THE ECO LUXE HOTEL

Zara McGillivray
Almanac

CONTENTS

THE ROOTS OF THE PROJECT

CHAPTER 1

CHAPTER 2

CHAPTER 3

THE ENDINGS

THE ROOTS OF THE PROJECT

"Recapitulation of Semester 1"

S

SEMESTER 1

"What did I do in semester 1?"

Semester one consisted of looking into different climate issues that affected Brighton directly, and challenging those issues with ideas that would help resolve or reverse the effects of climate change. My chosen climate crisis was ocean acidification and rising sea temperatures. As I researched into how these different issues affected Brighton directly, I learnt that both issues had a direct link to affecting tourism within Brighton. One of them was that ocean acidification caused juvenile shellfish's' shells to disintegrate whilst they're being built. This would be fatal for shellfish. As a result, this would affect the amount of fish, and the price of fish, sold to restaurants around Brighton which would affect business and sales. I wanted to create an installation that would help this issue.

I created an installation that would rejuvenate the shells of certain shellfish using a controlled pH and temperature of the water. The shellfish would sit in tanks suspended from the ceiling of my site I was investigating. The tanks would be fed sodium carbonate, this is the component used for shellfish to build their shells at the juvenile stage. This installation would have been interactive with the public so that they can look into the tanks and observe the progress of the shellfish. Once the shellfish have fully recuperated, half would be let back into the ocean, and the other half would have been sold to restaurants to provide restaurants with enough fish to sell to tourists.

Fig. 1

'Stages of shellfishs' shells disintergrating throughout time as a result of ocean acidification'[1]

1 (Smithsonian Ocean, 2018)

Inhabited Drawing of Installation

Fig. 2

Model

Fig. 3 & 4

INTRODUCTION

After researching into these issues and creating an installation that helps the shellfish, I want to look into creating and designing a project that would take up and help reuse materials. I want to look into circular economy that reuses recycled materials to create a high-end restaurant and hotel. As I have always loved high end interiors, I wanted to integrate this concept in with my final design, however, after researching into a lot of high-end interior designers, only a small percentage of them take the climate crisis into account. I want to prove and show that high end design can still be environmentally friendly whilst still receiving a lavish experience.

The main concept of my project is ensuring that I use recycled materials and upcycle them into new, sustainable materials like concrete columns or items that can be used within the hotel. Some of the materials I plan to look into are:

- Glass

- Plastics

- Seashells

- Fishing Equipment

I also plan to reuse certain materials that were previously used in the existing site, such as the concrete.

To fit in to the concept of being ecological, I want to investigate different systems such as fish farms and rejuvenating systems that help marine life but also to produce 100% organic foods for the restaurant.

CHAPTER 1

"Programme research"

R

RESEARCH

Precedent & research studies

CIRCULAR ECONOMY
AND HOW IT HELPS

What is 'circular economy'? Circular economy is looking beyond the current take-make-waste extractive industrial model. A circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital.[1]

1 (Ellenmacarthurfoundation.org, 2018)

Cicular economy is based on three principles:

1. *Design out waste and pollution.*
2. *Keep products and materials in use.*
3. *Regenerate natural systems.*

In a circular economy, economic activity builds and rebuilds overall system health. The concept recognises the importance of the economy needing to work effectively at all scales – large and small businesses, for organisations and individuals, globally and locally.

Transitioning to a circular economy does not only amount to adjustments aimed at reducing the negative impacts of the linear economy. It represents a systemic shift that builds resilience, generates business and economic opportunities, and provides environmental and social benefits.[1]

1 (Ellenmacarthurfoundation.org, 2018)

As I want to look into circular economy to see how I can integrate it within my programme, I need to know how it works. I need to know the cycle of circular economy and how that cycle provides us with new upcycled products. This way I can come up with new and innovative ideas that I can use within the project I am designing.

To put it into simple terms:

- Waste gets recycled

- It gets stripped to its raw materials

- New design ideas are thought of

- Production

- Distribution

- Consumed/used

And the shells of the product will be then recycled, and the cycle will start again.

OUTLINE OF A CIRCULAR ECONOMY

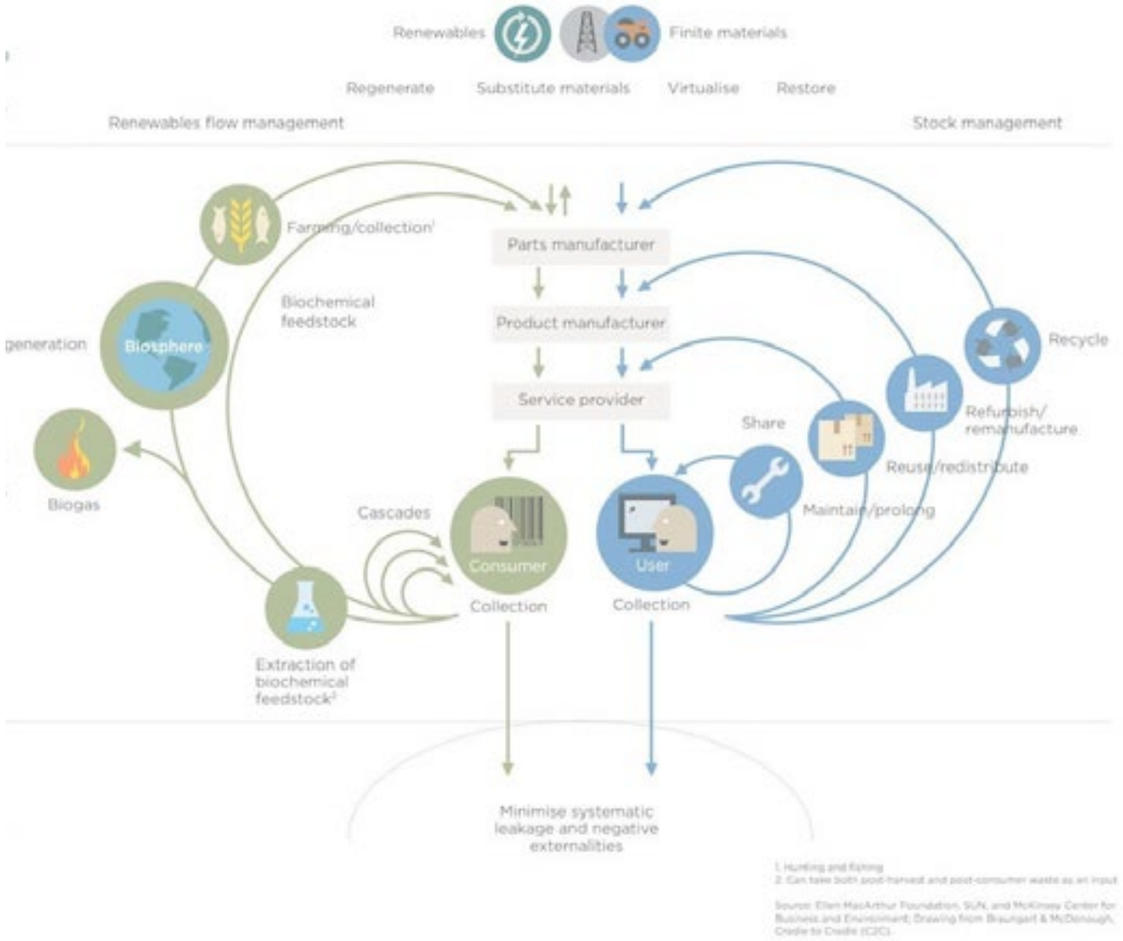


Fig. 5

Principle 1

Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows reSOLVE levers: regenerate, virtualise, exchange.

