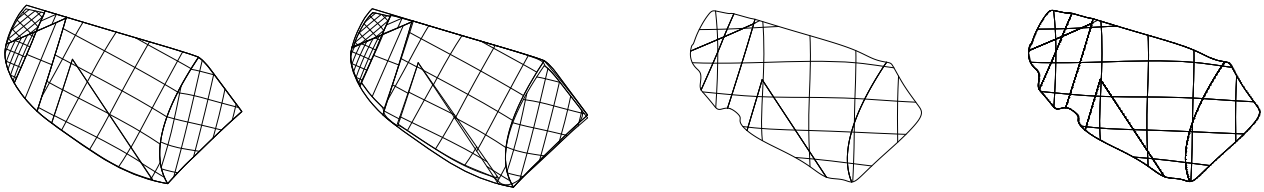
① Simple geometric outline

② Projecting lines from pathway routes and landscape outline from below

③ Creating surface over simple geometric outline

④ Dividing up surface using lines to split this up into smaller modules

PLAN VIEW



PERSPECTIVE VIEW

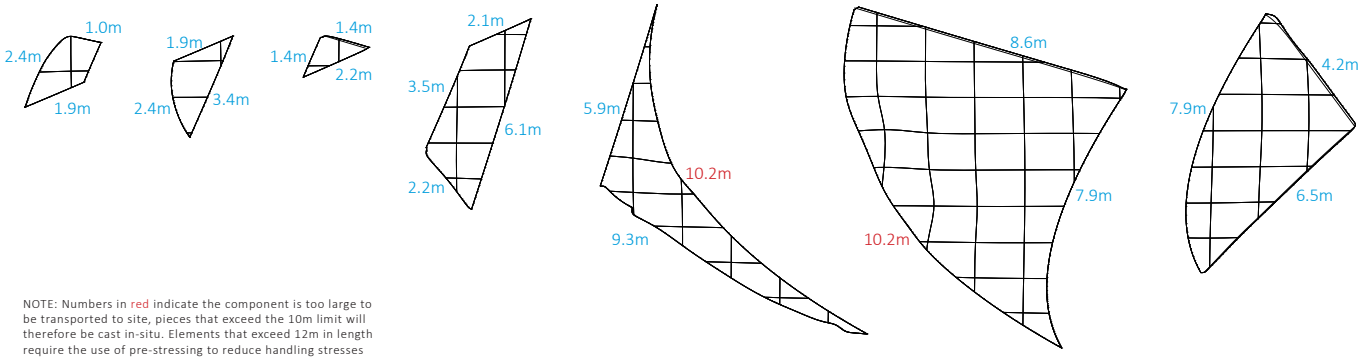
⑤ Rotating surfaces to create framing of views

⑥ Rotating surfaces further taking in consideration angle of sun in order to create shading

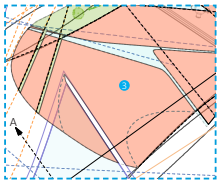
⑦ Converting these angled surfaces into continuous roof structure

⑧ Extruding roof surface to the required 150mm canopy thickness

ROOF A PRE-FABRICTED ELEMENTS



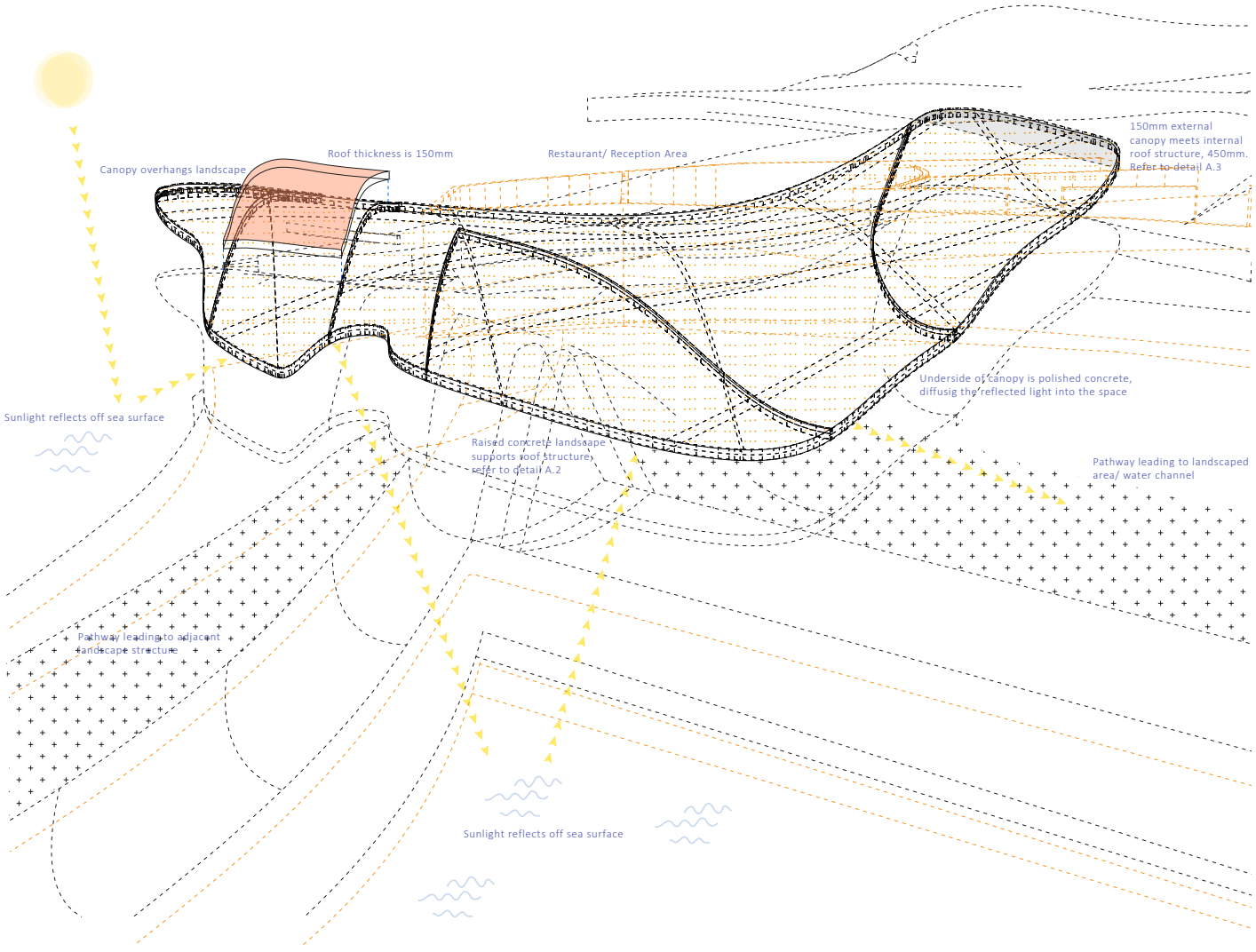
NOTE: Numbers in red indicate the component is too large to be transported to site, pieces that exceed the 10m limit will therefore be cast in-situ. Elements that exceed 12m in length require the use of pre-stressing to reduce handling stresses and minimise cracking.



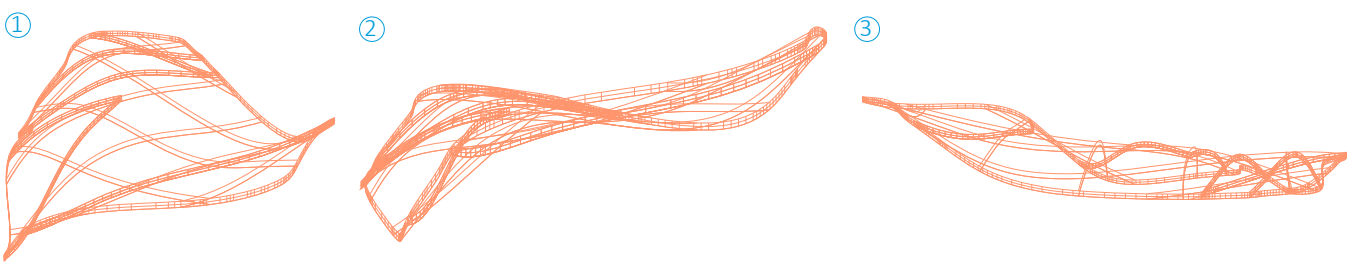
Below is a strategy diagram for Roof Component A. This roof is for creating a canopy and therefore shading over an outdoor area within the landscape. The right hand side of the roof connects to the internal cafe area, so a threshold between the varying thickness of concrete will need to be looked at.

Direction of Axo view

Strategy diagram for Roof Component A
Not to Scale

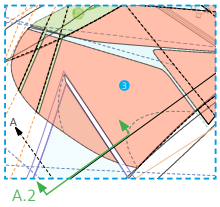


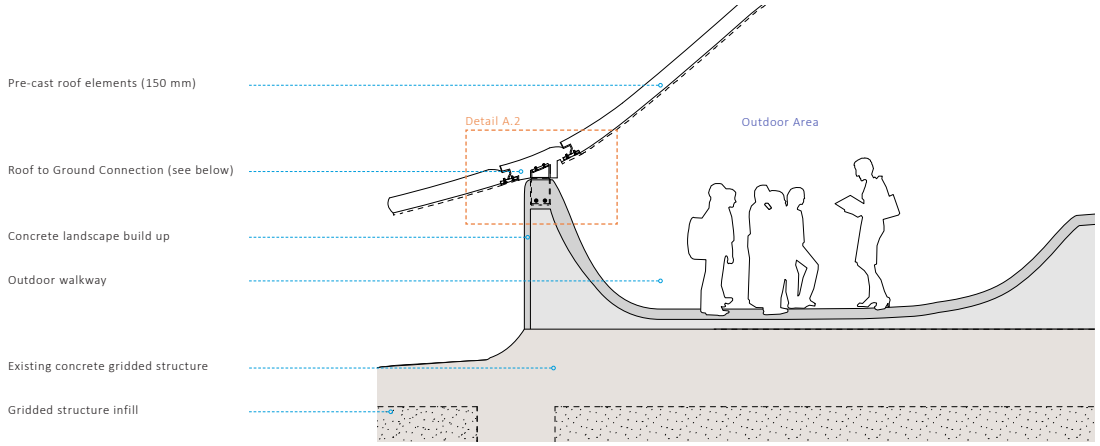
Roof Component A
Roof at other angles/ views to show curvature of structure from all sides



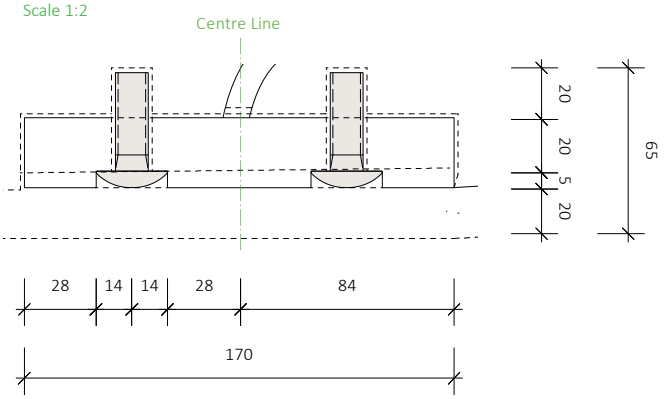
Section Showing outdoor walkway
Scale 1:50

Section cut line





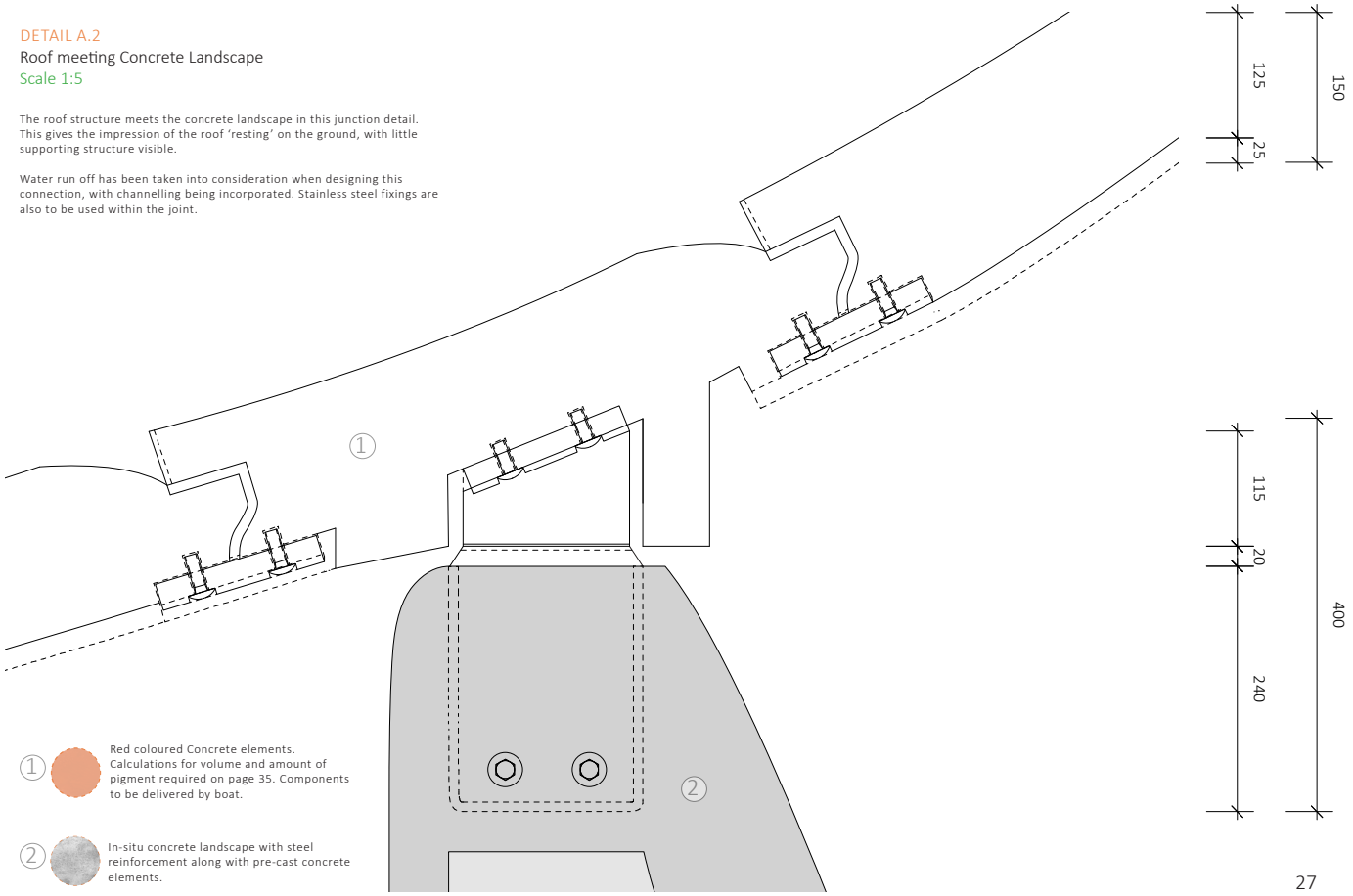
DETAIL A.1
Connection Detail
Scale 1:2



DETAIL A.2
Roof meeting Concrete Landscape
Scale 1:5

The roof structure meets the concrete landscape in this junction detail. This gives the impression of the roof 'resting' on the ground, with little supporting structure visible.

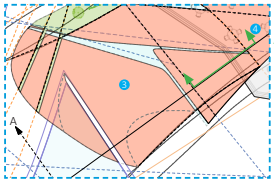
Water run off has been taken into consideration when designing this connection, with channelling being incorporated. Stainless steel fixings are also to be used within the joint.



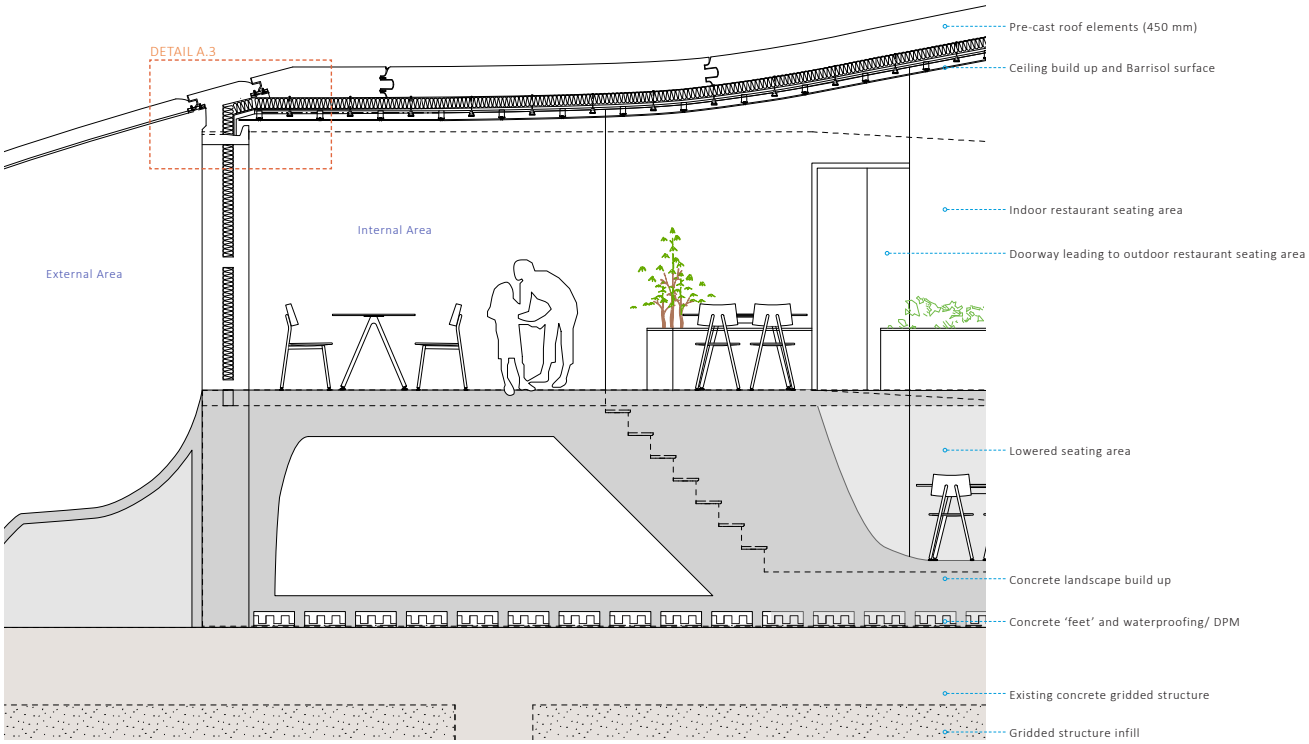
① Red coloured Concrete elements. Calculations for volume and amount of pigment required on page 35. Components to be delivered by boat.

② In-situ concrete landscape with steel reinforcement along with pre-cast concrete elements.

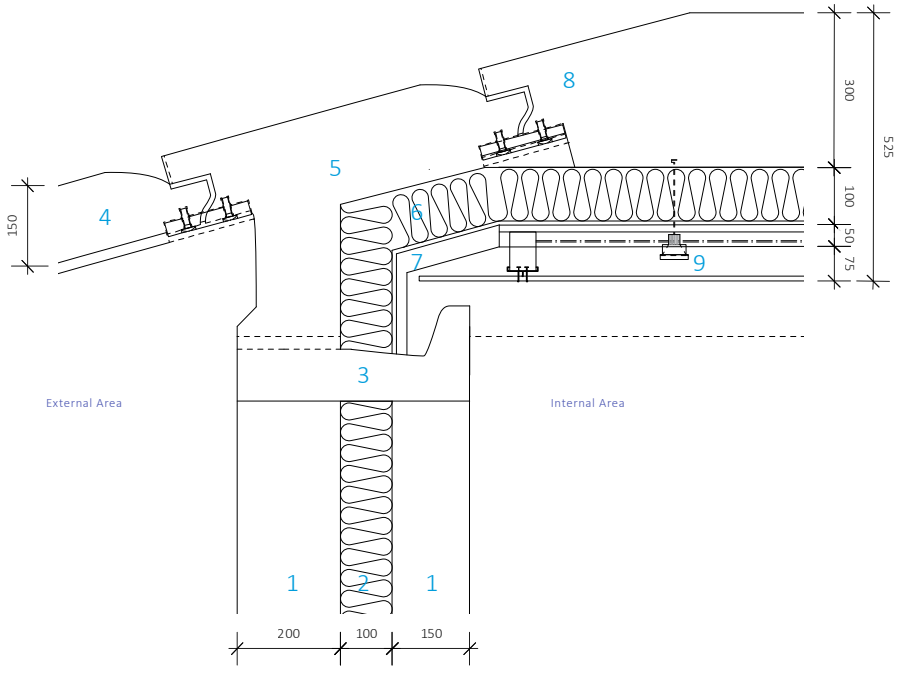
Section cut line



Section showing Roof meeting Structural wall
Scale 1:50



DETAIL A.3
Roof meeting Structural wall detail
Scale 1:10



KEY

1 Precast concrete wall
2 Insulation
3 Concrete lid with fixture attached
4 External Pre-cast concrete component
5 Pre-cast concrete fixture
6 Insulation
7 Barrisol ceiling surcace
8 Precast concrete roof for internal area
9 LED lighting under Barrisol surface

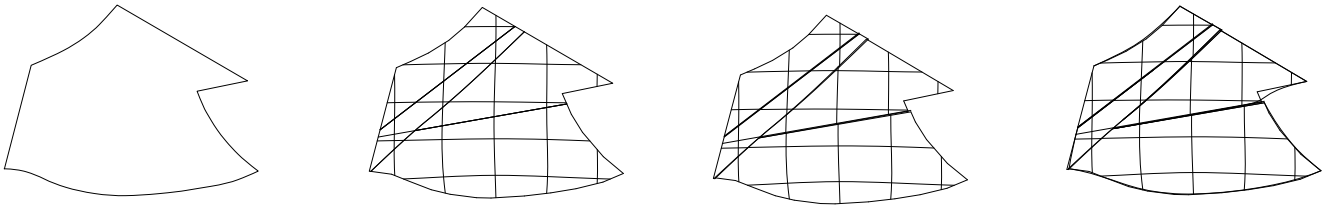
NOTE:

Due to the nature of the construction, cold bridging takes place in some local areas. All fixtures and fittings will be made of stainless steel, meaning any condensation will not cause damage.

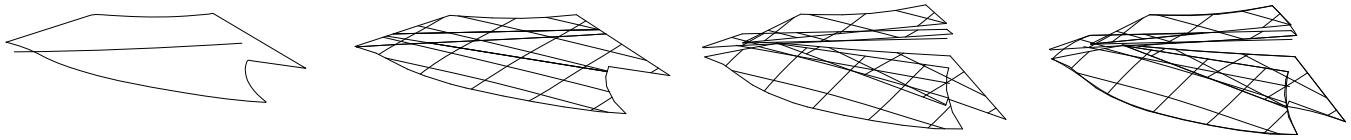
B

Here I have shown the process of developing this section of the roof from a simple geometry outline of Roof Component B, through to a 3D structural component. Certain considerations were taken into account when designing this element which have been outlined in the series of diagrams below.

PLAN VIEW



PERSPECTIVE VIEW



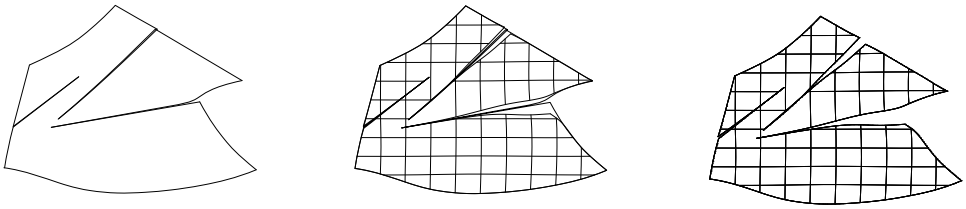
① Simple geometric outline

② Projecting lines from pathway routes and landscape outline from below

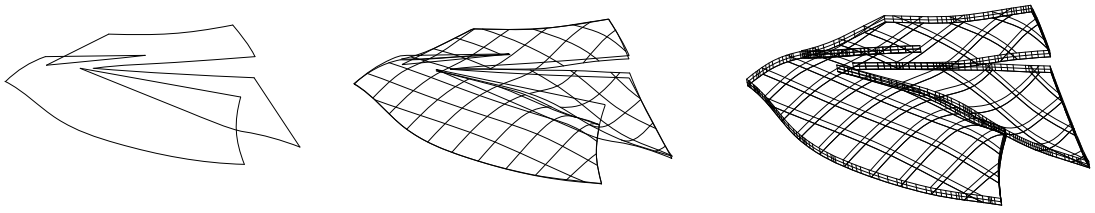
③ Dividing up surface using lines to split this up into smaller modules

④ Rotating surfaces to create window openings

PLAN VIEW



PERSPECTIVE VIEW

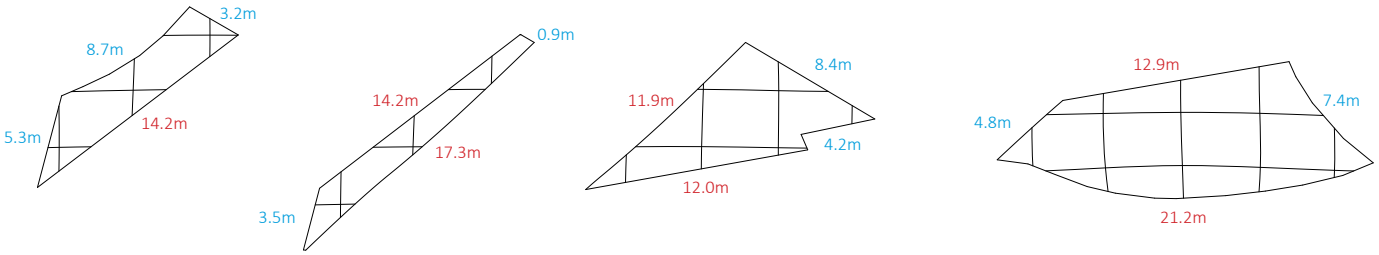


⑤ Rotating surfaces further taking in consideration angle of sun

⑥ Converting these angled surfaces into continuous roof structure

⑦ Extruding roof surface to the required 450mm thickness for covering the internal space.

PRE-CAST ROOF ELEMENTS

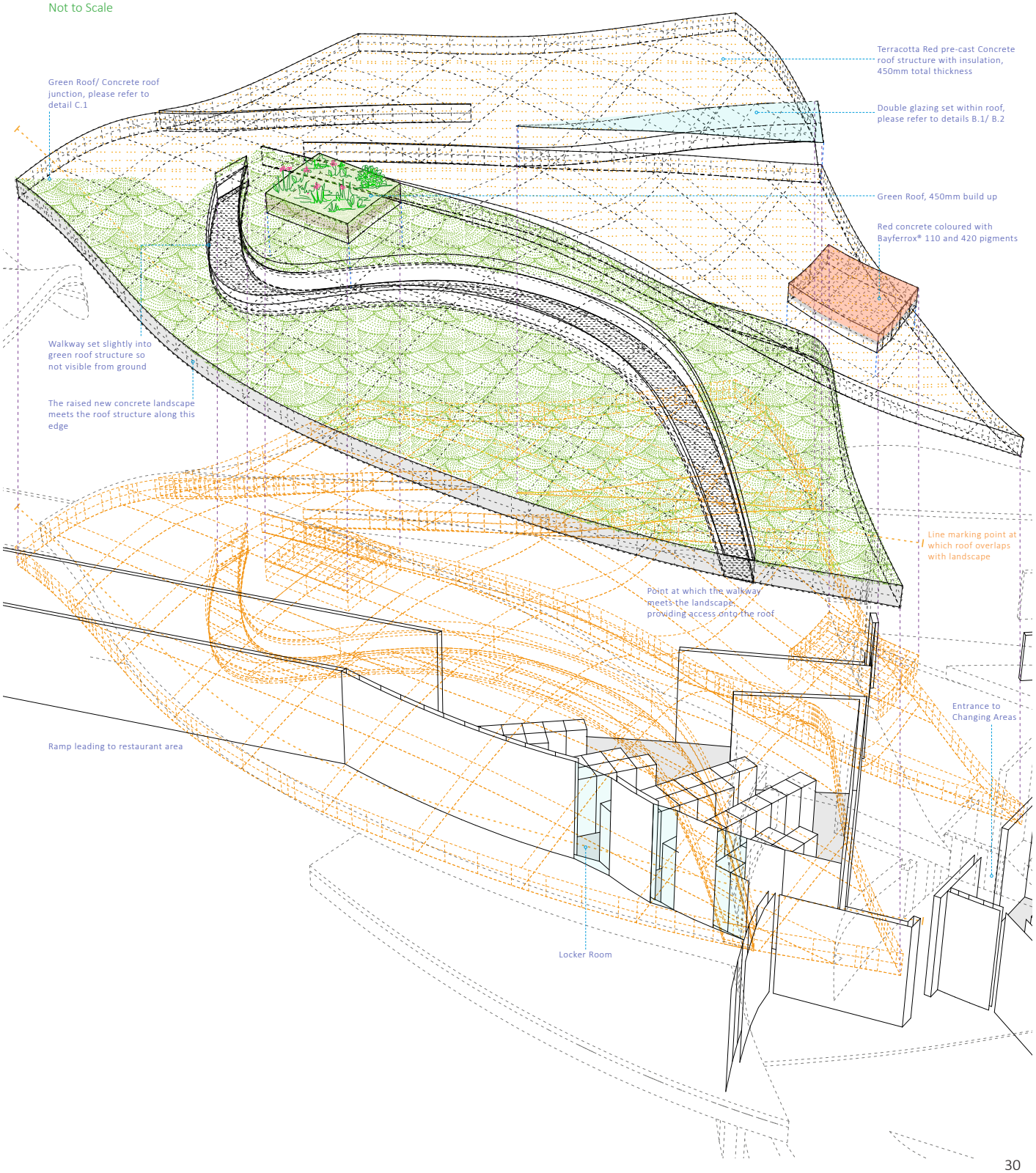


NOTE: Numbers in red indicate the component is too large to be transported to site, pieces that exceed the 10m limit will therefore be cast in-situ. Elements that exceed 12m in length require the use of pre-stressing to reduce handling stresses and minimise cracking.

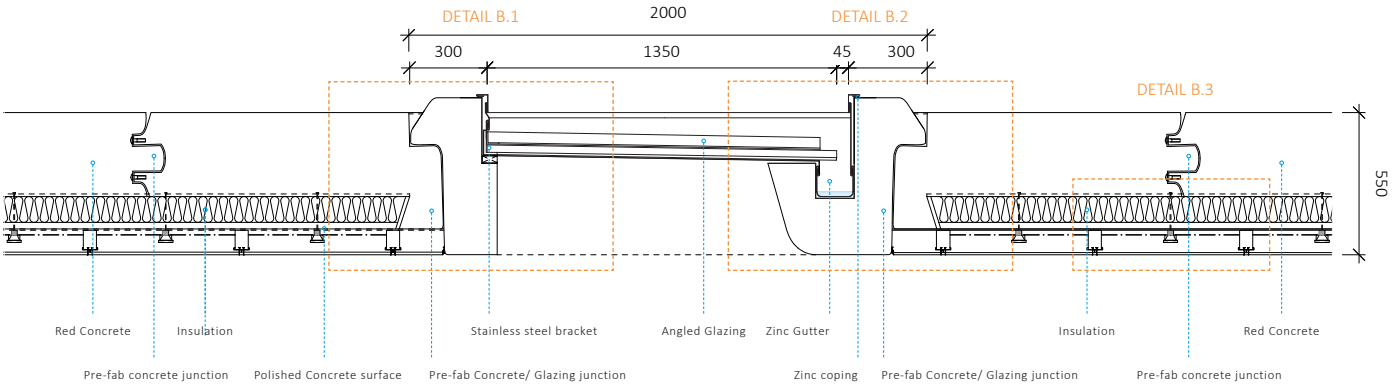
Below is a strategy diagram for Roof Component B. This roof covers internal spaces, with a mixture of green roof and concrete roof areas. There is also a walkway over the green roof providing views across to the sea as well as back over Marseille Vieux Port. I will be detailing the key aspects of this roof piece over the following pages.

Direction of Axo view

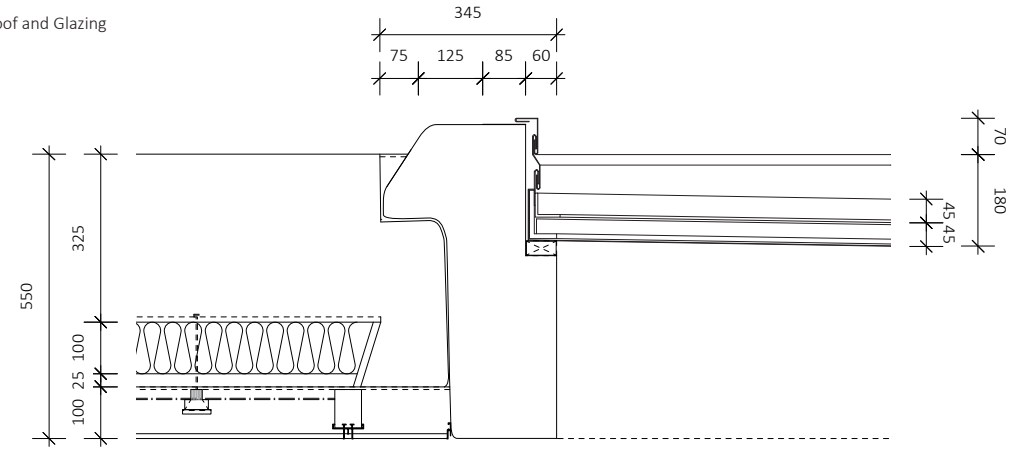
Strategy diagram for Roof Component B
Not to Scale



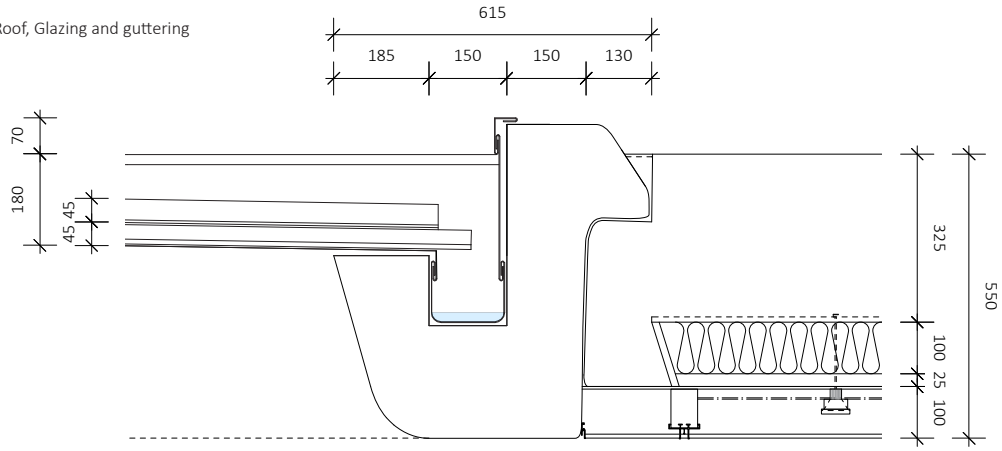
I would like the glazing in the roof to act as a separate component that can be slotted into the structure.



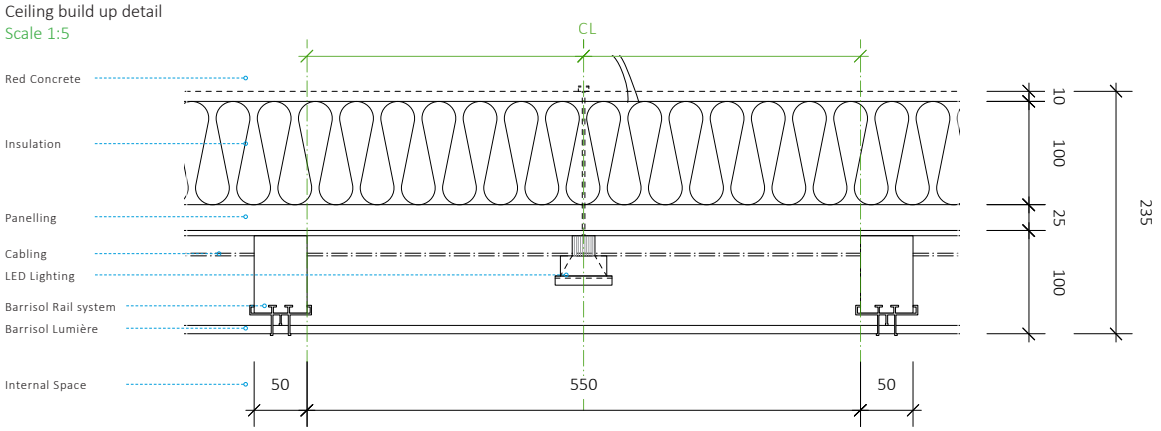
DETAIL B.1
Junction beween Roof and Glazing
Scale 1:10



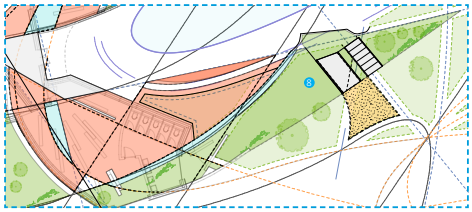
DETAIL B.2
Junction between Roof, Glazing and guttering
Scale 1:10



DETAIL B.3
Ceiling build up detail
Scale 1:5

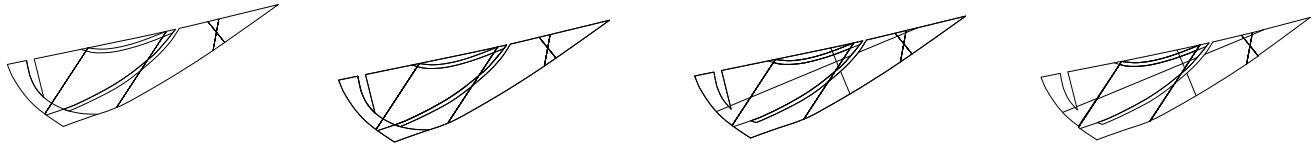


C



Here I have shown the process of developing this section of the roof from a simple geometry outline of Roof Component C, through to a 3D structural component. Certain considerations were taken into account when designing this element which have been outlined in the series of diagrams below.

PLAN VIEW



PERSPECTIVE VIEW

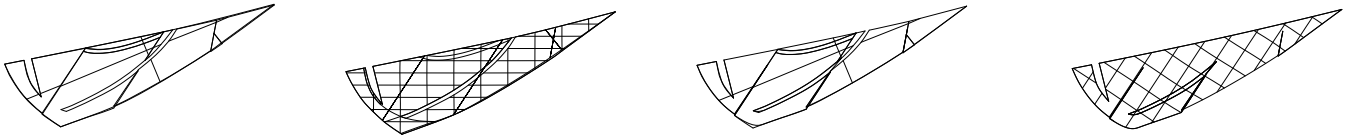
① Simple geometric outline

② Projecting lines from pathway routes and landscape outline from below

③ Creating surface over simple geometric outline

④ Dividing up surface using lines to split this up into smaller modules

PLAN VIEW



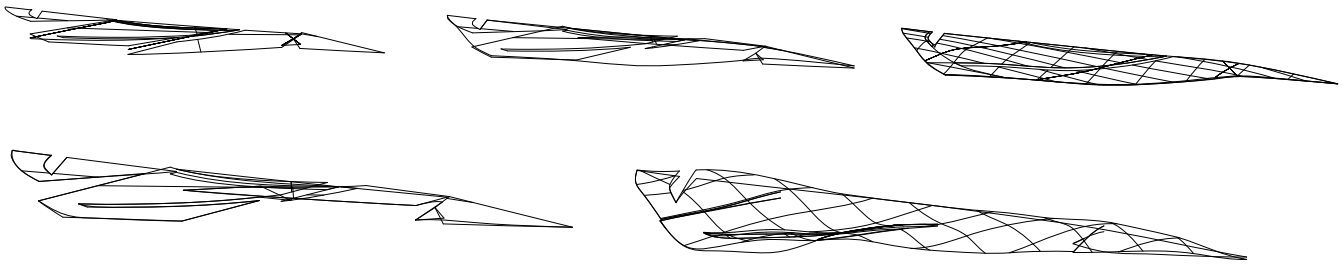
⑤ Rotating surfaces to create framing of views

⑥ Rotating surfaces further taking in consideration angle of sun

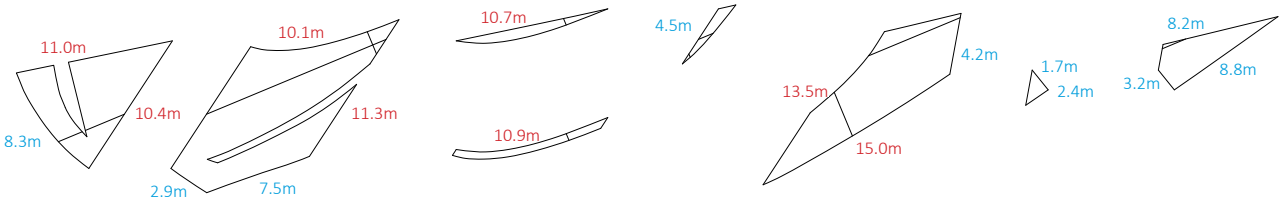
⑦ Converting these angled surfaces into continuous roof structure

⑧ Extruding roof surface to the required 450 mm green roof build up

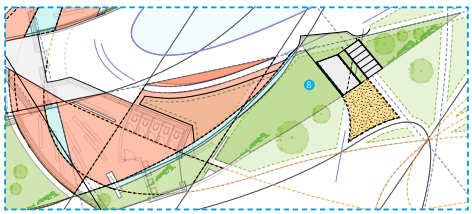
PERSPECTIVE VIEW



PRE-CAST ROOF ELEMENTS



NOTE: Numbers in red indicate the component is too large to be transported to site, pieces that exceed the 10m limit will therefore be cast in-situ. Elements that exceed 12m in length require the use of pre-stressing to reduce handling stresses and minimise cracking.