Principle 2

Optimise resource yields by ciruclating products, components and materials in use at highest utility at all times in both technical and biological cycles reSOLVE levers: regenrate, share, optimise, loop.

Principle 3

Foster system effectiveness by revealing and designing out negative externalities. All resolve levers.[1]

1 (Ellenmacarthurfoundation.org, 2018)

CONRAN, LONDON

This is a form of circular economy where materials get reused and reused for different purposes. This ensures that no new materials are made solely for the purpose of the installation. How was the ribbon made? "Through a mechanical process, the bottles are transformed into Polymer which is then woven into the ribbon – the use of the recycled polyester requires fewer processing stages, meaning less energy is utilised in the production of the ribbon."

The idea of creating something that could be seen as fairly high end and extravagant yet is completely made out recycled materials is very unique. This concept proves that all design styles can be environmentally friendly and to produce as less new materials as possible. The red ribbon that will be used after as gift wrapping is a great example of extending the recycling and upcycling process, as well as creating something more lavish. The final quality of the ribbon is more than enough to trick people into thinking it has been made from new.

Conran created an installation which included 26,000 strands of red ribbon to be dropped from the ceiling;

"Made from recycled plastic waste collected from the Mediterranean sea and local recycling sites, the harvested waste is transformed by a machine process and woven into reclaimed polymer ribbon. The recycling process requires fewer stages than normal, meaning less energy and water is utilised at the production, spinning, and dyeing stages versus traditional yarn and fabric dyeing. Importantly, after Christmas, the ribbon will be repurposed and reused for our gift wrapping service throughout 2020."[1]

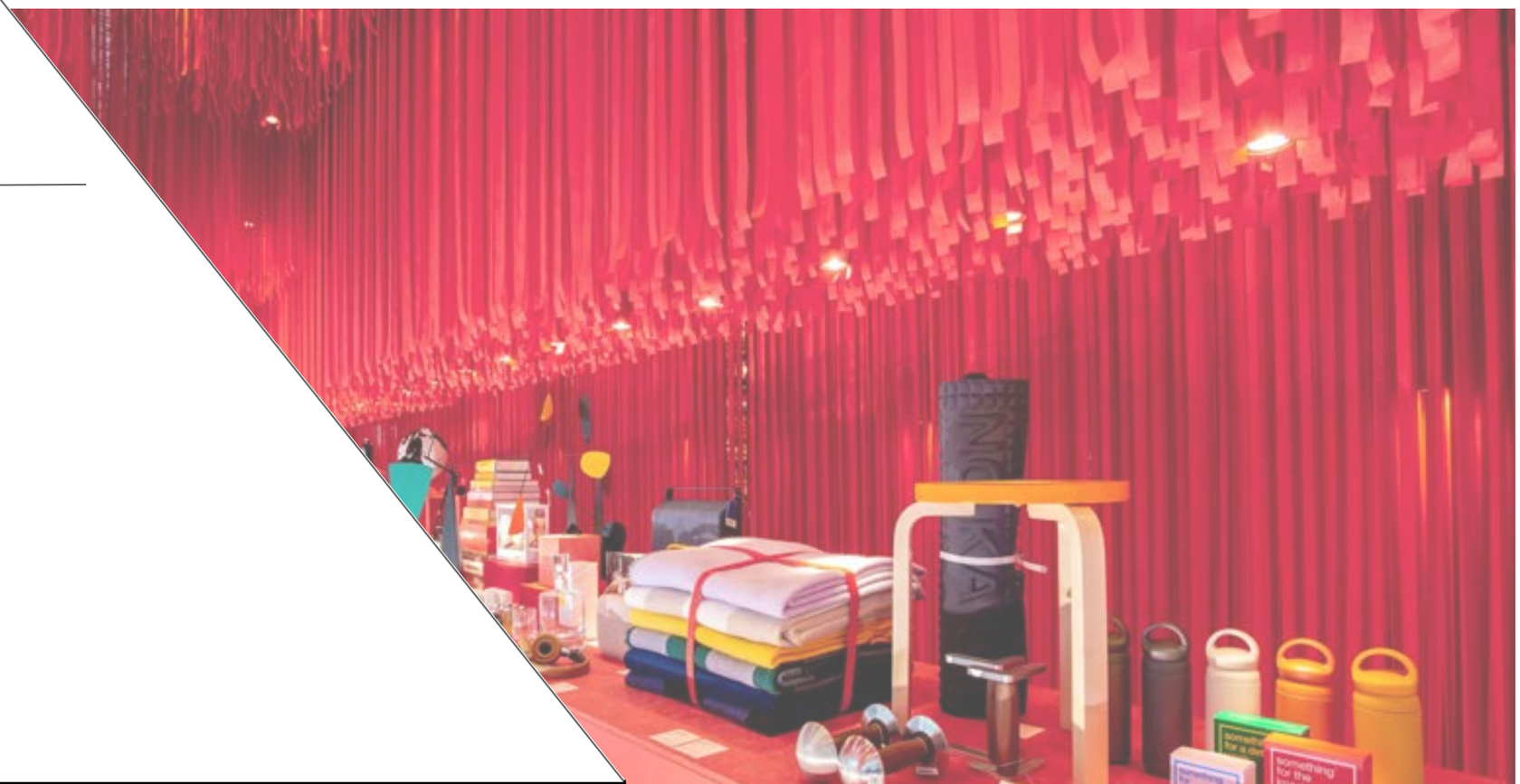


Fig. 6

1 (The Conran Shop Journal, 2019)

THE QO, AMSTERDAM

Fig. 8

Can a luxury hotel join forces with circular economy and produce a world-class lifestyle experience?

Juniper & Kin | Kitchen Garden & Bar

Fig. 7

This is the question that I want to address. However, after doing some extensive research, I soon learnt that this had already been done! The QO Hotel in Amsterdam offers a high end, luxury experience whilst its concept is based on a sustainable, circular use of resources. For example, 33% of the concrete used for the building came from a demolished skyscraper in Amsterdam. The carpets are made from 100% recycled yarn sourced from old fishing nets and there are 1,638 thermal solar panels fixed to the facade of the building.

"The goal of a circular economy system is to reduce consumption of resources as much as possible by reusing all available resources and minimizing waste. In its treatment of water, which is one of the most used resources at any hotel, the QO adheres to high standards. Grey water, for instance – all the water coming from sinks and showers – is reused to flush toilets, effectively cutting the overall water usage by 42 percent."[1]

The food served at the hotels restaurant and roof top bar is all either grown in their own greenhouse, or locally sourced. "But the jewel in the QO's crown is without a doubt its rooftop greenhouse, a circular aquaponics system with a fish farm. The fish waste provides an organic food source for the plants, whose roots lay in water, while the plants purify the water for the fish. The resulting fruit, vegetables, flowers and fish are then used in the restaurant and rooftop bar as ingredients for dishes and cocktails, with menus based on the produce available in a particular season or day."[2]

The QO Hotel has applied for the LEED platinum certification - the strictest, most prestigious certifications in green building. If they receive this, it will become the first hotel in Europe to obtain this.

"We want the QO to stand out from other lifestyle destinations. Guests should not have to opt for either luxury or sustainability; we want to show that the two can be perfectly combined", said Inge van Weert, General Manager at the QO.

This research will help me gather ideas to create a similar concept of hotel and restaurant using circular economy. There are ideas that the QO has shown which I would really like to dive deeper into and research more about, but also create and design some new ideas that are a part of the circular economy notion.

1 (www.eni.com, n.d.)

2 (www.eni.com, n.d.)

SILO, LONDON

"It's tagline is "the only truly zero-waste restaurant" in the UK, and Silo deserves its pioneering reputation. Located in the epicentre of London this chic restaurant has successfully eliminated waste by composting every scrap and piece of leftover food directly on-site. The Silo team also crush all waste glass for their local potter to make into beautiful ceramics for the diners and everything down to the chairs has been up-cycled and repurposed."[1]

Silo ferments and pickles all of the produce on site to create the most natural outcome. Their way of life is 100% organic, and this is what I admire the most.

1 (British Vogue, n.d.)

"Silo is a resturant conceived from a desire to innovate the food industry whilst demonstrating respect: respect for the enviroment, respect for the way our food is generated and respect for the nourishment given to our bodies. The resturant furniture and fittings are created from a desire to re-use, choosing from upcycling before recycling, the furniture is made from materials that would otherwise been wasted, crafted with innovation to serve function".[1]

They use pails, crates or containers to have their food delivered in as they are reusable. This achieves zero waste and any food that is left over by consumers is put into an aerobic digester.

1 (Silolondon.com, 2011)

Silo is a perfect example of using circular economy. The idea of crushing recycled bottles into ceramic plates and crockery for the restaurant to use as well as getting old furniture and reupholstering and upcycling them to use for chairs and tables within the restaurant are some great examples of circular economy and as I am designing a restaurant within my hotel, the idea of creating crockery out of recycled items seems to fit well with my programme.

Fig. 9

SVART, NORWAY

Fig. 11

Fig. 10

"Svart is a Hotel proposal located in Norway. It is the world's first energy positive hotel concept by the Arctic Circle, with a 360 degree view of the Svartisen glacier and arctic nature. the hotel is planned to open in 2020 and is a collaboration between MIRIS, Snohetta and Powerhouse.

This hotel would reduce its yearly energy consumption by 85% compared to other modern hotels, and it harvests enough solar energy to cover both the hotel operations plus the energy needed to construct the building. Building in a fragile environment comes with clear obligations in terms of creating a sustainable tourist destination.

The architecture is inspired by local coastal building traditions and stand on wooden piles dissolving the boundary between land and fjord".[1]

Although this hotel doesn't relate directly to my project, it is still useful research to gather to see how different hotels provide sustainable features. The architecture of this building is structurally gorgeous as well!

1 (Svart, n.d.)

‘ZERO WASTE’ BISTRO. MANHATTAN, NEW YORK

This little ‘zero waste’ bistro sits as a temporary installation in Helsinki, Finland. The pop-up resturant is built from recycled food packaging and that composts all of its leftovers has been set up at the WantedDesign Manhattan fair. The temporary eatery builds on the concept created by Helsinki’s Restaurant Nolla, billed as the “first zero-waste restaurant in the Nordic region”. Among its aims are to use foods that would typically be discarded, and to reject packaging from supplier, while working with designers, engineers and architects to rethink waste management and water efficiency.”[1]

“Our dishes at Zero Waste Bistro in New York will be comprised of local and organic ingredients as well as commonly overlooked byproducts of our food system,” said chef Luka Balac in a statement.

“They chose panels made from recycled Tetra Pak – a packaging material commonly used for milk cartons.

The panels are fabricated in batches by ReWall in Iowa, and take their colour from whichever products are processed at the time. In this case, the surfaces have a mottled silver-blue tone from afar, while the text and barcodes from the packaging are visible when looked at up close.”

This research can be useful in my project once deciding what materials will be used for plates and crockery for the restaurant. One of the areas which really catches my eye is how stunning the walls are and how they are completely made from 100% waste. This just proves the stunning design can be curated from recycled materials!

1 (Dezeen, 2018)

Fig. 12

RECYCLABLE MATERIALS & SYSTEMS
TAKEN FROM THESE PRECEDENTS

PLASTIC BOTTLES

Recycled plastics can be made into many different objects. However, once filtering out the irrelevant ideas to my project, I've concluded that my favourite transformations are the plastic bottles being transformed into kitchen work surfaces and dining tables for the restaurant. This would be an effective opportunity to increase the use of recycled materials. 'Smile Plastics' collect plastics from the sea and convert them into surfaces of any sort, from kitchens to bathrooms.

ROOFTOP GREENHOUSE AND FISH FARM

A rooftop greenhouse would provide produce for the hotel's restaurant. This would include a large fish tank. The roots of the plants would be based into the water so the fish can act as fertilisers to maintain a much more organic grow. Shellfish struggling to grow their shells will also be contained within these tanks to provide growth and rejuvenation. Once the juvenile shellfish have fully developed their shells, half will be released back into the oceans and the other half will be used within the restaurant.