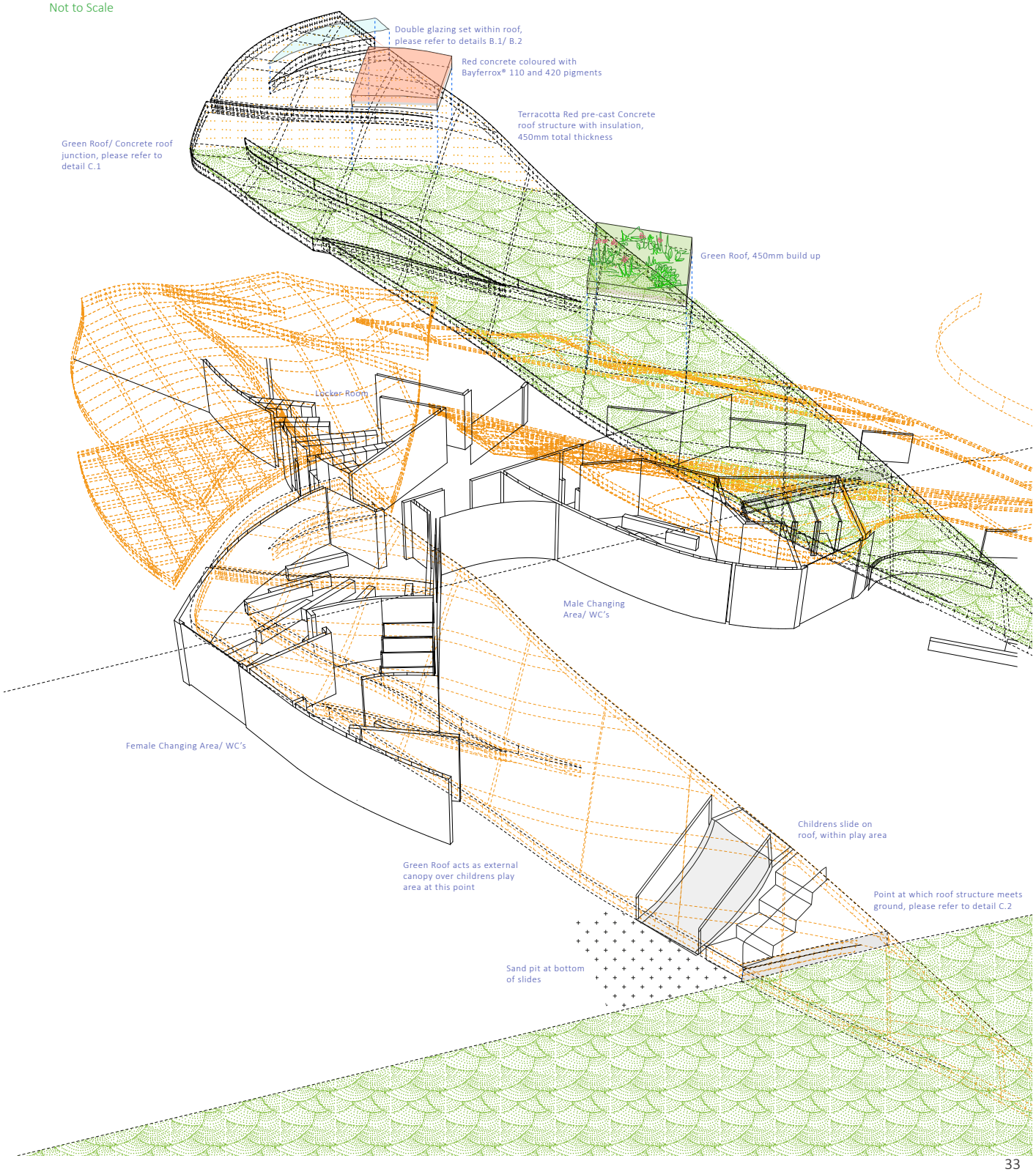


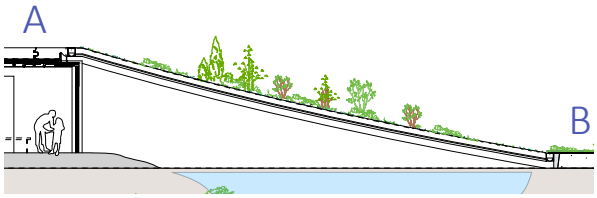
Strategy diagram showing all the aesthetic elements as well detailing I need to take into consideration in order to construct the roof structure successfully.

Direction of Axo view

Strategy diagram for Roof Component C

Not to Scale



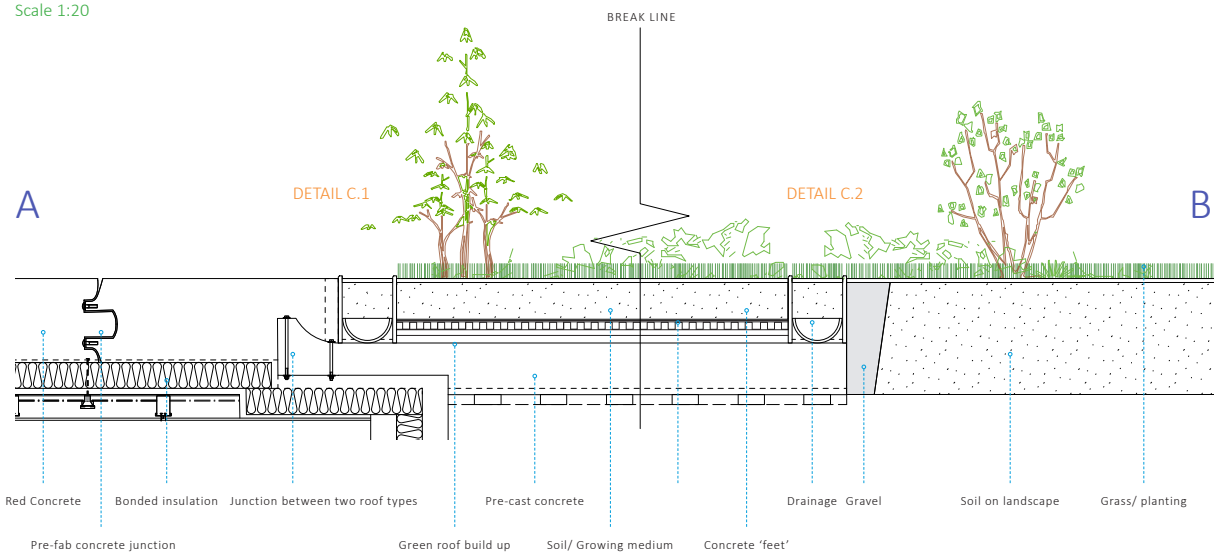


Green Roof Section Key
Scale 1:150

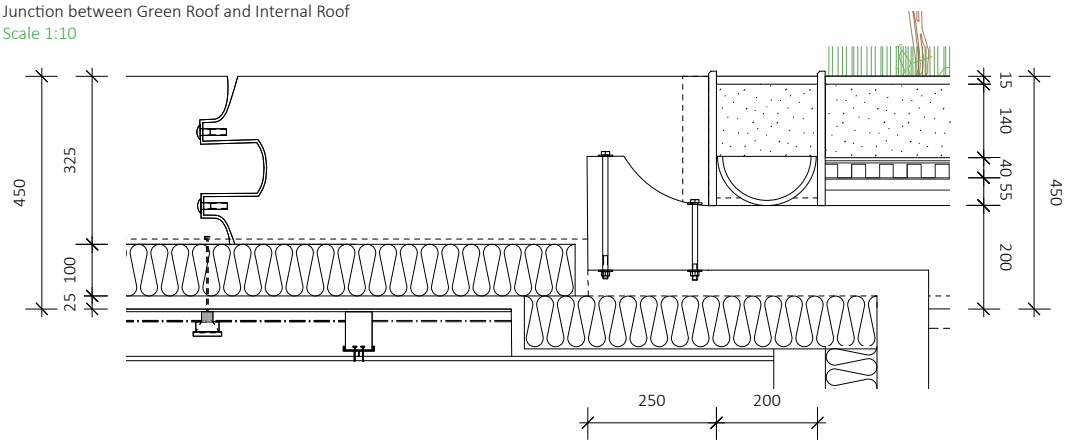
I have flattened the roof for the purpose of these details. Please refer to 'A' and 'B' for start and end point.

Details C.1 and C.2 refer to each green roof junction.

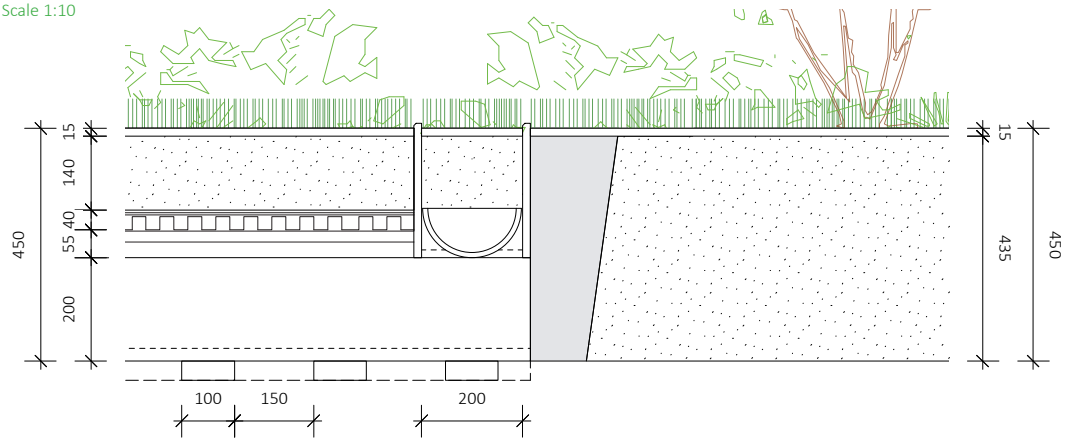
Green Roof detail drawing
Showing point at which green roof meets Ground and Roof
Scale 1:20



DETAIL C.1
Junction between Green Roof and Internal Roof
Scale 1:10



DETAIL C.2
Roof meeting Ground junction
Scale 1:10



SUSTAINABILITY

Concrete roof structure has a life expectancy of 80 - 150 years, exterior concrete facings have a life expectancy of 100 - 150 years

RECYCLING CONCRETE

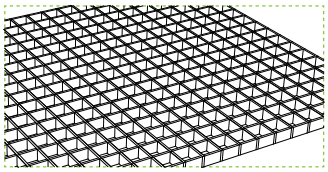
France recycles 63% of its concrete waste per year. The recovered concrete from construction and demolition waste is predominantly used for road sub-bases/foundations, but it can also be used to make new concrete structures.

In-situ demolished concrete can provide a large amount of recycled aggregate, but other than this it does not serve much other purpose. But if constructed with pre-cast panels, if demolished carefully these can be reclaimed and used again to build new forms, saving the original embodied energy of the manufacture. This will also save on cost of the new construction, making it more economically as well as environmentally viable.

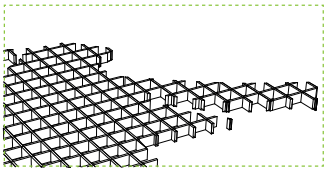
The recycling of concrete is also advantageous due to the fact that concrete hardens and increases in strength with age.

Significant energy costs arise from the transportation of panels and the use of a crane to lift them into place on site. However, the usual fuel emissions associated with aggregate extraction, cement manufacture and mixing are eliminated which makes it a more environmentally friendly option.

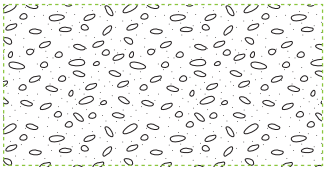
Recycling Existing Port for New Landscape:



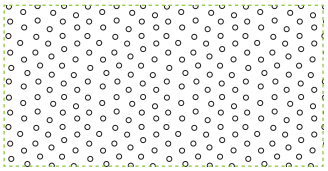
1 Existing gridded structure of landscape



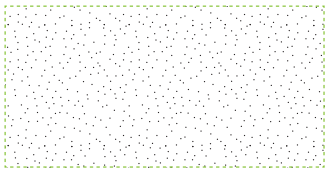
2 Large amounts of structure removed and transported away by barge.



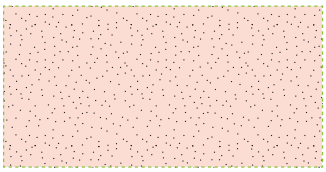
3 This waste concrete is broken down into smaller pieces by being fed through a vibrating feeder



4 These smaller pieces are fed through a jaw crusher in primary crushing stage. This then passes through an impact crusher for secondary crushing.



5 These pieces are fed through a vibrating screen where it is sieved into different grades. The aggregate is then washed to clear away the dust and small particles.



6 The aggregate is mixed with water and cement, as well as red pigment to create a terracotta colour. This is now ready for use.

Red concrete coloured with Bayferrox® pigments

When creating the terracotta coloured concrete for Casa das Histórias by Paula Rego in Portugal, a total of 3,810 cubic metres of concrete were coloured with 15 metric tons of Bayferrox® 110 and three metric tons of Bayferrox® 420. The pigments were delivered in sacks and processed in batches at the concrete factory.

Area = 3,307 m²
Amount of concrete = 3,810 m³

Bayferrox 110

Bayferrox 420

Marseille pools concrete roof area = 1358.6 sqm
Average depth of roof = 0.3m

Volume = 3157.5 m3 approx.
= 5.16 m3 of Barrofex 110
= 1.04 m3 of Barrofex 420

Therefore, for the roof structure of my building, to achieve the same colour, I will require:

Bayferrox 110 = 12.42 Metric tonnes
Bayferrox 420 = 2.50 Metric tonnes

RECYCLED STEEL REINFORCEMENT

Steel reinforcement can be produced from recycled steel. Recycled steel reinforcement has a lower embodied energy compared with structural steel. The properties of steel allow it to be recycled continually with no degradation in performance, and from one product to another, because of this it is the world's most recycled material

U- VALUE CALCULATIONS

U - Value is a measure of the heat transmission through a building part (such as a wall or roof) or a given thickness of a material (such as insulation) with lower numbers indicating better insulating properties. I have calculated the figures for my building and compared these with the U-Value regulation in the UK.

The requirements for the conservation of fuel and power, which includes thermal insulation, in buildings in England are detailed in Approved Documents (AD) L1A, L1B, L2A and L2B to the Building Regulations 2013 which came into effect on 6th April 2014.

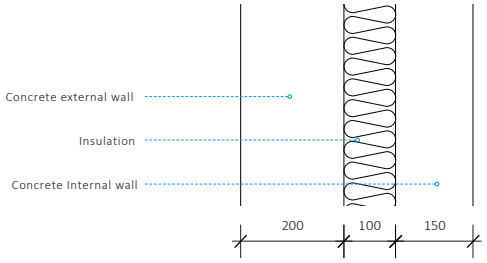
Calculations for my Building Proposal:

The WALL is made up of the following layers:

- Cast Concrete (High Density): 150 mm
- Polyurethane Board (Unfaced): 100 mm
- Cast Concrete (High Density): 200 mm

The u-value for this construction is: 0.21 W/m2K

The regulation u-value in United Kingdom is: 0.3 W/m2K

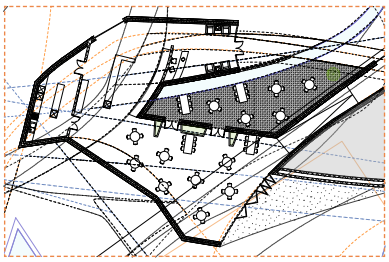


The parameters for the FLOOR in Reception/ Kitchen/ Restaurant are:

- Polyurethane Board (Unfaced): 100 mm
- Wall Thickness: 450 mm
- Floor Area: 256.8 m2
- Heatloss Perimeter: 90.45 m

The u-value for this construction is: 0.2 W/m2K

The regulation u-value in United Kingdom is: 0.25 W/m2K

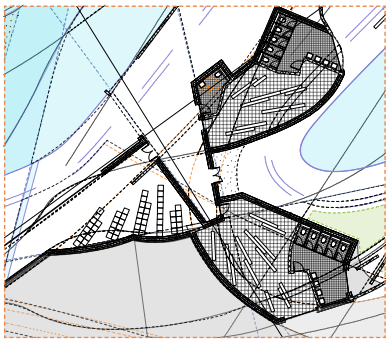


The parameters for the FLOOR in the Locker Room/ Changing Areas/ WC's are:

- Polyurethane Board (Unfaced): 100 mm
- Wall Thickness: 450 mm
- Floor Area: 224.8 m2
- Heatloss Perimeter: 116.2 m

The u-value for this construction is: 0.22 W/m2K

The regulation u-value in United Kingdom is: 0.25 W/m2K

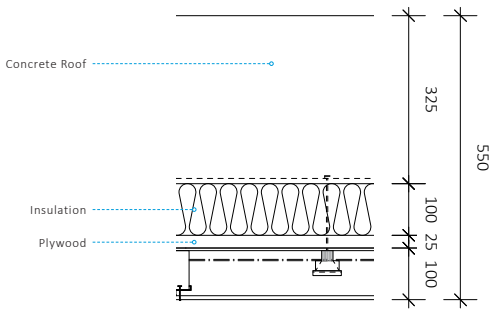


The ROOF is made up of the following layers:

- Cast Concrete (Medium Density): 300 mm
- Plywood: 25 mm
- Polyurethane Board (Unfaced): 100 mm

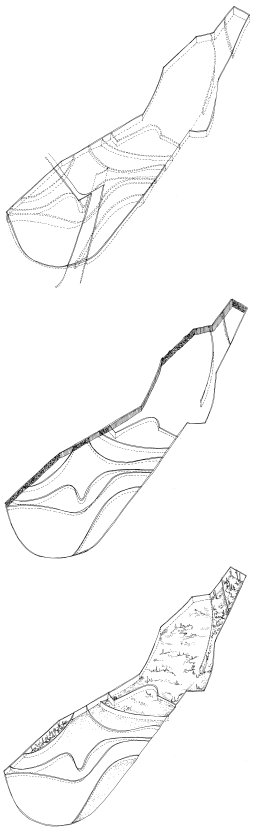
The u-value for this construction is: 0.2 W/m2K

The regulation u-value in United Kingdom is: 0.2 W/m2K

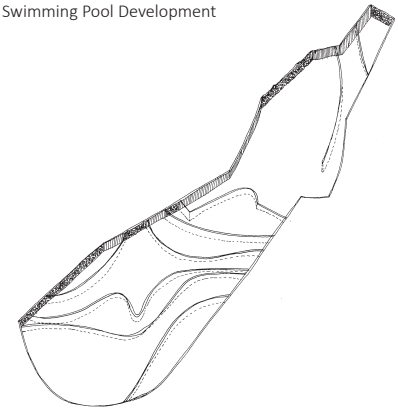


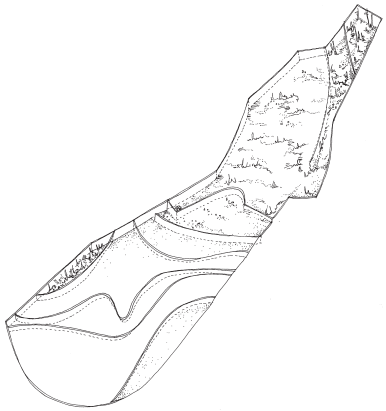
SECTION 03

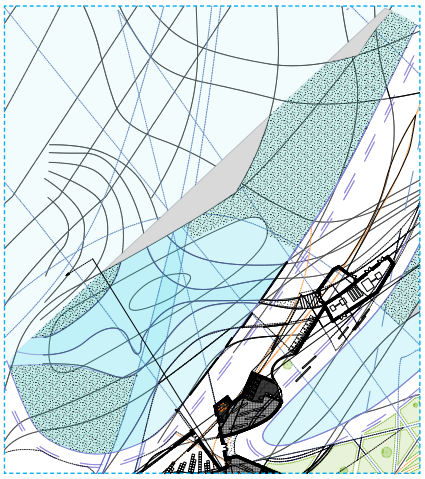
// Building Performance



Swimming Pool Development





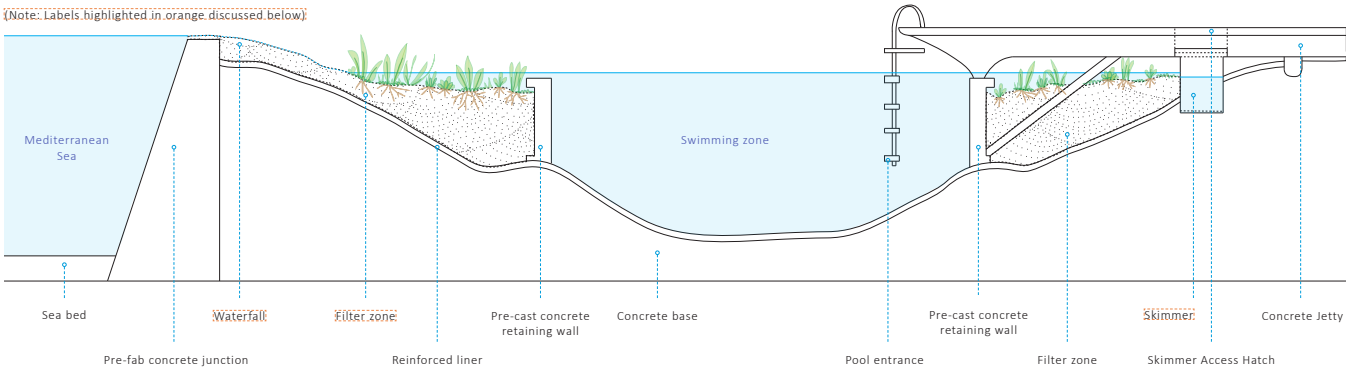


Each contour line in the drawings above represents a change in swimming pool depth. I have sketched and hatched planting to represent the filter zones, which have been shown in more detail in the diagram below. A concrete junction as well as filter zone surrounds the perimeter of the pool, so that all water entering from the sea passes through this filtration and cleaning area.