FISHING NETS

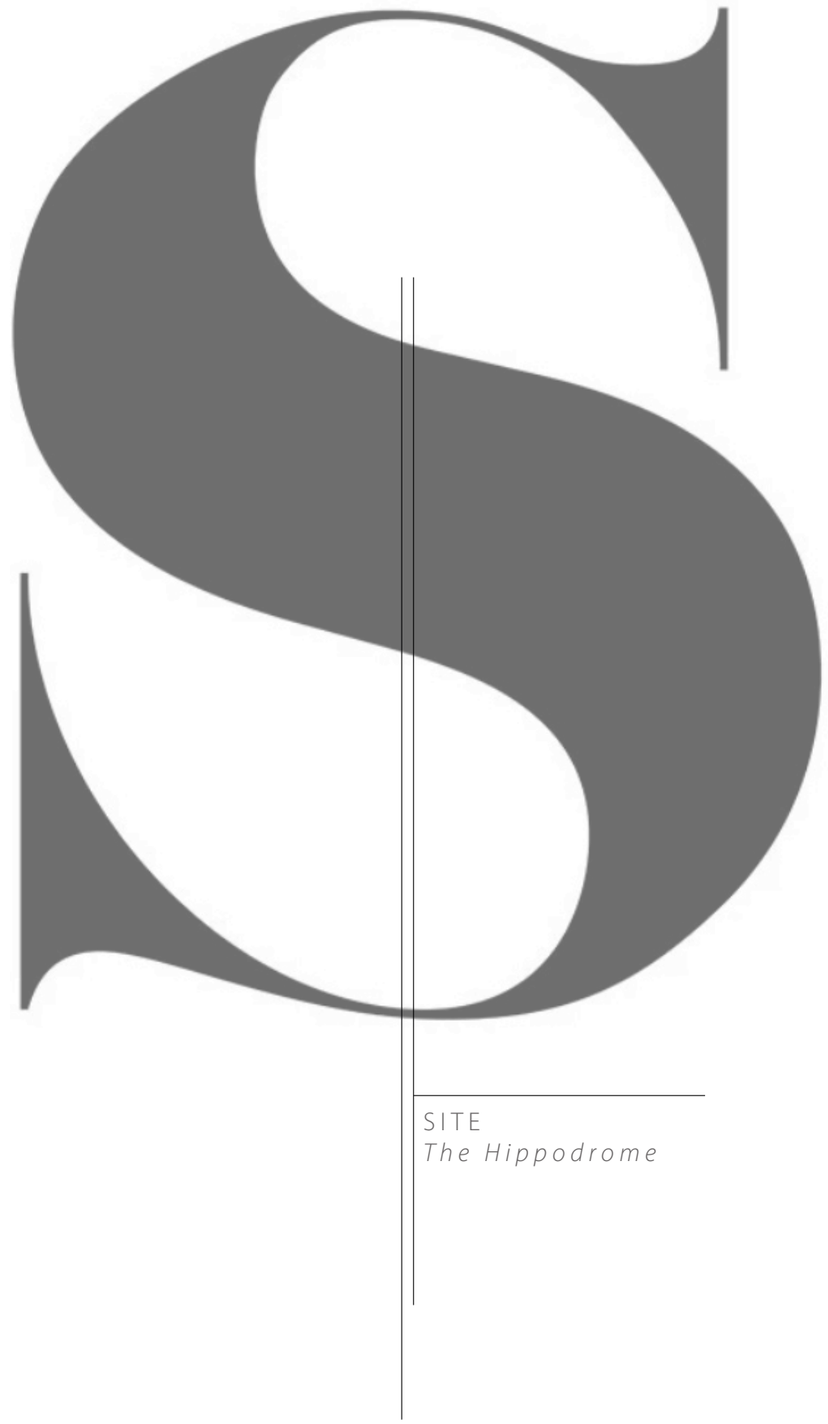
Recycled fishing nets can be used as yarn for making new carpets out of recycled materials. This idea fits well within my project as the recycled fishing nets would be collected from the fisheries around Brighton and Shoreham. This also promotes recycling fishing equipment rather than disposing of them in the oceans as 85% of plastic pollution found in the sea is fishing equipment. This will help to reduce this percentage.

CONCRETE

Old concrete from demolished buildings can be melted down and reused in new buildings. Instead of making up a new batch of concrete, it would be more effective to use as much recycled concrete from other demolished buildings around Brighton as possible.

WATER

In hotels, one of the biggest usages is water. Water known as 'grey water' is water used from showers and taps. This water will be stored and reused to flush toilets. This can save up to 50% on water usage and stop the waste on water than can be reused, i.e. grey water.

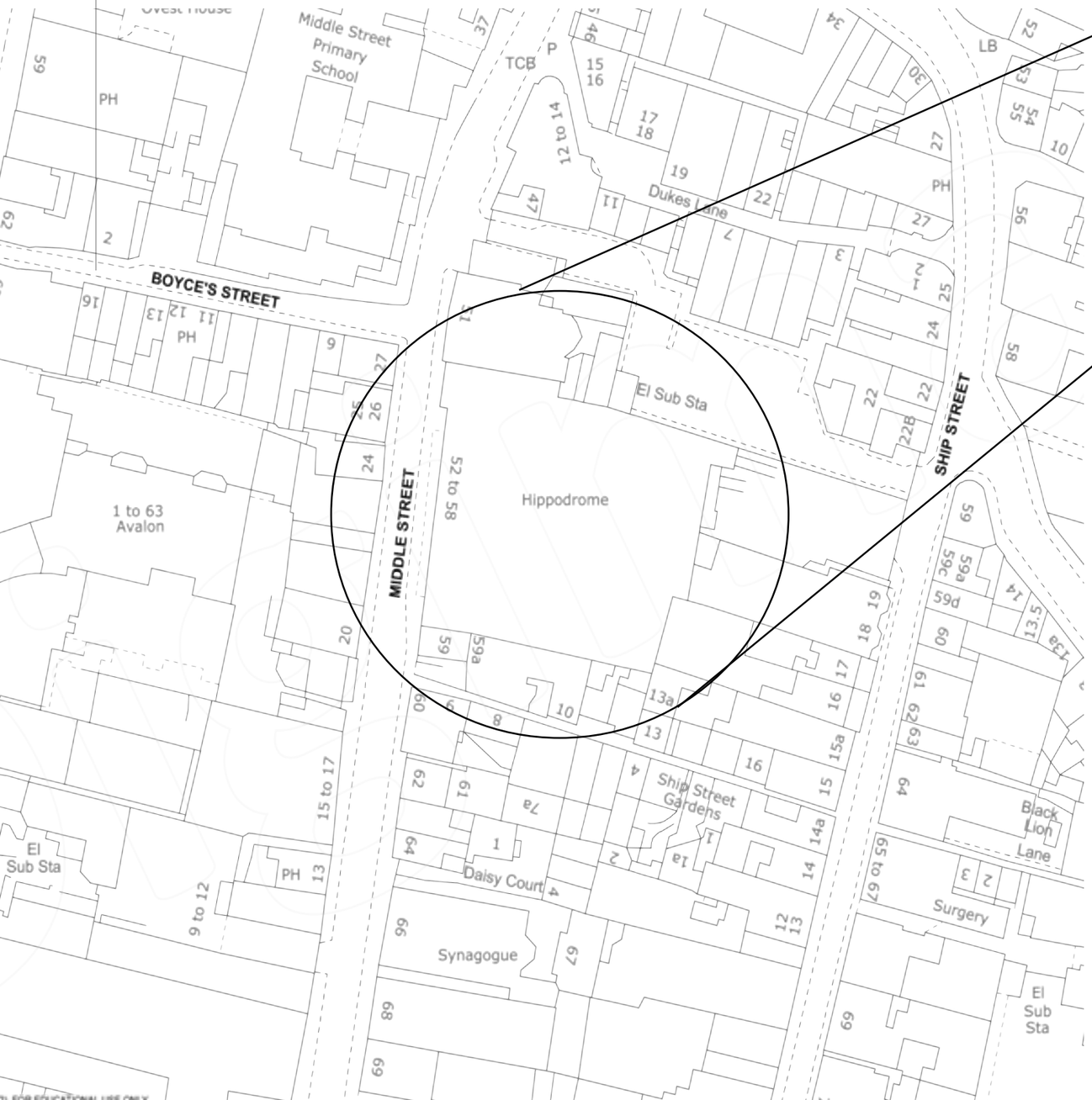


SITE
The Hippodrome

HIPPODROME,
BRIGHTON

HIPPODROME, Brighton.

The Hippodrome in Brighton is situated in The Lanes. It is a derelict building at the moment, bursting with potential. This is the site I will be researching and using to inhabit a new creative design idea.



HIPPODROME,
HISTORY & CONTEXT OF SITE

"Brighton Hippodrome is the UK's most architecturally significant circus theatre – the finest surviving example of its type in the country. It is listed Grade II. The Hippodrome originally opened as an ice-skating rink in 1897, designed by Lewis Karslake. In 1901 eminent theatre architect Frank Matcham converted it into a circus. Further adaptations in 1902 by another distinguished theatre architect of the time, Bertie Crewe, saw it modified into a variety theatre. The most spectac ular feature is the circular auditorium with its richly decorated ceiling in the form of a panelled tent.*

The Hippodrome played host to many famous performers, including actors, comedians, singers and later, pop stars. Perhaps the most famous was the comedian Max Miller, Brighton's own 'Cheeky Chappie', who regularly performed at the Hippodrome between the 1930s and 1950s. The decline of variety, especially in the years after the Second World War, saw the Hippodrome mount more musicals, concerts and one-off performances by celebrities.

In 1964 pop concerts by both the Beatles and the Rolling Stones played to capacity audiences, but this was not enough to save the Hippodrome as a live performance venue. It closed in 1965, becoming the Mecca Bingo Club in 1967, bringing to an end over one hundred years of music hall and variety theatre in Brighton."[1]

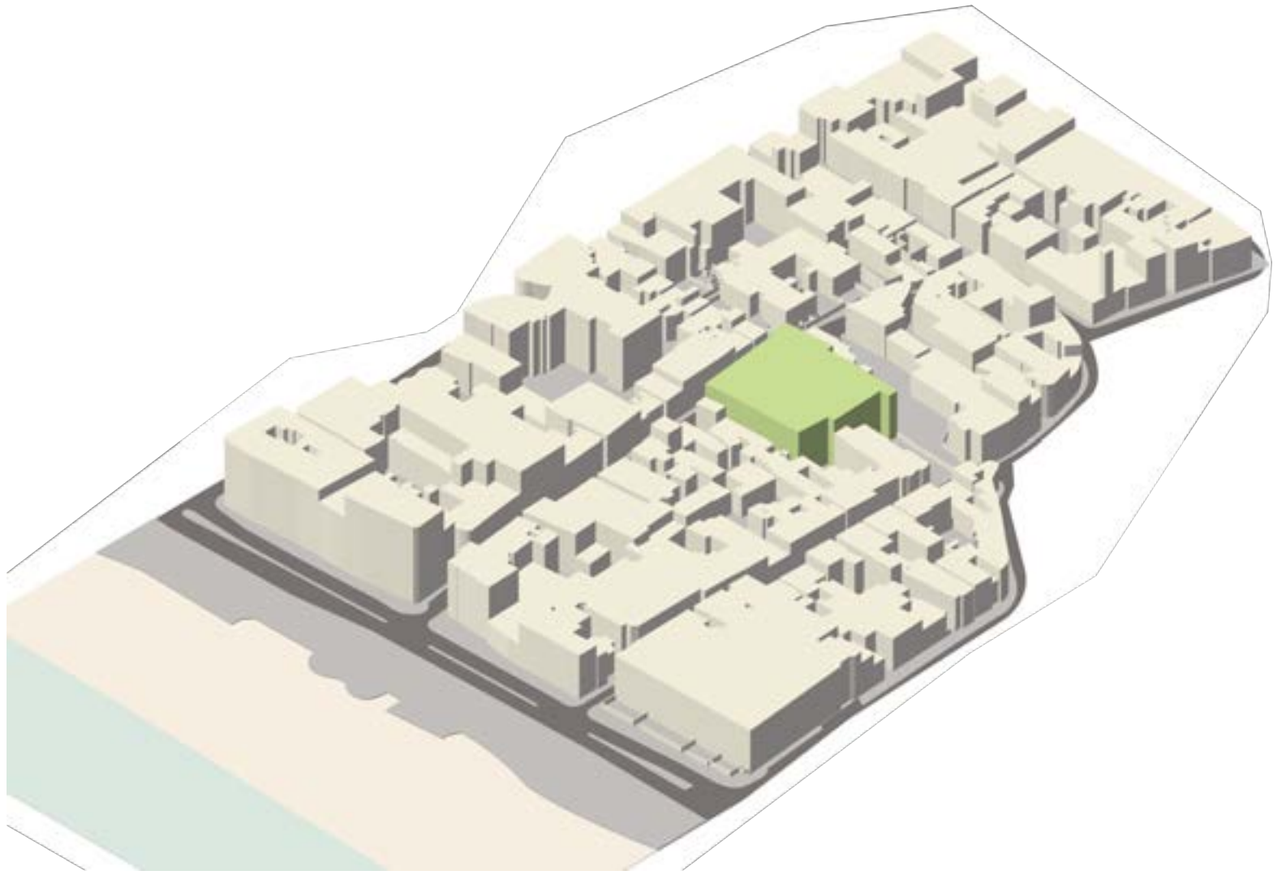
The image to the right shows a grander image of the site within its area. The Hippodrome is coloured in green. It shows the buildings that surround it and how far it is from the seafront. This provides interesting data to my studies as it shows you directly how close the site is to the sea. This makes the site that would be designed as a hotel more ideal to customers who are visiting the famous seaside city, with an idyllic walk to the beach of Brighton. Also, as recycled items would come from the sea, it provides clear data on the travelling distance from collecting waste to the site.

1 (Theatres Trust, n.d.)

Fig. 13

Fig. 14

Fig. 15



TIMELINE,
FISHING EQUIPMENT/WASTE USED FOR FISH FARMING.

When looking into creating the timeline with a process within our design, I decided to look at the process of fish farming and shellfish rejuvenation as that would be a main feature within the project I am designing.

As I am wanting to include circular economy as a main concept within my design, I wanted to also include what equipment I would use throughout the process of fish farming and shellfish rejuvenation and how that equipment and waste would then be upcycled into something that could be used in the hotel.