Section through Sea/ Pool area

Not to scale

(Note: Labels highlighted in orange discussed below)



WATERFALL

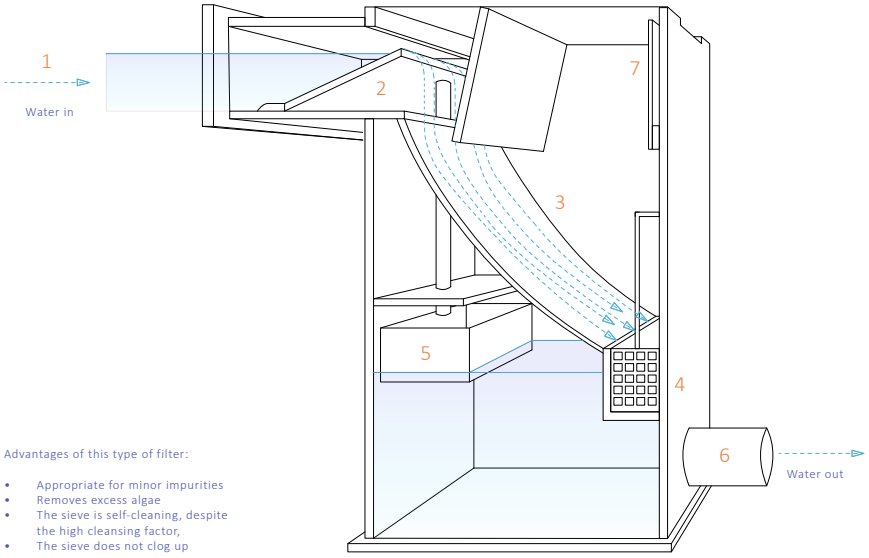
I have created a small gradient between the two water levels (sea and pool) which creates a small waterfall over a short distance. This waterfall will oxygenate the sea water entering the pool, depositing it back into the filter zone, helping the aquatic plants to grow and stay healthy.

FILTER ZONE

The filter zone is filled with aquatic plants and haydite. Haydite is a lightweight aggregate which helps provide flow of water to root systems of plants as well as reducing soil compaction. Friendly bacteria also attach to this type of rock, acting as biological cleansers. Copper and silver beads may be added to this zone, which destroys bacteria and algae if this gets too high. The filter zone is held back by a pre-cast concrete retaining wall along the length, preventing the plants and haydite collapsing into the pool.

SKIMMER

A curved sieve skimmer sucks leaves and debris from the waters surface. An access hatch has been placed within the dock so that this can be emptied out by maintenance staff. This should be done every week, especially during autumn and spring, to ensure it does not get blocked. The skimmer has been detailed below.



Advantages of this type of filter:

- Appropriate for minor impurities
- Removes excess algae
- The sieve is self-cleaning, despite the high cleansing factor,
- The sieve does not clog up

SKIMMER KEY

1 Skimmer inflow
2 Skimmer flap
3 Curved sieve
4 Container for catch tray
5 Float guage
6 Line back into pool
7 Escape flap for animals

Water flows over the top of the auto-adjustable skimmer flap. This flap is connected to the float guage so its height is automatically adjusted. The system will only allow the exact amount of water that is pumped out of the filter to enter the filter on the inlet.

Dimensions, 65mm x 37mm x 99 mm

Max. flow of 30,000 litres per hour

Surface Area of large pool = 1993.5 sqm
Average depth of pool = 1.8 m

Therefore Pool Volume = 1993.5 x 1.8
= 3,588.3 m3

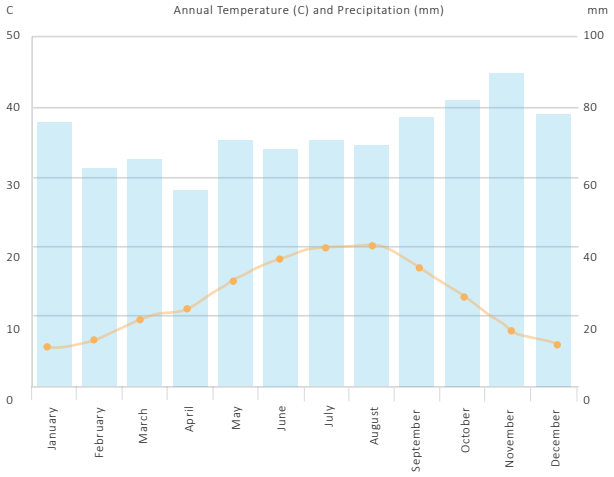
Time for all water to pass through skimmer with rate of 30,000 l/h = 119 hours (with 1 skimmer)

To filter all water in 24 hours requires 5 skimmers in large pool
119 h / 5 skimmers = 23.8 hours

Roof B Drainage summary diagram

I have summarised the key aspects/ things to consider regarding roof drainage, using Roof B as an example for this strategy outline. Due to the heavy rainfall Marseille receives throughout the year, as well as the curvature of the roof structure, this is an important factor to consider.

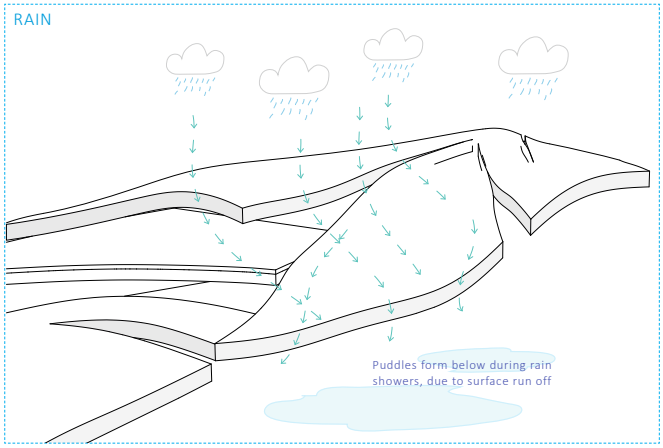
Direction of Axo view

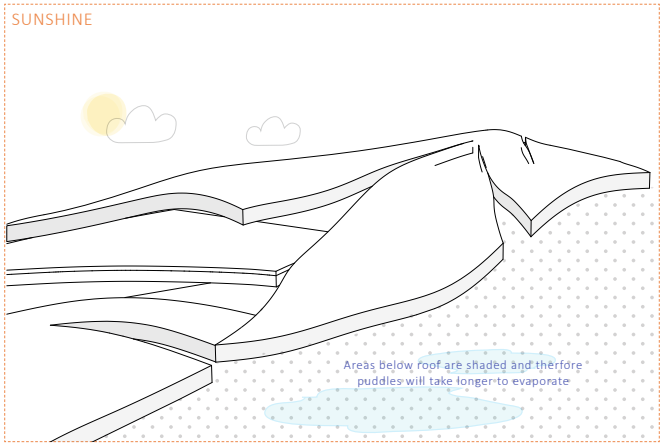


As the temperature in Marseille never reaches anything lower than 3 degrees Celsius, there is no risk of freeze- thaw cracking within the concrete roof structure.

Within my design, I can therefore take advantage of the warm sun along with the heavy rainfall. To be able to use the rain showers in the summer months to cool the internal areas of my building would be extremely environmentally economical and sustainable.

To avoid puddles and slippery surfaces on the ground, retaining water within the roof structure would be highly advantageous.

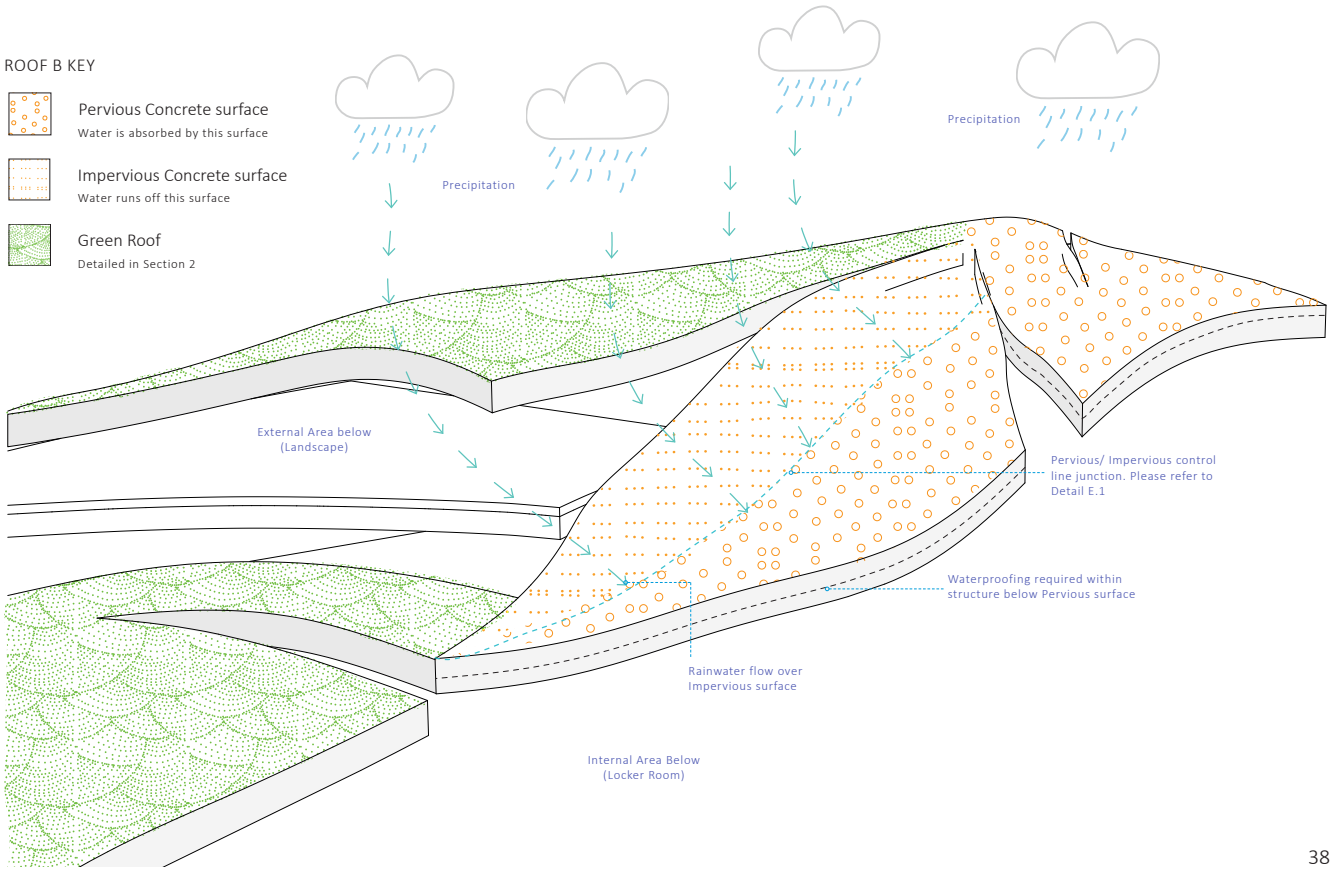




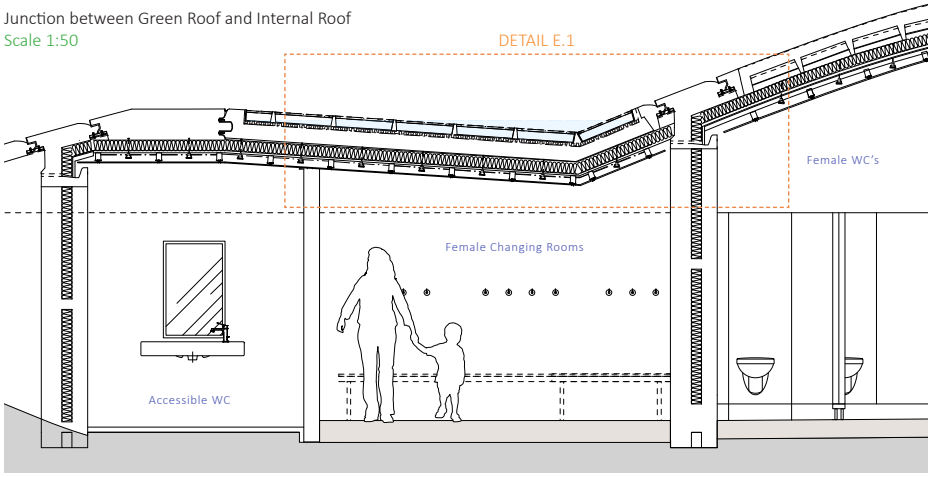
ROOF B STRATEGY DIAGRAM
Not to Scale

ROOF B KEY

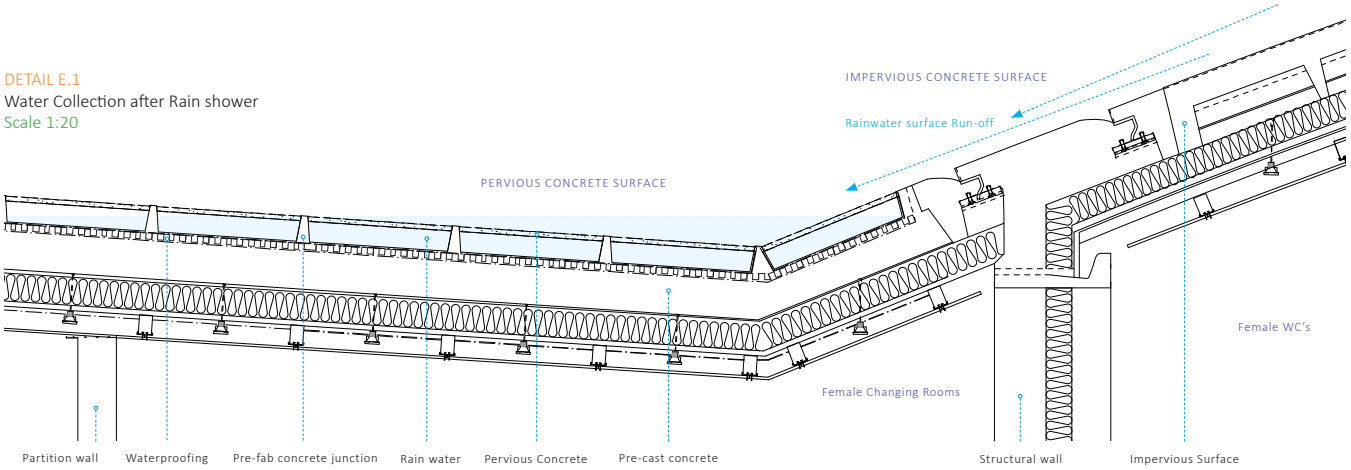
- Pervious Concrete surface — Water is absorbed by this surface
- Impervious Concrete surface — Water runs off this surface
- Green Roof — Detailed in Section 2

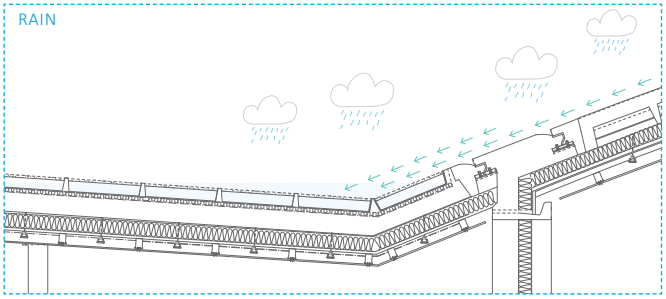


Junction between Green Roof and Internal Roof
Scale 1:50

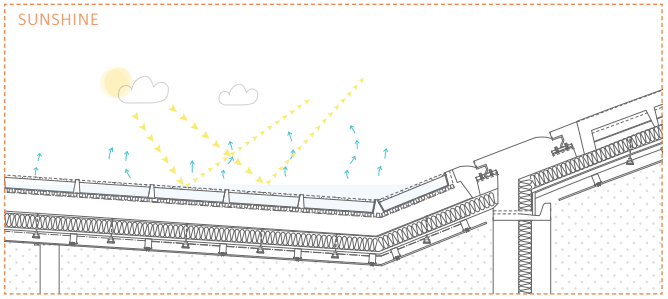


DETAIL E.1
Water Collection after Rain shower
Scale 1:20



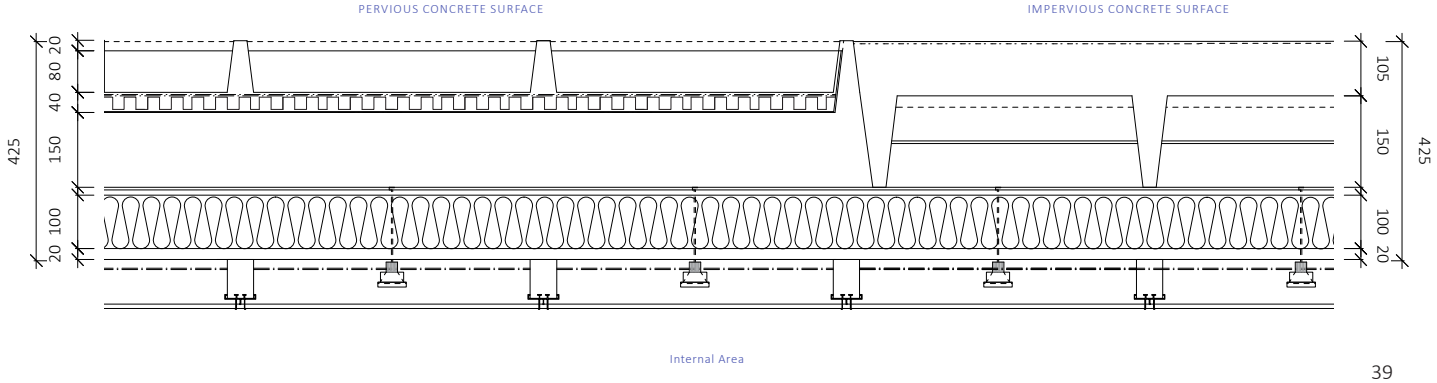


The water runs down the slope of the impervious concrete surface, until it reaches the pervious surface. Here the water settles creating a small pool on the roof structure. Waterproofing means this is not absorbed through the lower concrete surface.



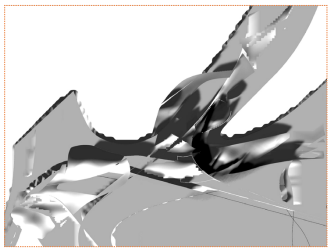
When the warm Marseille sun comes out after the rain shower, the settled water reflects some of these sun rays. This, along with the cool water on the porous roof surface helps to maintain a cool internal environment inside the building. The water will eventually evaporate and the cycle can begin again.

DETAIL E.2
Pervious/ Impervious Concrete Junction
Scale 1:10



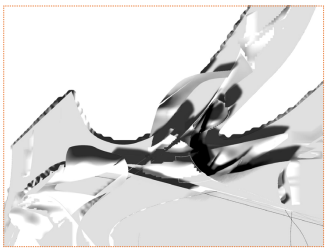
Below are a series of plan views all taken from the same angle, on the same date in each month (14th day) at the same time (15.30 pm). The only factor that is changing within each image is the month.