An example of this would be the fishing nets used to catch the fish and shellfish. These fishing nets would be part of the equipment list; however, they can also be recycled then stripped to their raw material; the yarn, and woven into carpets which could then be used in the hotel rooms

Another example of this would be the empty shellfish's' shells. Instead of disposing of them normally, they could then be recycled, crushed and made into concrete. This could either be used as concrete crockery for the restaurant, or maybe into slabs for flooring within the restaurant

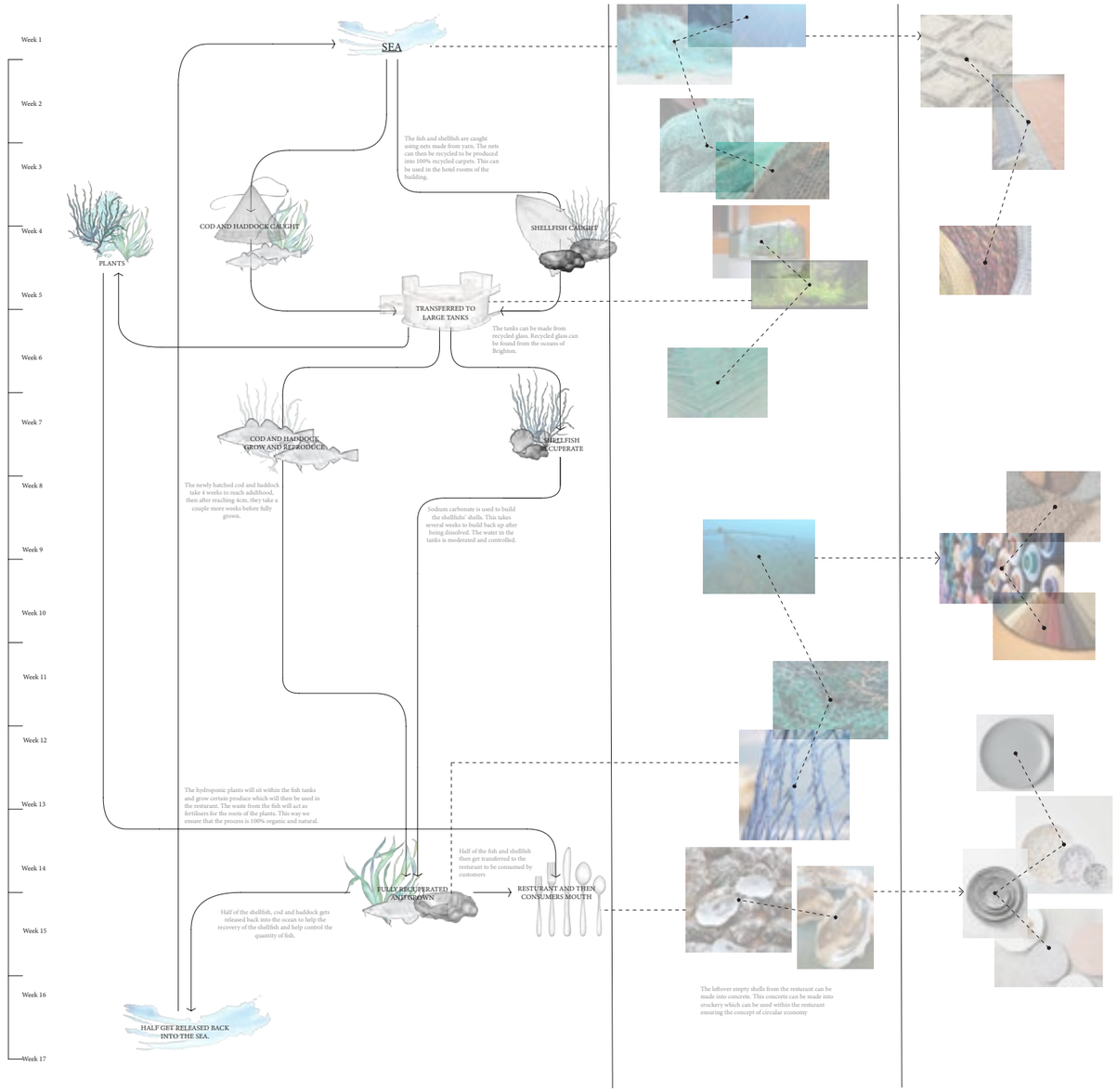


Fig. 16

THE ECO LUXE HOTEL LEAFLET

The EcoLuxe Hotel offers a luxurious & high end experience whilst having a concept that is based on a sustainable, circular use of resources. The hotel includes a michelin star resturant that sources its produce either from our rooftop greenhouse or local producers.

We believe that guests shouldn't have to choose between a luxurious stay or sustainability; why not include them both? At the The EcoLuxe Hotel, this is possible.

Inside page

WHERE ARE WE?

The EcoLuxe Hotel

52 Middle St,

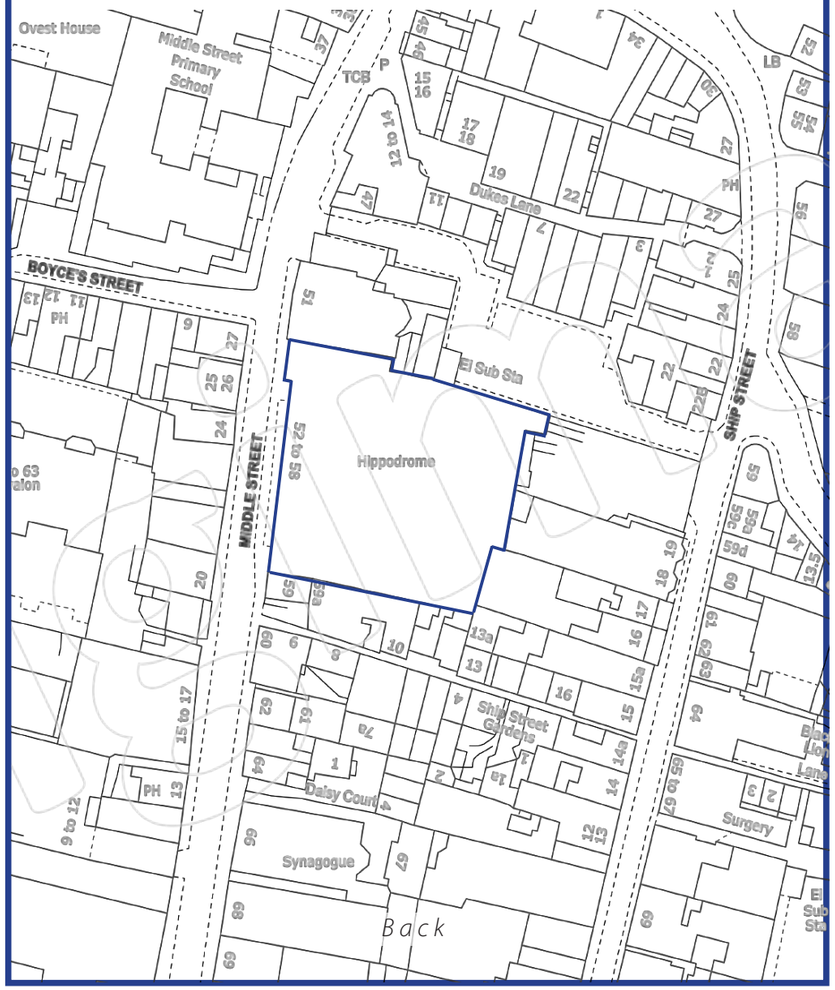
Brighton.