01 // January



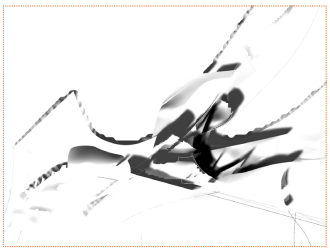
Average no. of daily sunshine hrs in January = 4 hours

02 // February



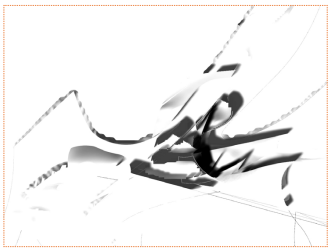
Average no. of daily sunshine hrs in February = 6 hours

03 // March



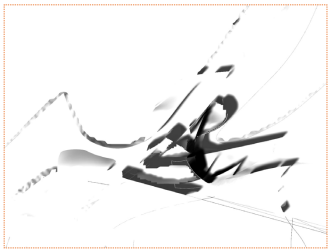
Average no.of daily sunshine hrs in March = 6 hours

04 // April



Average no. of daily sunshine hrs in April = 8 hours

05 // May

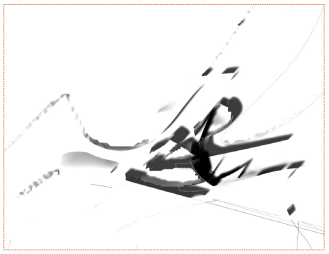


Average no. of daily sunshine hrs in May = 9 hours

06 // June

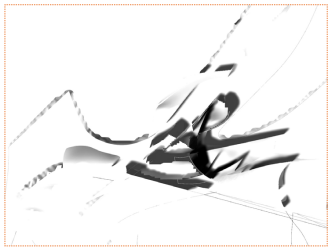
Average no. of daily sunshine hrs in June = 10 hours

07 // July



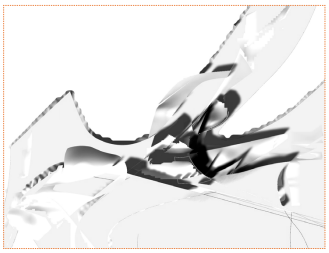
Average no. of daily sunshine hrs in July = 10 hours

08 // August



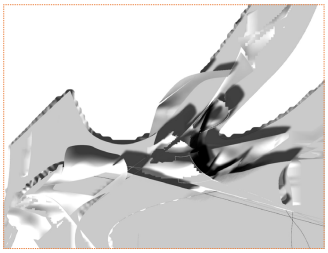
Average no. of daily sunshine hrs in Aug = 10 hours

09 // September



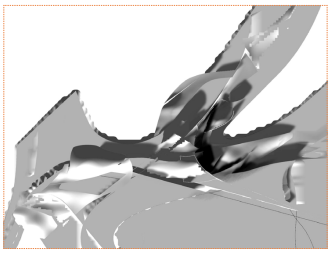
Average no.of daily sunshine hrs in September = 8 hours

10 // October



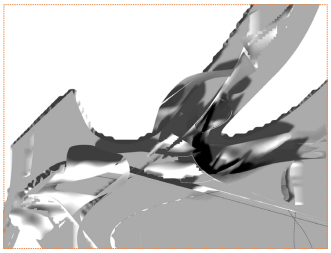
Average no. of daily sunshine hrs in October = 6 hours

11 // November



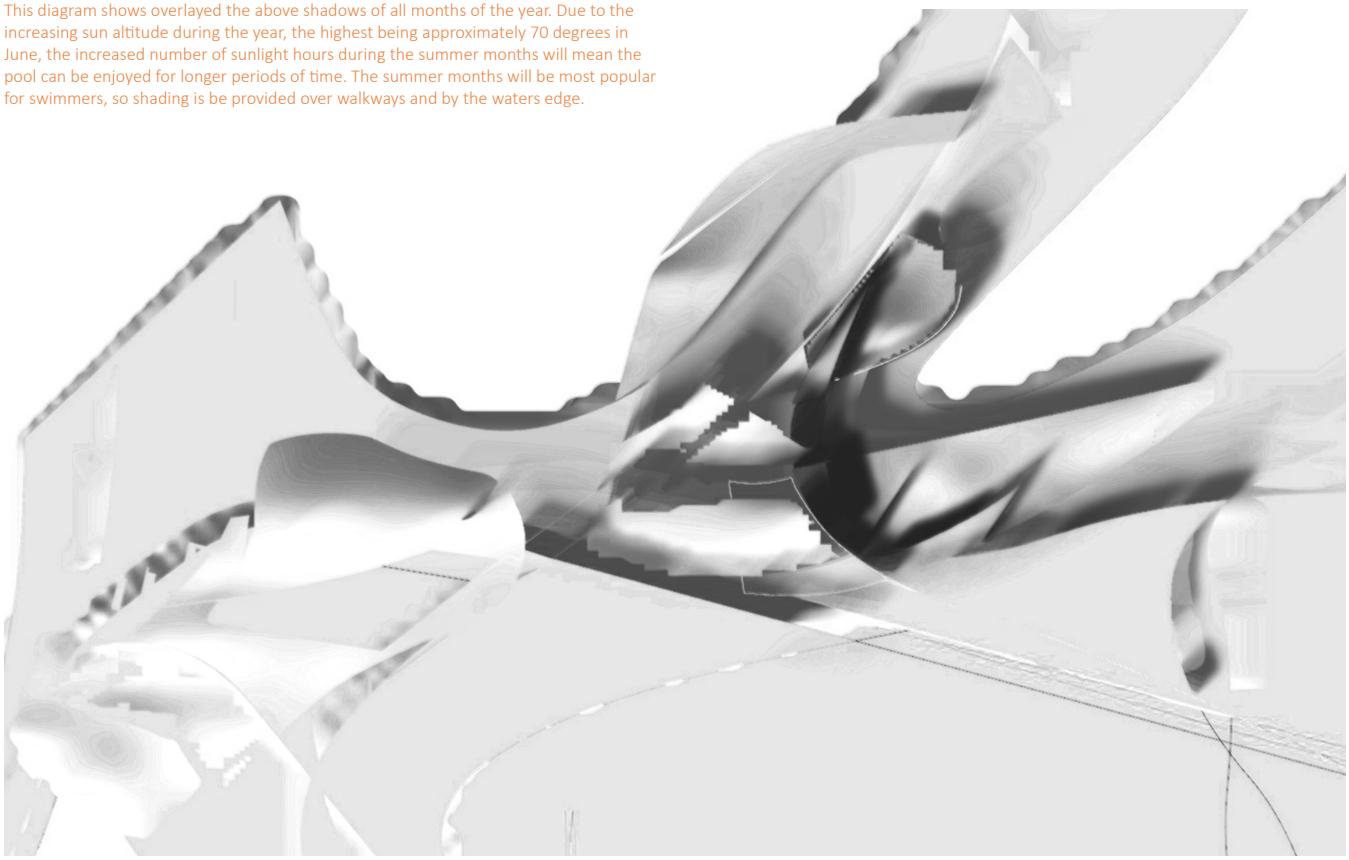
Average no. of daily sunshine hrs in November = 5 hours

12 // December

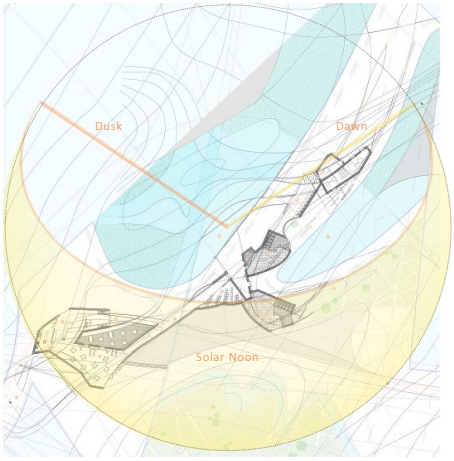


Average no. of daily sunshine hrs in December = 4 hours

This diagram shows overlayed the above shadows of all months of the year. Due to the increasing sun altitude during the year, the highest being approximately 70 degrees in June, the increased number of sunlight hours during the summer months will mean the pool can be enjoyed for longer periods of time. The summer months will be most popular for swimmers, so shading is be provided over walkways and by the waters edge.



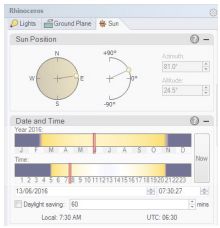
Sun Path Diagram over my Site, Marseille
June 14th 2016



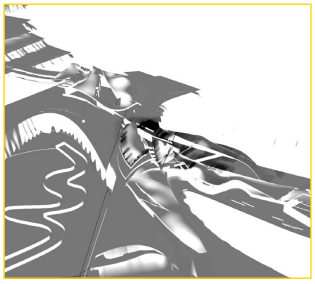
KEY SOLAR TIMES

04:23	//	Dawn
04:59	//	Sunrise
12:40	//	Solar Noon
20:21	//	Sunset
20:57	//	Dusk

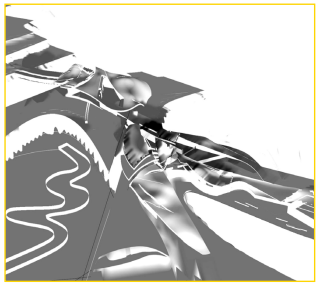
Using Rhino I selected the location and updated times during my chosen date to produce the series of diagrams below:



14.06.16 // 05:30



14.06.16 // 06:30



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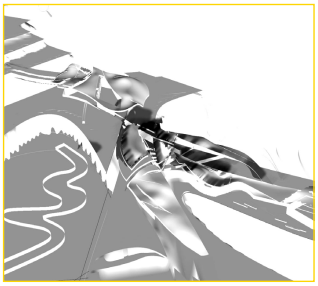
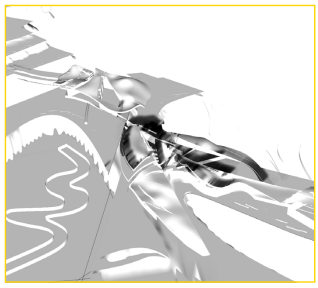


14.06.16 // 08:30



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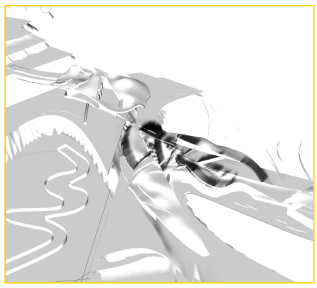

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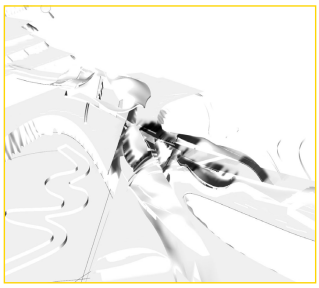


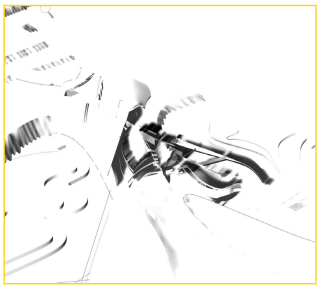
14.06.16 // 11:30

14.06.16 // 12:30

14.06.16 // 13:30

14.06.16 // 14:30

14.06.16 // 15:30



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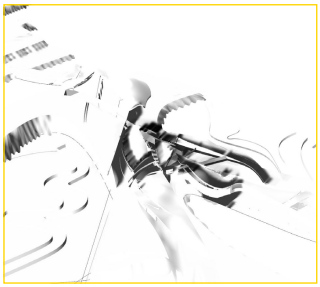

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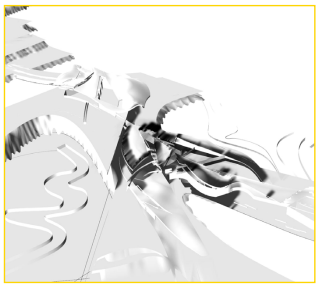

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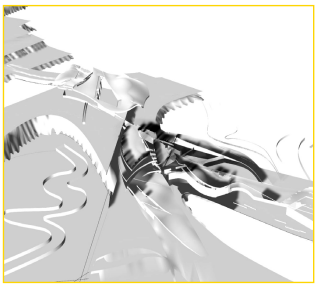

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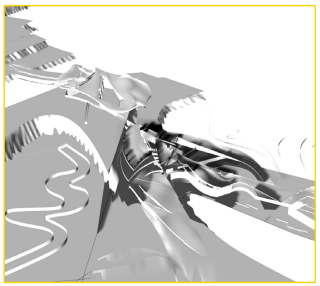

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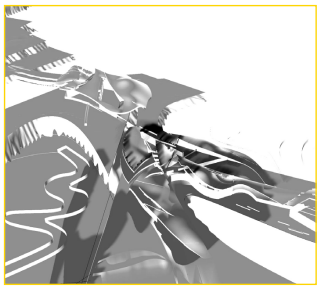
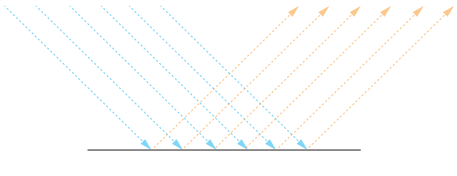
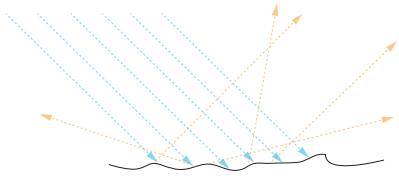


Diffuse reflection is the reflection of light from a surface such that an incident ray is reflected at many angles rather than at just one angle as in the case of specular reflection.

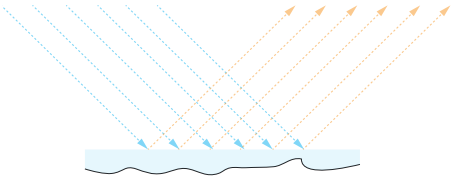
As my site is surrounded by water, the amount of diffuse reflection entering the various spaces within my scheme is relatively high. Below I have outlined three simple reflection scenarios.



Specular Reflection (Smooth surface)



Diffuse Reflection (Rough surface)



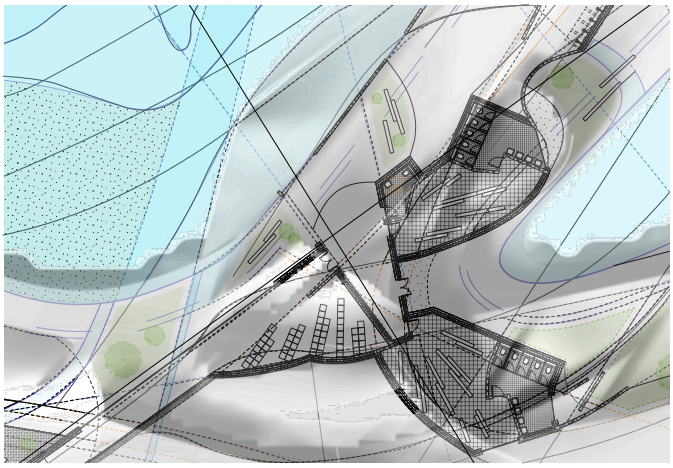
When wet, water fills in the crevices of the rough surface, resulting in specular reflection and a glare.

USE OF SPECULAR AND DIFFUSE REFLECTION WITHIN THE LANDSCAPE

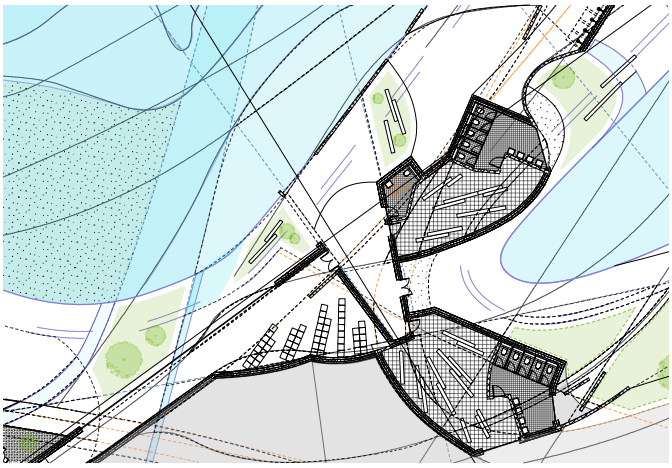
- When its hot and dry, the surface of the concrete will diffuse the reflection, meaning direct sunlight does not enter spaces.
- After rain shower, concrete surface becomes wet, water fills crevices and results in specular reflection - light beams will therefore enter spaces and warm them up during any cool spell

Water channels will therefore be carefully placed around the edge of the building to allow for these changes, taking advantage of both the sunlight and the rain that Marseille receives throughout the year.
Building will be lighter and warmer on cooler/ rainy days and spaces will be dimmer and cooler on sunny days, providing a perfect space to warm up or cool down depending on the time of year.

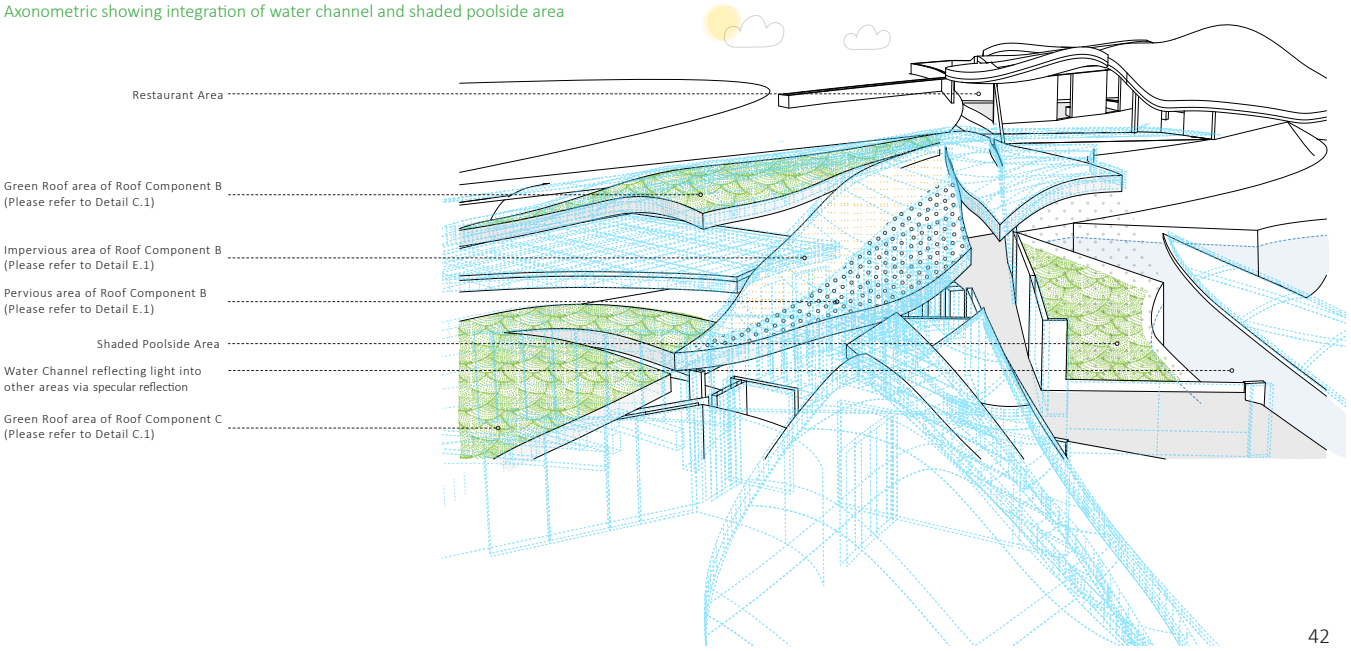
Plan with Shadow Study overlay



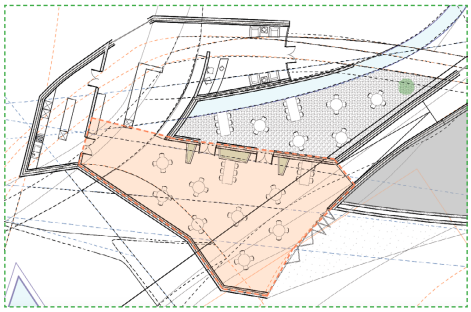
Addition of Water Channels and Shaded Poolside areas



Axonometric showing integration of water channel and shaded poolside area



Due to the location of the site, I am able to take advantage of both the strong North West Mistral wind, very specific and local to Marseille, as well as the sea breeze before it warms up over the land.



Restaurant Area highlighted in ORANGE above

NATURAL VENTILATION CALCULATION

Reception, Kitchen and Restaurant Area = 263.79 sqm

Restaurant Area = 138.5 sqm

Restaurant Capacity during peak times will be approximately 100 people at any time.

I am hoping to be able to rely on natural ventilation within this area, as it is in a high up position with slits in the roof to allow for air flow. Windows and folding doors are also able to be opened if temperature inside increases with higher capacity.

In order for a room to be cooled solely by natural ventilation, the space requires openings that cover 5% of the total floor area, on opposite sides. For the restaurant area, the opening will need to be a minimum of 6.93 sqm

Current area of openings = 20.4 sqm, therefore sufficient for the space

The maximum room heat gain that a naturally ventilated room can keep cool is 60 Watts per sqm

1 person gives off 80 Watts of heat

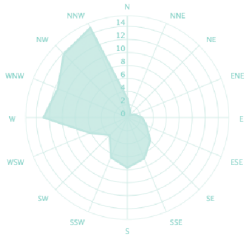
The restaurant, with 100 people present at any time will therefore produce approx. 8,000 Watts of heat

8,000 Watts / 138,5 sqm = 57.76 Watts per sqm

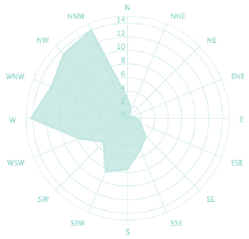
The capacity of 100 people will therefore work, allowing this space to be naturally ventilated.

Wind Direction Distribution charts (%) for most popular visitor months

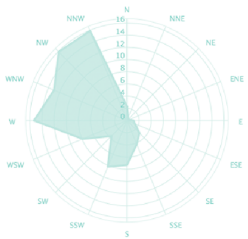
05 // May



06 // June



07 // July



08 // August

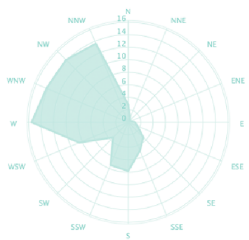
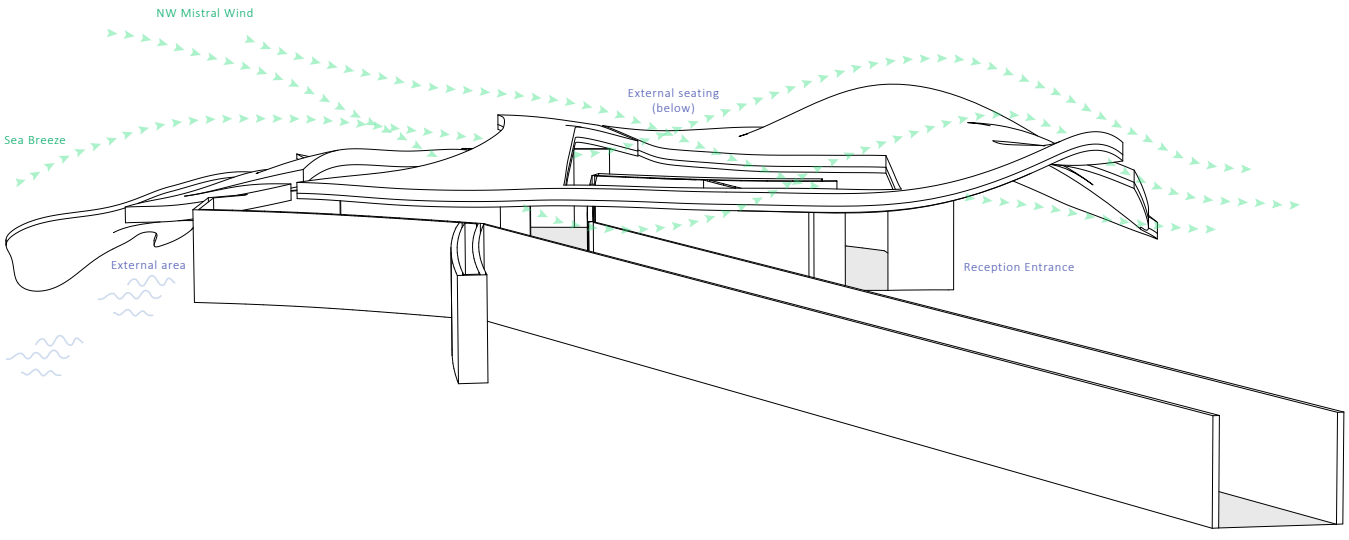


Diagram showing Mistral Wind and Sea breeze

Sea breeze is the onshore wind caused by the heating of air over the land at low altitudes.

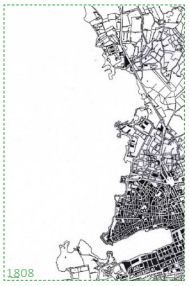
The Mistral is an offshore wind caused by the cooling of air over land at high altitudes.



Ramp leading to locker room/ changing rooms

SECTION 04

// Building Delivery



Marseille Fos' Port's facilities form the subject of constant development, due to the success of the Euroméditerranée urban renewal to this date. The organisation is excited about the future of Marseille Fos, wishing for growth to continue to increase. A quote from their website reads:

"The Port of Marseille Fos is constantly adapting its facilities in order to always be able to offer its passengers a better service."

They trust that the new Masterplan scheme will allow this to happen, due to the steady increase in cruise passengers and cruise ships over the past couple of years.

THE CLIENT: MARSEILLE FOS PORT ORGANISATION

The French port reforms of 2008 established a three-tier management structure of executive, supervisory and development boards. (see diagram on right)

1 THE EXECUTIVE BOARD

The Executive Board currently has 2 members :

Mrs. Christine Cabau-Woehrel

Chief executive officer
Chairman of the Executive Board

Mrs. Chantal Helman

Director of Administration and Finance,
Member of the Executive Board

2 THE SUPERVISORY BOARD

Comprises 17 members :

- 5 government representatives: the Regional Prefect and representatives of the ministers of: des transport, the environment, economic affairs and the budget.
- 4 representatives of local authorities: the Provence-Alpes-Cote d'Azur Regional Council, the Bouches du Rhône General Council, Marseille City Council and the Western Provence New Conurbation Association.
- 3 staff representatives from the public establishment, including one management representative.
- 5 qualified individuals are chosen for their expertise in relation to activities specific to ports, development, the environment, maritime navigation, transport, the regional or national economy (including 1 representative of the CCIMP (Marseille Provence Chamber of Commerce and Industry) and 1 representative from the economic sector).

The 4 members of the Executive Board (in an advisory capacity), the Government Commissioner and the Auditor General attend meetings.

3 THE DEVELOPMENT BOARD

The Development Board comprises 4 panels and is made up of 40 members

12 representatives of the port community, chosen from the following categories:

- Companies based on the port
- Shipping companies serving the port
- Shipping line agencies based on the port
- Pilots working within the port
- Companies operating equipment within the port
- Port services companies operating within the port (in particular handling, transit and consignment companies, companies operating bonded warehouses, maritime brokers, transport companies and rail operators)
- 4 staff representatives from companies operating within the port, including at least 2 representing the staff of port handling companies.
- 12 representatives of local authorities or organisations located within the boundaries of the port. The list of authorities or organisations with a representative is compiled by the Prefect of the Provence-Alpes-Cote d'Azur region.
- 12 qualified individuals interested in the development of the port, including at least 3 representatives of authorised environmental protection associations and 3 representatives of operators and managers of land transport infrastructures.

The public as well as workers within Port Fos are therefore being represented in all meetings and decisions being made regarding the new Port develpment.

1 THE EXECUTIVE BOARD

Draws up the strategic plan, submits it to the Supervisory Board for approval and implements it.

2 THE SUPERVISORY BOARD

Adopts the GPMM's strategic guidelines and exercises continuous control over its management.

3 THE DEVELOPMENT BOARD

Consulted about the strategic plan and the GPMM's pricing policy.It may issue proposals and ask for questions to be included on the agenda for Supervisory Board meetings.

FUNDING BODIES

The three key funding organisations for the development of the Port:

Marseille Fos
La port euroméditerranéen

Because of the huge impact the new landscape I am creating will have on Port de la Joliette, which is owned by the Marseille Fos authority, the organisation will play a huge role in the masterplan project. The company is keen to continually develop the port in order to compete with other successful cruise destinations. Marseille Fos will be providing most of the funding for the development and the organisation of the company will also allow for all representatives to have their say on the development.

La Méridionale

Passenger cruise company La Meridionale connects Marseille to the following ports: Ajaccio, Bastia, Propriano, all in Corsica, as well as Porto Torres in Sardinia. The increase in the number of tourists wanting to visit Marseille after the masterplan has been completed will provide La Meridionale with more business. The organisation would benefit from the proposal, therefore supporting the project. Funding would make sure this is a success.

SNCM

Similarly to La Meridionale, SNCM connects Marseille to Corsica and Sardinia, as well as Africa. This includes Algeria and Tunisia. These vessels allow both cars and foot passengers. I am hoping that the introduction of the new landscape will increase the number of foot passengers that visit Marseille, due to the increased number of amenities brought to the port in comparison to what is already existing on the site.

ROLE OF THE CLIENT

As mentioned on the previous page, the Marseille Fos Organisation will be the client for this new development. The organisation will be extremely important to the implementation of the design as well as overseeing the budgetary and brief concerns. Marseille Fos willl be responsible for the upkeep and maintenance of the new landscape following handover of site from the Contractor.

A board of development officers would be first installed to form a clear set of outcomes and specification and assist in overseeing the tendering processes, alongside the Client and Quantity Surveyor.

it is important on a project of this scale and complexity that the client has prior knowledge of dealing with large phased schemes projected to last over substantial periods of time and subject to likely change, providing clear ambitions to be achieved by the Design Team. With the experience of the Euroméditerranée urban renewal so far, this gained knowledge by the organisation will be invaluable.

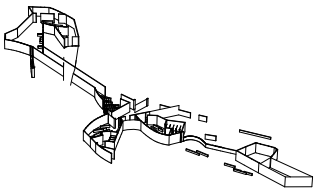
It is anticipated that upon the completion of the First phase (of four phases in total) of the development, new positions shall be created to address the changing outcomes of the site and assist in the liaising

The project will require a strong management structure to provide clear direction to the design team.

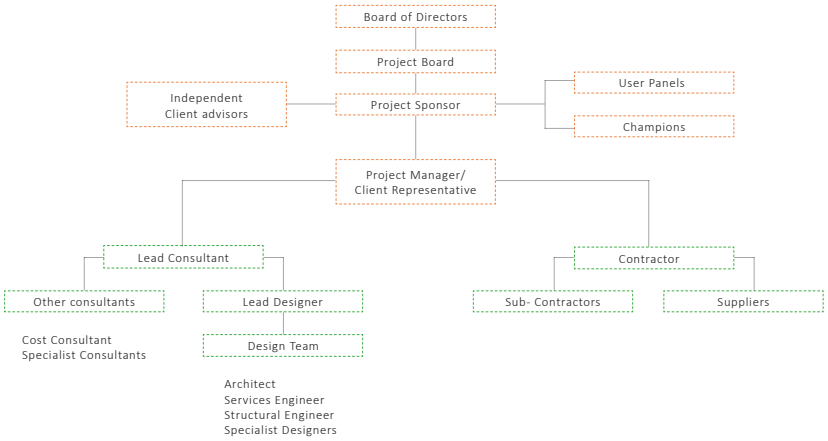
APPOINTMENT OF THE ARCHITECT

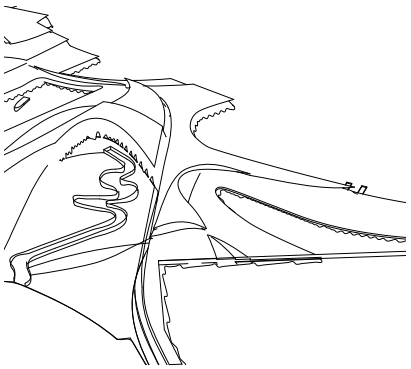
Due to the conceptual nature of the project, the architect for the Marseille landscape approached the Port authorities to be appointed on a consultancy basis, to allow them to research the concept of a new series of landscapes on the Port edge, working alongside a concrete specialist and contractor to carry out samples.

Upon completion of the speculative scheme the architects proposals shall be inspected by Marseille Fos to commence the design process with the Architect appointed via the RIBA Standard Agreement for the appointment of an architect. Initial terms of appointment shall secure the role of the architect as design team leader up to Stage 3, after this the terms of appointment may be reassessed.



It is crucial that project teams are structured properly from the outset, and that team members are selected carefully to give the project the best prospects for success. The composition of the project team may change through the duration of a project and may include many members, but an indicative, outline structure for a traditional project is shown below:





SPECIALIST CONTRACTORS

Due to the uniqueness of this Masterplan project, as well as the complex form and materiality, specialist contractors will be brought in at an early stage, to assist in the design development. Their shared expertise will be vital in order to ensure the project is feasible with the budget and time frame provided.

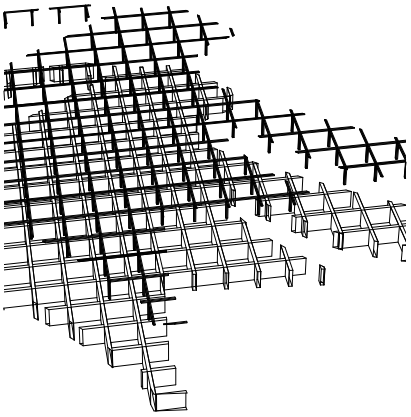
They may voice any concerns, resulting in fewer set backs further along the design process. A specialist contractor will be chosen to complete both the pre-cast and in-situ pieces to ensure there is consistency between all roof component pieces. The elements this concrete contractor will need to supply is outlined below:

- Concrete roof component pieces cast in-situ
- Pre-fabricated concrete roof components (delivered to site once in-situ pieces are complete)
- Bespoke structural wall to roof junctions
- Concrete ground to roof structure supporting piece

With all these pieces being supplied by the same contractor, it will ensure that uniformity is present within the scheme, enabling a well thought out and strategic construction phase, ending in a successful piece of architecture for visitors to enjoy.

Other contractors that will be required during later stages of the construction periods include:

- Landscape designer and contractor
- Green Roof contractor and supplier
- Bespoke glazing manufacturer and contractor



CDM REGULATIONS

The Construction Design and Management Regulations 2015 came into force on 6 April 2015. These regulations govern the way construction projects of all sizes and types are planned. This regulation has replaced Construction (Design and Management) Regulations 2007. CDM 2015 is the latest update to the regulations that aim to improve the overall health, safety and welfare of those working in construction.

The main changes from the CDM Regulations 2007 are:

- Clients' responsibilities have been strengthened and broadened
- The exemption for Domestic Clients has been removed
- The role of CDM Coordinator has been removed
- The new role of Principal Designer has been introduced to plan, manage, monitor and coordinate the pre-construction (design) phase
- The threshold for appointing a Principal Designer and Principal Contractor is if more than one Contractor is required on a project

RISKS MANAGEMENT

Because of the changes to the CDM Regulations, the architect, who now has the role of the lead designer is asked to ensure the proposed design can be build with the safety on site in mind. This risk management will require a summary of any risks or dangers that exist within the Marseille Port landscape scheme. I have summarised these risks as well as strategies and responsibilities in the table below:

RISK ON SITE	DANGER OF RISK	STRATEGY IMPLEMENTED
EXISTING SITE		
Site surrounded by water	Any investigative work of existing structure on water edge condition will require access by boat. The danger/ risk of drowning will depend highly on the weather conditions and currents at that specific time	Anyone visiting site by boat must be accompanied by an experienced person in suitable weather conditions. The coastguard must be informed of the trip and all essential life vests and pull chords must be worn at all times.
Rocks at waters edge	Along the edge of the water, especially near the harbour wall, there are many boulders and rocks making up the face of the structure. These may be loose and not safe to walk on.	No person is to walk on these rocks for any reason. If absolutely necessary, harnesses and hard hats must be warn and secured correctly. Person investigating must be accompanied by another experienced person to remain watching at all times.
CONSTRUCTION SITE		
Passing Ships and Vessels	The site sits alongside one of two port entrances. Vessels and other smaller boats will be passing by the site during early stages of construction. Large barge with crane on will be a risk to smaller boats passing in front,	Coastguard and Marseille Fos Organisation will be required to stop/ reduce access to barge route, to and from the shoreline. This will reduce the risk, a pilot boat and coastguard should look out for any boats not abiding by this enforcement.
Water and Electricity	Any machinery requiring electricity could cause electricution on user, level of danger depends on size and power of equipment being used near water. Some of these could be large and extremely dangerous.	All machinery to be earthed to ground during use. No machinery is to be turned on if wet or near waters edge. Electrical heavy duty Insulating gloves to be used when handling heavy machinery, if required near waters edge.
Heavy lifting	Large components and vast amounts of concrete to be delivered to site by boat. Some of the smaller sized pieces may require carrying by site workers. Back damage could result from any persons lifting anythingt too heavy.	No person is to lift anything exceeding 25kg. Anything above this weight to be marked 'heavy' and may be carried by two people instead or with machinery. No person should be expected to lift anything too high without assistance.
Powerful machinery	With heavy duty machinery being used on site, any accidents that happen could be extremely dangerous. Although all construction workers will be trained, likelihood of accidents can be reduced.	If any worker is on medication that may cause drowsiness, or with alcohol or drugs in their system they must be banned from working with machinery. Workers must be fit to work, those close to machinery to wear helmet, goggles, high vis and headphones.
Risk of collapsing buildings	During the demolition of the existing site, falling objects and dust are risks that will most definitely be present. Asbestos may also be a risk and precaution must be made so none is exposed.	Site survey to be carried out before demolition commences. Hard hats, high vis and goggles to be worn at all times during demolition. Sensible demolition procedure to be taken and any asbestos to be disposed according to regulations.
NEW LANDSCAPE/ BUILDING		
Swimming pools	The swimming pools are open to all members of public as well as visitors to Marseille from the passenger terminal. The pools vary in depth and therefore a risk of drowning.	All children under the age of 14 must be accompanied and supervised by an adult. A lifeguard will be present during opening hours and all safety equipment to be easily accessible in case it is needed.
Green Roof Pathways	There are pathways present on a couple of the green roofs, if any person strays off this provided walkway there is risk of falling onto the hard ground of the landscape below.	Railings to be provided along edge of all pathways on roof structure. Position the top of the handrails at a height of 900mm to 1000mm above the surface in order to comply with Building Regulations.
Slippery surfaces	After rainfall or showering some areas of the new landscape may become wet and slippery. This may result in, especially vulnerable, visitors such as elderly people and children being at greater risk.	Non slip surfaces surround pool side and showering area. No running is allowed near waters edge. First aid kit to be stored in lifeguard storage room and kitchen in case of any accident. These areas will be clearly sign posted.
Childrens play area	Within the landscape is a childrens play area consisting of slides, swings and a roundabout. Risk of falling from equipment may result in children being injured.	Soft sandy/ grass surfaces to cover all playground area to help soften any fall. First aid kit to be stored in lifeguard storage room and kitchen in case of any accident. Children under age of 12 to be supervised by adult at all times.

BUILDING MAINTENANCE

OPERATIONAL RISK

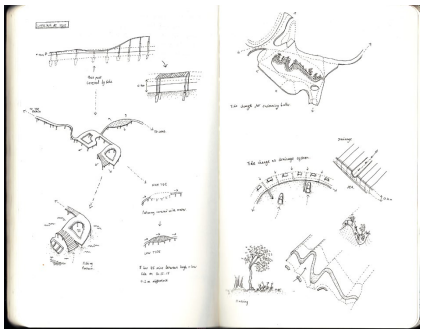
Identifying and eliminating areas of risk is very important in order tp protect the Marseille Fos organisation as well as its reputation. Any work that needs to be carried out at height needs to comply with BS 7985. Because the building is only one storey and linear, very little risk is involved with the operation, maintenance and cleaning of the building and surrounding landscape.

MAINTENANCE STRATEGY

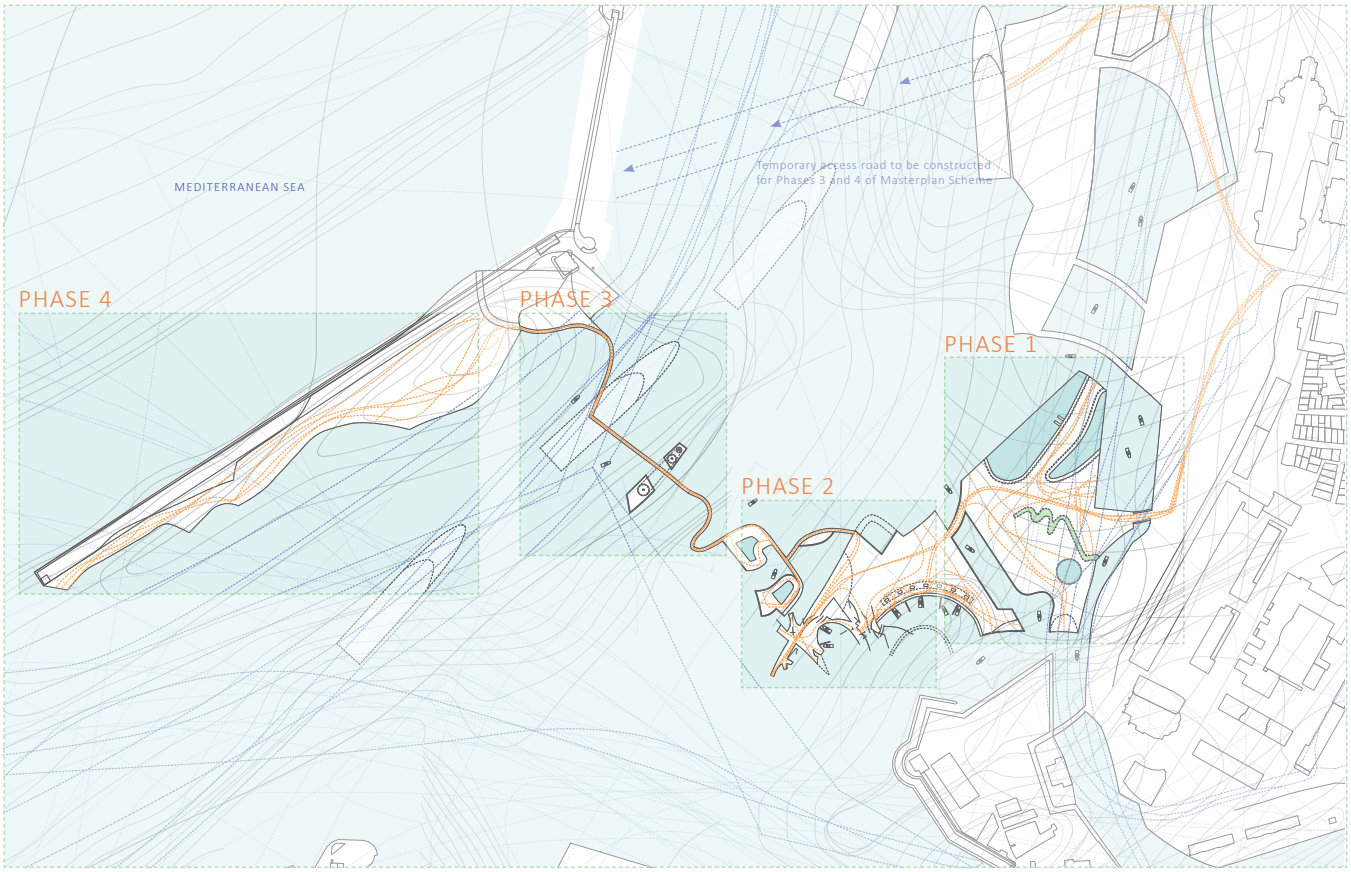
Building maintenance includes all structures: landscape, internal and external areas as well as roof structure. Anchor devices and eye bolts to be provided where neccessary, these will conform with British Standards. All swimming pool skimmers to be checked and cleared every 6 months.Swimming pool base to be kept clear with long pole and net.

CLEANING STRATEGY

To keep the building in a good condition, a thorough clean of all building components to take place annually. Windows to be cleaned and maintained from inside of building by specialist contractor, who must carry out an independent risk assessment. Weather conditions and wind speeds to be assessed by contractor before commencing works and should be monitored throughout. Gutter to be cleaned using specialist equipment. These should be checked and cleared annually, any blockages should be removed. The cleaner should ensure that when washing the concrete floor that no sitting water is left and warning signage is to be placed in a clearly visible location until the floor has completely dried. Landscape maintained by full time gardener.