BN1 1AL

We are in 'The Lanes', approx. 5 minute walk in land from the seafront, you won't miss us!

Telephone: 01273 667841

Email: enquiry@theecoluxehotel.com



THE ECO LUXE HOTEL,

BRIGHTON

Front

What makes The EcoLuxe Hotel one of a kind?

- The use of fish farming, shellfish rejuventation & our specialised greenhouse to create fresh, organic food!

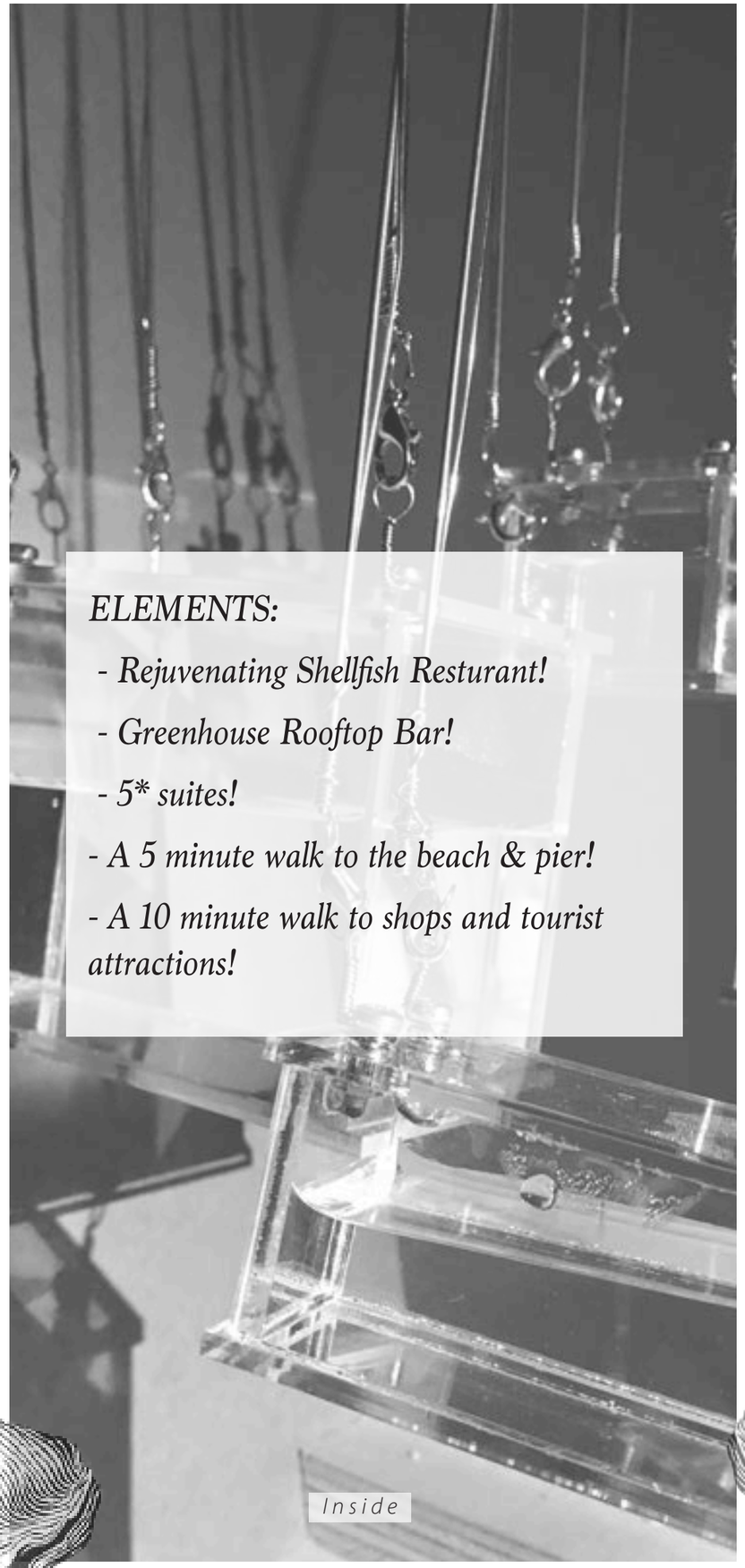
- We use sustainable resources to create luxury materials used throughout our hotel and resturant!

- We offer a 5* stay within a building bursting with history!

Our Rejuvenating Shellfish Resturant & Greenhouse Rooftop Bar

It contains a new state of the art design which involves fish tanks containing rejuvenating shellfish that are suspended from the building so it gives guests a immersive experience. Our food is sourced from our rooftop greenhouse where we group our produce.

We include a large fish tank that the roots of the vegitation sit it. The fish help fertilse the plants as an enviromentally way of growing crops. The rest of our produce is locally sourced. The walls of our resturant is also made out of plastic and glass bottles to create a stunning texture.



ELEMENTS:

- Rejuvenating Shellfish Resturant!
- Greenhouse Rooftop Bar!
- 5* suites!
- A 5 minute walk to the beach & pier!
- A 10 minute walk to shops and tourist attractions!

Inside

Our secret

We have a variaty of different examples that show our hearts are invested in creating a commercial building that has reused different materials that have been recycled. We love that we have created a luxury 5* hotel which also uses circular economy as a main design concept. This includes our carpets been made out of 100% recycled yarn from fishing nets donated by fisheries in Brighton and Shoreham.

Another aspect we pride ourselves in is our concrete walls. We try to use as much recycled concrete from demolished buildings around Brighton as possible. We also have created all of our surfaces, i.e kitchen surface, tables, bathroom surfaces, out of recycled plastics that have washed up and caught on Brightons shore. The plastics create a gorgeous, colourful effect, and look stunning as part of our design in our resturant.