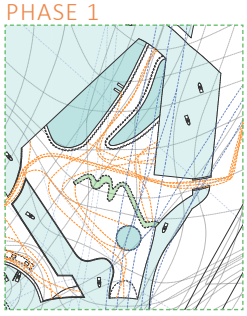


MASTERPLAN CONSTRUCTION PHASES (1-4)



MASTERPLAN KEY: PHASES 1-4

PHASE 1



Swimming Pool Landscape

YEARS 1-2

This landscape comprises of the following:

Reception Area, Self service restaurant, Indoor and outdoor seating areas, Locker Room, Changing facilities, Showers, Lifeguard Storage Area, 2 x Swimming Pools, Landscaping, Childrens play area.

This will all take place during the first couple of years of construction. The adjacent landscape (Fish market and fishing pontoons) within Phase 2, will commence 9 months into the Phase 1 construction period. This will ensure that the Pool landscape can be enjoyed by visitors once it is complete, without large amounts of construction taking place next door.

The experience gained through completing the first series of landscape will mean that the rest of the masterplan construction will run smoothly.

PHASE 2

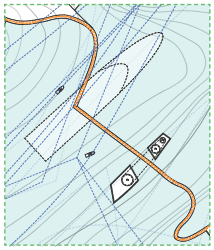
Fish Market and Fishing Pontoons

YEARS 2-4

This landscape will provide the city with a new fish market location, replacing the temporary market that takes place each day near the Vieux Port. This landscape will also contain a viewing platform across to Marseille's Vieux Port.

The landscape will be constructed in the same way as the swimming pool landscape, using the same contratctors and suppliers for all masterplan elements will therefore create continuity between sections and any lessons learnt in Phase 1 can be implemented within Phases 2, 3 and 4. This will be advantageous for the whole design team and contractor.

PHASE 3



Bridge/ Port Entrance

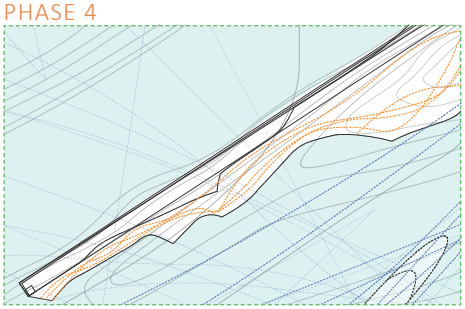
YEARS 3-5

The new entrance to Marseille Fos, for all passenger cruise vessels is through a moving entranceway. This acts as an opening to the port as well as a bridge connecting visitors from the fish market landscape to the urban beach.

For the construction of this phase, this area of the port will remain closed for approximately one month so that vessels do not hold back the construction time. This will mean the bridge is finished a lot quicker.

There will be little disturbance to the Port's vessels and cargo as the main entranceway is far from the site location. Time is therefore not such an issue in this scheme, as it is in a relatively cut off part of the sea-scape/ city (no important buildings are being demolished)

PHASE 4



Urban Beach-scape/ Beach Shop

YEARS 4-6

The urban beach will be constructed using sand dredged from the sea bed, which takes place every six months, to ensure the new entranceway is deep enough for all passing vessels. This sand will need to be treated to ensure no pollutants from the sea bed/ port are present before use.

Ecological and environmental studies will take place before the sand is deposited on the site. No harm to the ecosystem will be caused.

Although this part of the sea/ harbour is not used, the addition of land may require a planning strategy to ensure it complies with all regulations. Due to the increasing Port size over the past few years, this is something the Marseille Fos organisation will be familiar with and can therefore advise the team on the best way to go about this.

This is the final phase of the masterplan construction. Once complete, the temporary access route can be removed and all cargos, vessels and passenger cruise ships can use this stretch of newly dredged water again.

Marseille Fos willl be responsible for the upkeep and maintenance of the new landscape following handover of site from the Contractor.

In the table below I have outlined the seven RIBA work stages, alongside key points within the project delivery.

RIBA Plan of Work 2013

"The RIBA Plan of Work 2013 has been developed to ensure that the many subjects that will facilitate successful project outcomes are considered in a holistic manner providing a Plan of Work suitable for a 21st century collaborative project team."

They describe the 2013 plan of work and the introduction of BIM as moving from a previous analogue past into a much more digital future. Clarification of the detail required for BIM at each stage is also beginning to be discussed between RIBA and the UK Government so practices know where they stand when it comes to, for example, planning applications.

In most projects 17% of the overall fee is spent on concept development. Although this seems relatively small, this stage will require a large payment from the client. This is 7.25% of the pre-tender estimated cost of the building work

RIBA PLAN OF WORK STAGES 2013

	Preparation		Design			Pre- Construction		Construction	Use
TASKS	0	1	2	3	4		5	6	7
Core Objectives	Discussions with client regarding brief/ core project requirements. Site review/ feasibility studies.		Preliminary cost information and project strategies are discussed in accordance with design programme		Developed design prepared	All technical design to be prepared. To include architectural, structural, building services, specialised contractor information		Offsite manufacturing and on site construction in accordance with construction sequence	Used in accordance with schedule of services
Procurement	Best procurement method discussed based on Marseille Fos development experience		The project programme is discussed with Marseille Fos organisation and design team			Project Programme reviewed and discussed with client and QS		Administration of building contract, including site inspections and review progress	Building contract administration concluded
Programme	The Project programme is discussed with Marseille organisation and design team		The project programme is reviewed with contractors who have been already appointed. If changes need to be made, discussed with client			Project manager to review programme from this stage onwards to ensure all members of design team and contractors meet specific deadlines			
Planning	Pre-application submitted as soon as possible once client approves		Planning approved and consent given. If any changes need to be made these are sent back to planning authorities						
Architect Involvement	Architect appointed by Marseille Fos organisation based on prior experience of large scale projects		Architect roles are outlined and design is developed with contractor guidance.	Final design to be discussed and signed off by Marseille Fos		Architect present to sign off concrete sample testing pieces	Final sign off for all building components and finishes	Architect to visit site regularly to ensure all built pieces up to correct high standard	
Concrete	Specialist concrete contractors are appointed		Concrete contractor expertise are used to help with design development			Concrete samples are tested on site in same weather conditions	Any changes to mixture/ joints to pre-fab pieces are made	In situ concrete pieces are cast on site and pre-cast elements delivered	

SPECIFICATION, QUALITY AND COMPLETION

CONCRETE CONSTRUCTION

LANDSCAPE CONSTRUCTION

The main component within the landscape and building design is concrete. A specialist concrete consultant will be appointed early on in the project so they can advise the design team through the earlier stages of development, to avoid any set backs later on in the programme. This early involvement with the supplier and contractor will also allow a better idea of costs and these may be fixed earlier than they would have been otherwise.

The concrete landscape is the first to be constructed and to be mainly cast in-situ. This will be done in two layers, which enables the first layer to act as a sample. If any improvement or changes in the concrete finish need changing, it can be altered before the second and final layer is added on site. This is to be signed off by an architect who will be present on site during this stage. Although the client is able to have a say in this, all responsibility for signing off any successful test component is handed to the architect.

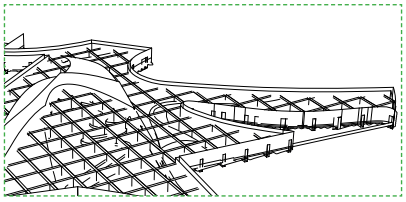
The same contractor will be in charge of delivering both the landscape concrete and roof elements to the site. Concrete is to be transported to the site by barge, coastguard is to be given notice of any barge movement to ensure all smaller boats are not in the way.

ROOF CONSTRUCTION

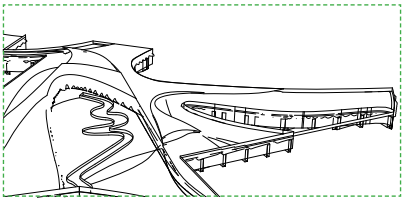
Once the landscape is completed, the in-situ roof components can be cast on site. The same contractor, who works closely with the project architect will be constructing both the in-situ and pre-cast roof elements. Test mock up pieces are to be carried out on site in the construction stage. In order to achieve a concrete finish, texture as well as colour, the concrete will need to be tested on the site rather than factory.

To the right I have annotated the 'test site' location within the scheme. Here, in-situ concrete pieces can be cast. In the same weather and lighting conditions, this piece can be compared and contrasted with a sample pre-cast concrete roof component. Once the architect is happy with the product, colour and texture of concrete is uniform, the concrete will be signed off. The signed off concrete element will remain on site until construction is complete, to act as a reference calibrating piece, to which all other pieces need to match.

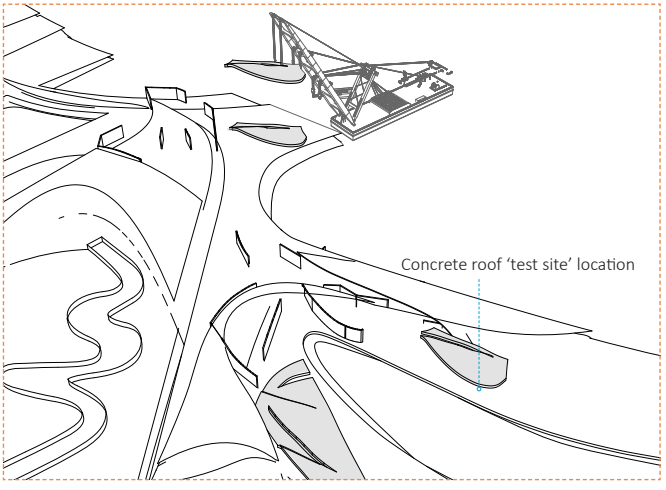
The testing of the concrete will ensure the building and all of its components are to the highest quality and as the design team agreed. Money will be paid up front, during the testing period, any unsatisfactory pieces will be recyled.



First concrete landscape 'test' layer before sign off

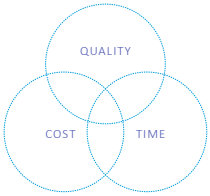


Final approved concrete landscape build up after sign off



CHOICE OF PROCUREMENT

The choice of procurement method is extremely important, especially within such a large scheme in Marseille. The final landscape and building product will depend on what method is chosen, as each will have certain pros and cons in relation to the project and design. There are a couple of procurement methods I am going to compare and contrast, Design and Build as well as Management, in order to find the one that is best suited to the Marseille Port landscape scheme.



QUALITY — Quality of the final landscape and building is extremely important within the new port landscape development. This is not something I wish to be compromised.

COST — The Euromed development so far has cost billions, I therefore belive that an additional cost of a few million will not be an issue for the already extremely large budget.

TIME — Due to the advantageous location of the site, it does not interfere with or cause any major disturbance to the city of Port Fos. Time is therefore not a great issue whithin the development scheme.

TRADITIONAL PROCUREMENT

This is probably the most commonly used method of procurement and it is suitable for:

- All clients, including inexperienced clients
- Complex projects and projects where functionality is a prime objective
- Time predictability
- Cost certainty.

The client develops the business case for the project, provides a brief and budget and appoints a team of consultants to prepare a design, plus tender documents. The client appoints the building contractor to construct the works to the design, by the contract completion date and for the agreed price. Usually much of the work is sub-contracted to specialist firms but the contractor remains liable. The consultants administer the contract on behalf of the client and advise on aspects associated with design, progress and stage payments which must be paid by the client. The separation of the contractor from the design can mean missed opportunities for contractor or specialist contractor to input.

This strategy is a low-risk option for clients who wish to minimise their exposure to the risks of overspend, delays or design failure. However, the exposure to risk will increase where the design phase is rushed, where unreasonable time targets are set or where the tender documents are not fully completed.

DESIGN AND BUILD PROCUREMENT

A method of procurement that involves the contractor being responsible for design as well as construction, it can be suitable when:

- The building is simple rather than complex, is not highly serviced and does not require technical innovation
- Brief for scope design is likely to change
- Programme can be accelerated by overlapping design and construction activities
- There is cost certainty
- Single organisation is required to take responsibility and risk for design and construction

Design and build methods offer certainty on the contract sum and bring cost benefits. The close integration of design and construction methods and the relative freedom of the contractor to use their purchasing power and market knowledge most effectively can provide a client with a competitive price.

With this method, it is possible to ensure a quicker start on site, and the close integration of design and construction can result in more effective programming. Time, however, is needed by the client's consultants to prepare an adequate set of requirements, and time is needed to compare and evaluate the schemes from competing tenderers. Once a contract is signed, any changes by the client can prove costly. Although there are many advantages, the employer lacks control over the detailed design and client is required to commit to a concept design at an early stage and often before the detailed designs are complete. Due to the complexity of the new landscape, some aspects of this method are overriding the advantages.

MANAGEMENT PROCUREMENT

Key points for managements procurement, relating to Marseille Landscape construction:

- Management procurement methods are best suited to large, complex, fast moving projects where early completion is desirable.
- It is an advantage to appoint the management contractor at an early stage, so that their knowledge and expertise are available to the design team throughout the pre- construction period.
- The client has a considerable degree of flexibility on design matters. The design can be adjusted as construction proceeds, without sacrificing cost control. This would not be possible with traditional methods.
- The management contractor can select specialists and order materials with long lead-in times for delivery in good time without any of the uncertainties and complexities which attend traditional nomination procedures

The client appoints designers and a contractor (management contractor) separately and pays the contractor a fee for managing the construction works. A feature is the early appointment of the contractor to work alongside the design team to develop a programme for construction and contribute to the design and costing of the works. The works are let competitively by the management contractor to subcontractors and specialists in appropriate works packages. This approach often means that design and the start on site overlap, with the design and tender packages becoming available at a time that suits the construction programme.

CHOSEN PROCUREMENT METHOD : MANAGEMENT PROCUREMENT

Reasons for choice:

- Marseille Fos organisation is an experienced client with existing teams of advisors, therefore a good team for decision making processes, with three tiers representing different people involved with Port Fos.
- The complex large scale projects requiring additional management, expertise and good planning, which Marseille Fos already has great experience and knowledge of
- Design and construction phases allow for an early start on site, multiple elements proceed in parallel. Contractor flexibility during works, therefore abe to carry out concrete testing
- Most effective competition on cost for design, works and sub contract packages. Value engineering is a key element and there are direct benefits to the client
- This procurement method allows for the highest level of buildability, as the contractor is involved from an early stage. This will result in an increased specialisation, especially for concrete construction.
- Client retains flexibility for design changes at any time until work package is completed.
- No firm price at commitment to construct. Contractor not responsible for managing cost of works, this means that the client remains in control of costing. There is also a clear separation between design and management and the degree of client control is variable, meaning architect is able to sign off elements.

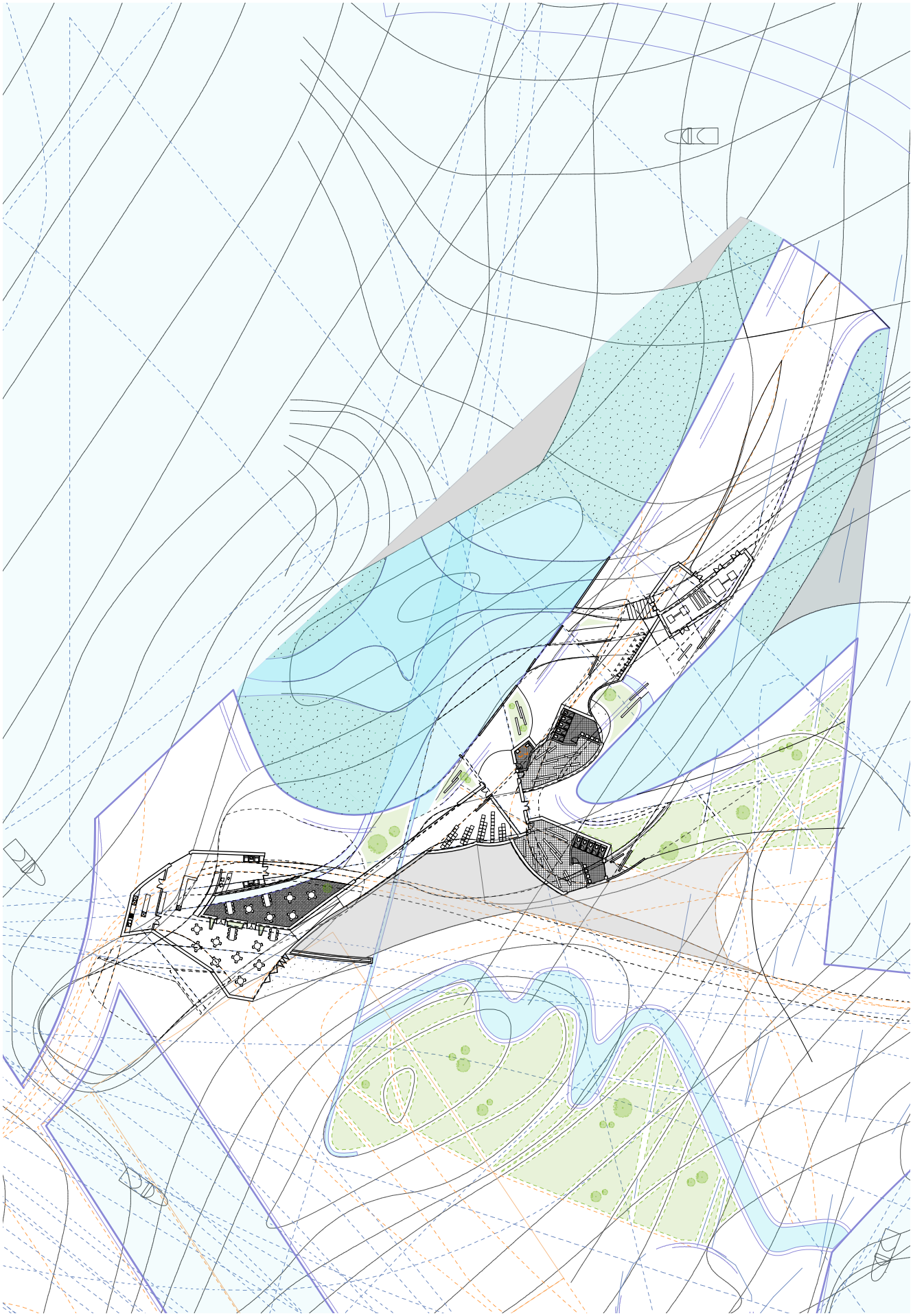
APPENDIX

DRAWING APPENDIX // General Arrangement Plans and Sections

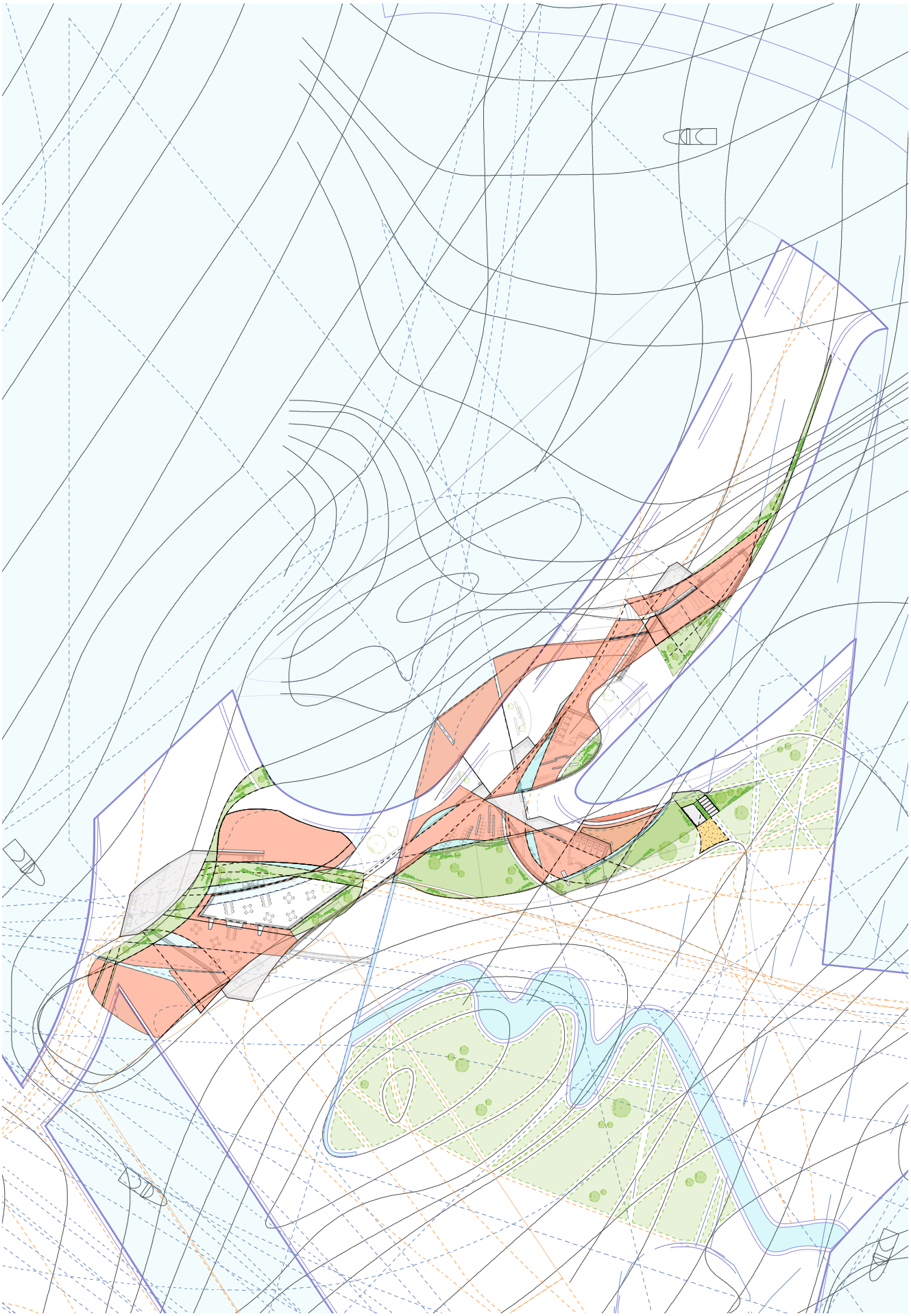
APPENDIX CONTENTS

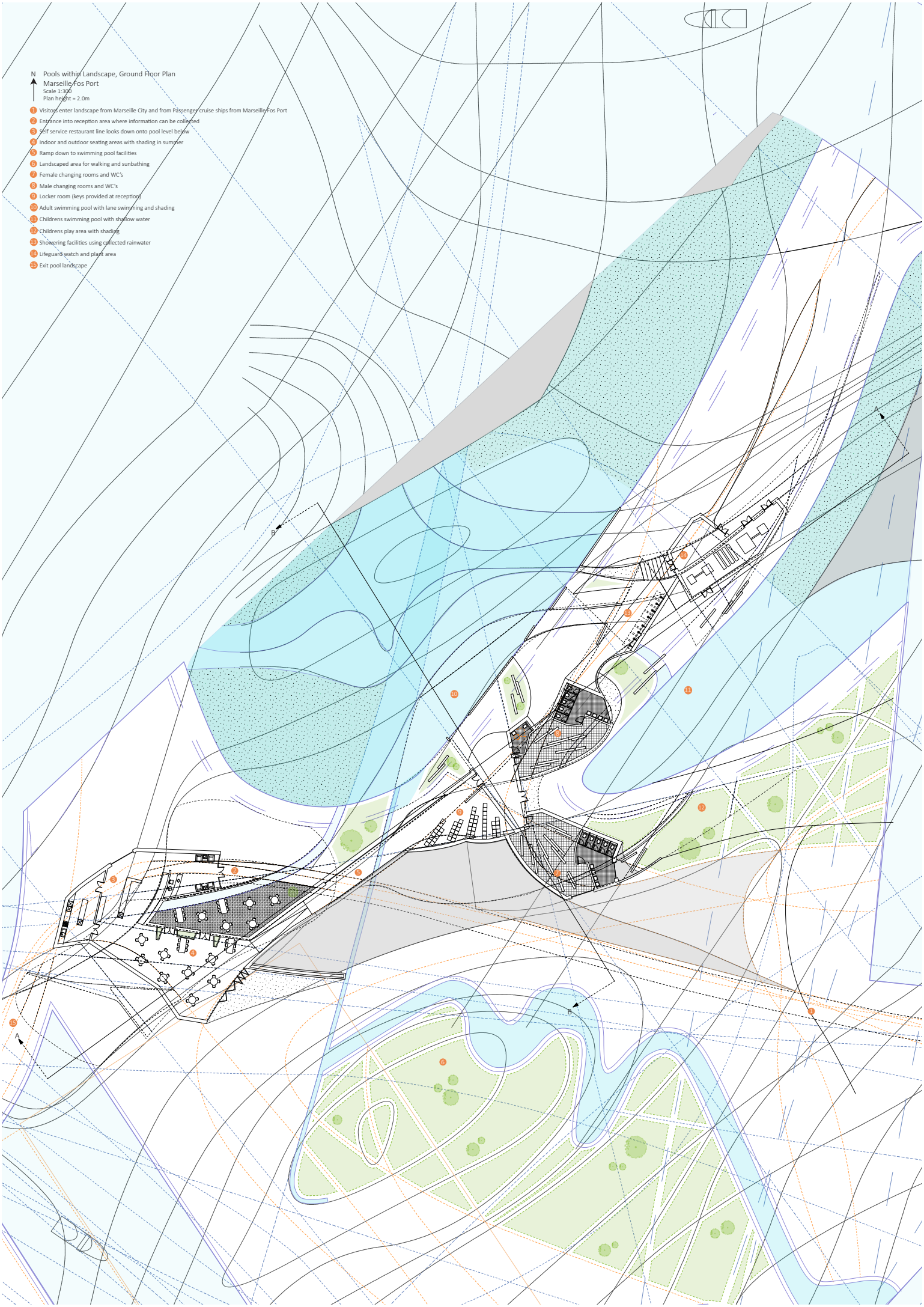
APPENDIX // Ground Floor Plan

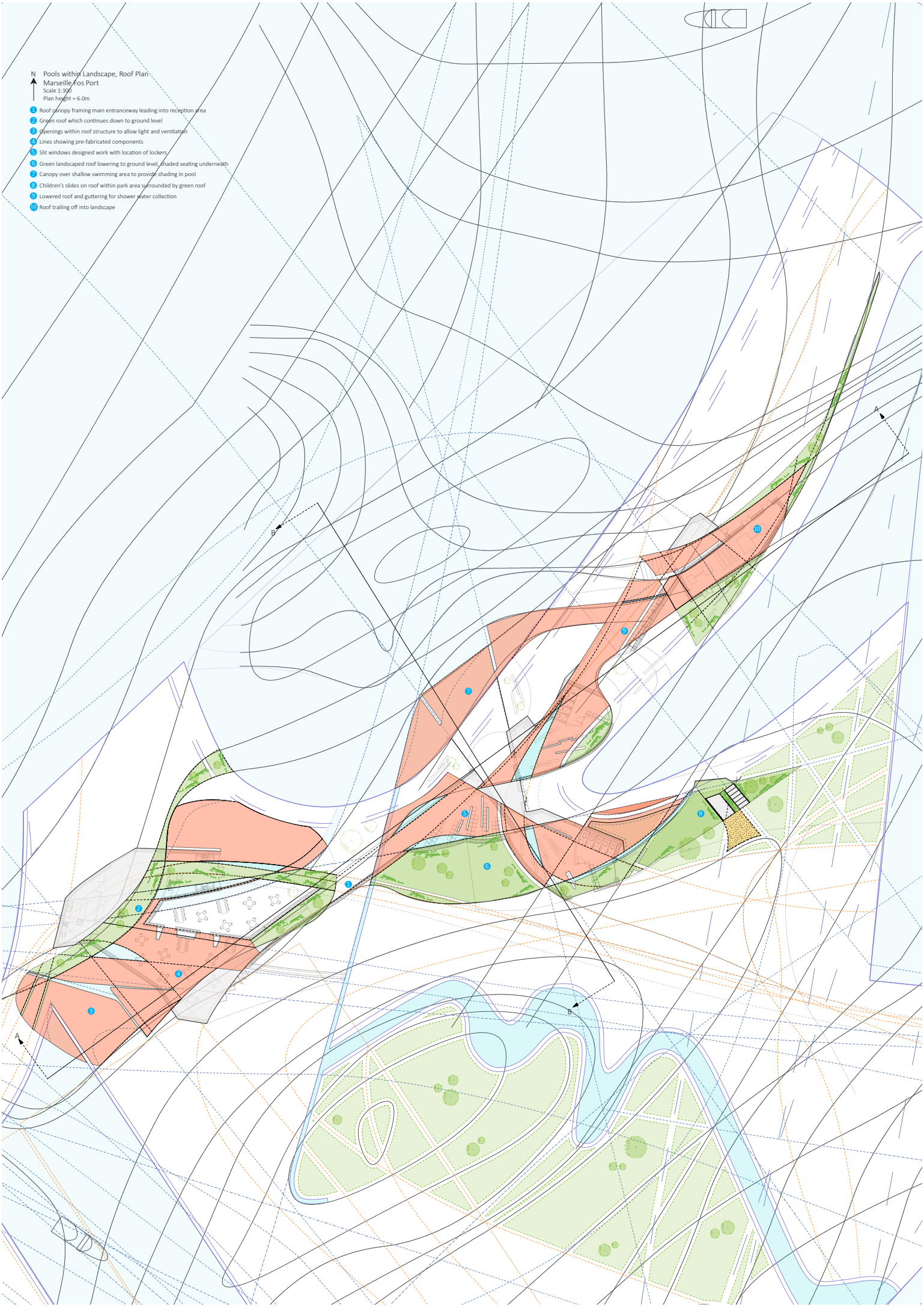
Scale 1:500



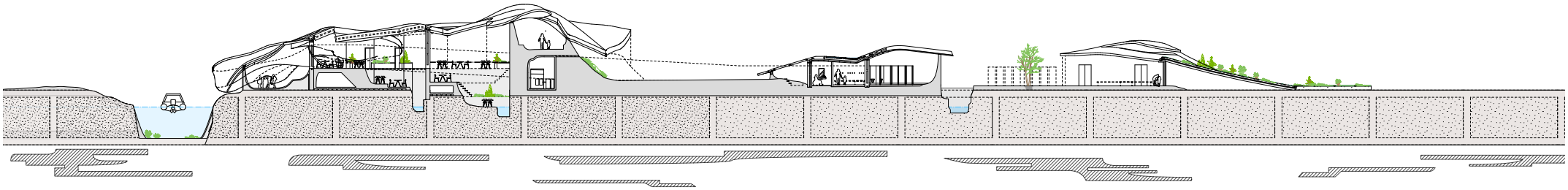
APPENDIX // Roof Plan
Scale 1:500




N
Pools within Landscape, Ground Floor Plan
Marseille Fos Port
Scale 1:300
Plan height = 2.0m
1 Visitors enter landscape from Marseille City and from Passenger cruise ships from Marseille Fos Port
2 Entrance into reception area where information can be collected
3 Self service restaurant line looks down onto pool level below
4 Indoor and outdoor seating areas with shading in summer
5 Ramp down to swimming pool facilities
6 Landscaped area for walking and sunbathing
7 Female changing rooms and WC's
8 Male changing rooms and WC's
9 Locker room (keys provided at reception)
10 Adult swimming pool with lane swimming and shading
11 Childrens swimming pool with shallow water
12 Childrens play area with shading
13 Showering facilities using collected rainwater
14 Lifeguard watch and plant area
15 Exit pool landscape
A
B

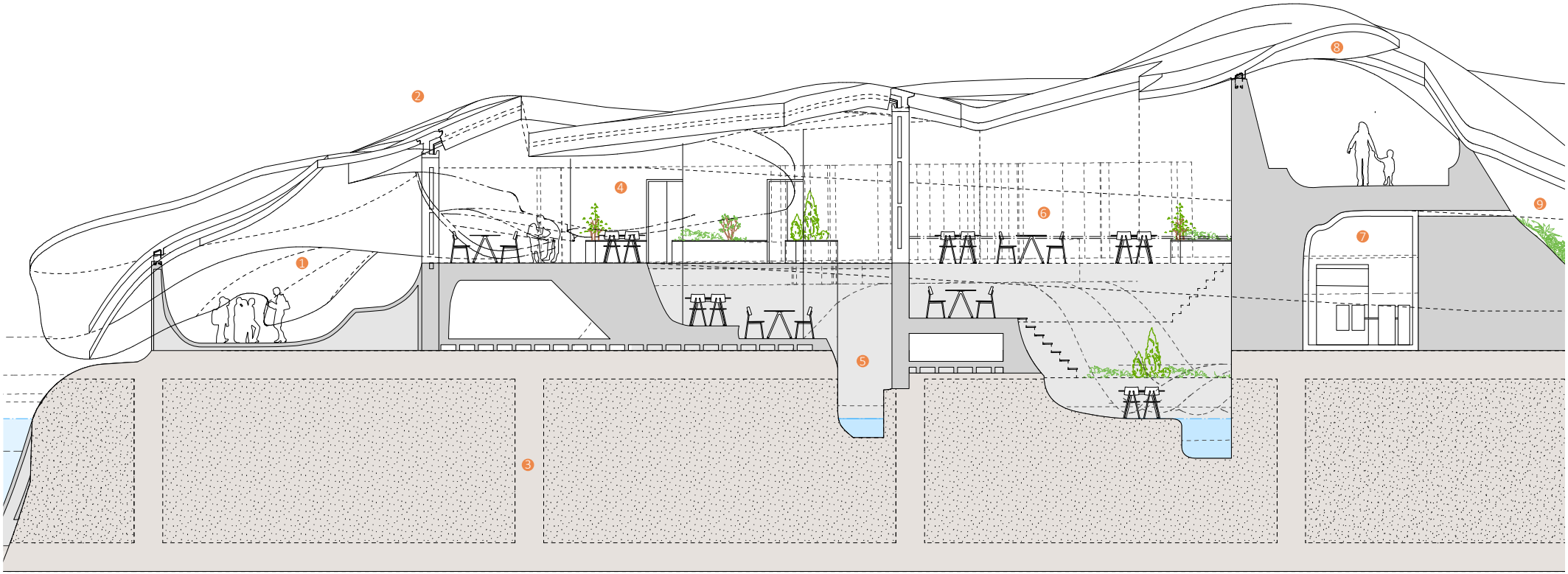

N
Pools within Landscape, Roof Plan
Marseille Fos Port
Scale 1:300
Plan height = 6.0m
1 Roof canopy framing main entranceway leading into reception area
2 Green roof which continues down to ground level
3 Openings within roof structure to allow light and ventilation
4 Lines showing pre-fabricated components
5 Slit windows designed work with location of lockers
6 Green landscaped roof lowering to ground level, shaded seating underneath
7 Canopy over shallow swimming area to provide shading in pool
8 Children's slides on roof within park area surrounded by green roof
9 Lowered roof and guttering for shower water collection
10 Roof trailing off into landscape
A
B
A
B

Marseille Pools Landscape Scheme
Long Section through site showing programme
Scale 1:200



VECTORWORKS EDUCATIONAL VERSION

DRAWING APPENDIX // Section showing Indoor and Outdoor Restaurant Areas
Taken through Section Line A
Scale 1:100



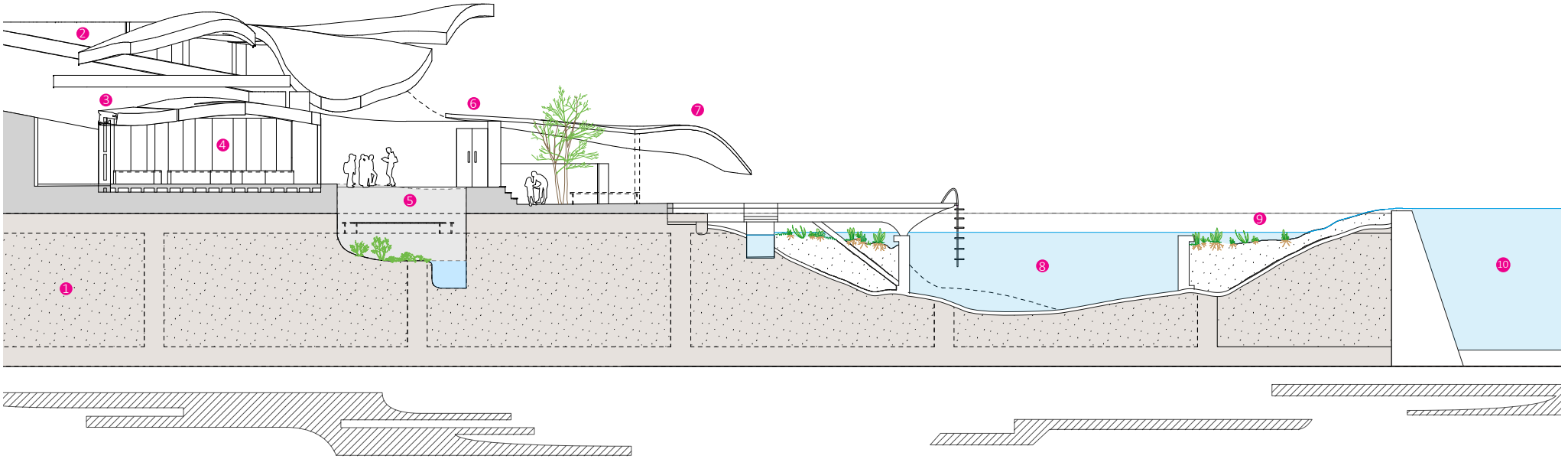
SECTION A DETAIL KEY

1. Shaded walkway under roof canopy with views into shallow water passage
2. Please refer to Section 2 Detailing
3. Existing gridded structure of Marseille Fos Port
4. Indoor cafe seating area with planting and doors leading to outside space
5. Seating tiered into split levels overlooking water channels below
6. Outdoor seating area, again tiered with additional water channel inlet
7. Plant room within concrete landscape for additional services
8. Raised pathway leading to building entrance with views accross to pool area
9. Local flora used to soften concrete facade, visible from pools

DRAWING APPENDIX // Section showing Pool side Area

Taken through Section Line B

Scale 1:100

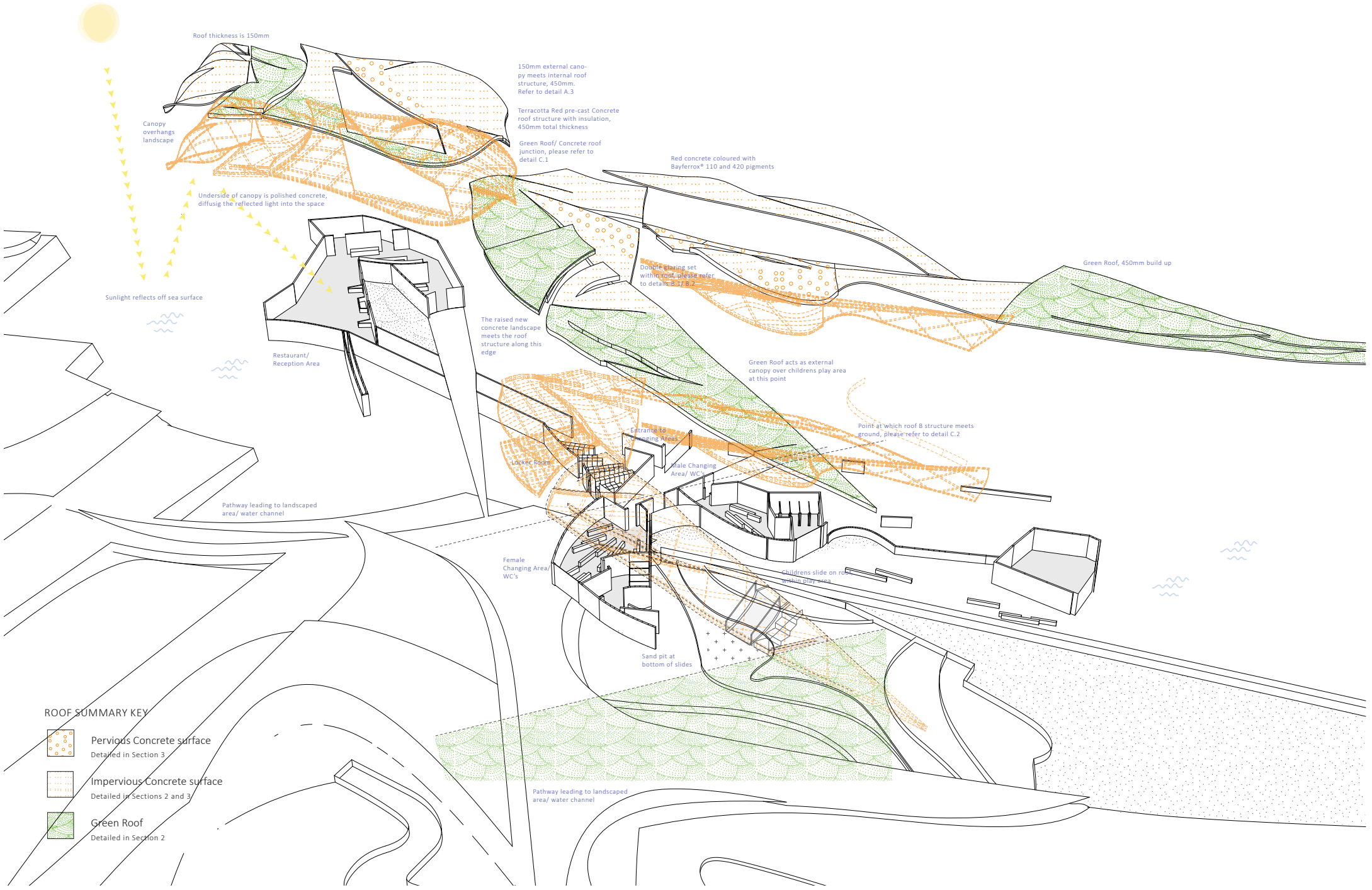


SECTION B DETAIL KEY

1. Existing gridded structure of Marseille Fos Port
2. Roof Component B Structure
3. For Roof to structural wall junction, please refer to section 2
4. Locker rooms availiable for use by locals and tourists
5. Outdoor seating area, overlooking water channel and planting below
6. Entrance to passageway, leading up to cafe area
7. Canopy shading shallow swimming pool area
8. Swimming area with maximum depth of 3m. Refer to Section 3 for details
9. Planting and sediment build up in shallow water for water cleansing
10. Mediterranean Sea

DRAWING APPENDIX // Roof Type Summary Diagram

Not to Scale



ROOF SUMMARY KEY

Pervious Concrete surface
Detailed in Section 3

Impervious Concrete surface
Detailed in Sections 2 and 3

Green Roof
Detailed in Section 2