CHAPTER 2

"Strategy Iteration"

P

PRECEDENT STUDIES

Strategies working with existing buildings

GORDON MATTA CLARK

Fig. 17

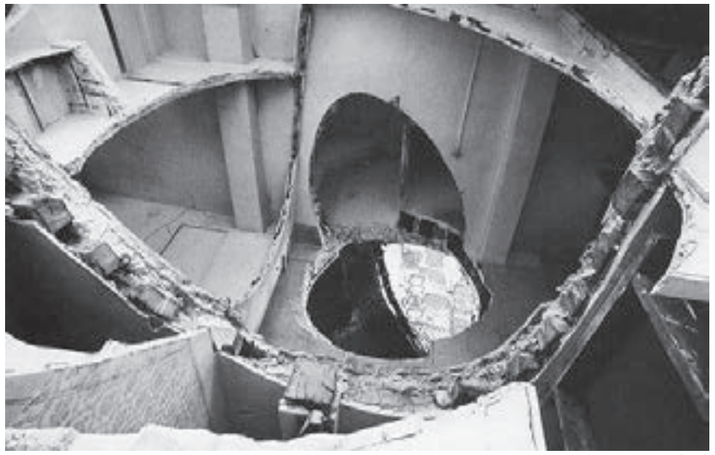


Fig. 18

"Gordon Matta-Clark (1943–1978), who trained originally as an architect, is best known for his spectacular 'building cuts'. These have often been seen as an outright rejection of the architectural profession. The collaborative project Anarchitecture (1974), however, demonstrates how the language of modernism, particularly the polemical and epigrammatic Towards a New Architecture by the French modernist artist and architect Le Corbusier, was very much part of his raw material."[1]

1 (Tate, 2015)

As I am looking into how we preserve materials or sections/walls of buildings. This was some helpful research to give me some insight in how I can portray old original walls within the Hippodrome. Gordon Matta-Clark creates these 'building cuts' on purpose to show people the sections within the walls and objects, whereas, I would be hoping to preserve areas that I think add character to the building, to add to this, the building is in a dilapidated state, so it is interesting to see how I could preserve and present original areas of the Hippodrome.

ROOFTOP REMODELLING, VIENNA

Fig. 19

The 'Rooftop Remodelling' project is designed by Coophimmelblau and is situated in Vienna, Austria. This is a parasitic structure that sits on top of an exisiting building. The project was designed for a Law firm and was designed to be very light and open, hence the immense use of glass.

"The law firm Schuppich, Sporn, Winischhofer, Schuppich wished to extend their office upwards. The office is situated on the first and second floor of the building on the corner of Falkestrasse and Biberstrasse in the inner City of Vienna. The attention was to be focussed on a large meeting room. Adjacent to it several smaller office units were to be designed."

"While designing, we envisioned a lightning bolt reversed and a taut arc.

This space-creating taut arc - an element of our architecture that since 1980 has progressively become more important - is both the steel backbone of the project and its posture. The open, glazed surfaces and the closed, folded or linear surfaces of the outer shell control the light and allow or restrict the view."[1]

1 (Coop Himmelb(l)au, n.d.)

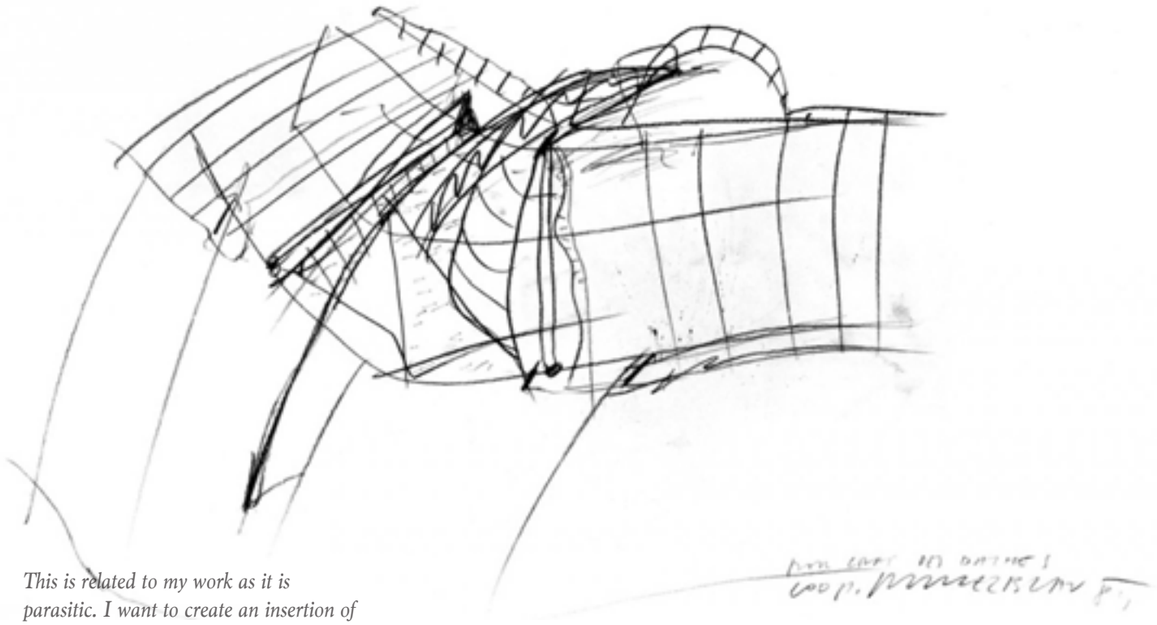


Fig. 20

This is related to my work as it is parasitic. I want to create an insertion of a greenhouse within the existing building. This will house the plants and fish which will create produce for the restaurant. One idea I had is that the structure will move up, out of the roof to provide a rooftop bar sitting within the vegetation, and when not in use, the structure will sink back into the building, back to its original form once again.

As the 'Rooftop Remodelling' structure's main element is glass, I wanted to have a look into it as the roof of my greenhouse will inevitably have to be glass to provide sunlight for the plants. This proves to be a very interesting project and very helpful to my own knowledge.

Radisson Blu Hotels is a chain of Hotels all around the world. But the one I wanted to research into is their hotel in Berlin. The reason for this is because it consists of a huge tank located bang in the middle of the hotel containing all sorts of marine life within it. A bar circles around the tank and an elevator penetrates through the tank taking you to the different levels of the hotel. With this, the elevator as a transparent wall which allows guests to look through the tank as they ride up the elevator to their desired level.

Balconies are also located looking onto the tank for a more personal viewing. This is such a unique idea.

RADISSON BLU, BERLIN

Fig. 21

I am interested in the idea of balconies of hotel rooms opening up within the hotel to allow a stunning view of the massive aquarium staged in the centre of the hotel. This allows the customers to have a fully immersive experience while staying at the Radisson Blu Hotel.

If I were to create a similar idea, I would use the centre of the Hippodrome to suspend the aquarium tanks full of the rejuvenating shellfish at different heights so that visitors can view these from their hotel room. The hotel rooms would open up to the centre of the site so they can view this feature, similar to the Radisson Blu Hotel.

CARLO SCARPA

"In 1961 Giuseppe Mazzario, a friend and colleague of Carlo Scarpa's University Institute of Architecture, as well as director of the Querini Stampalia Foundation, contacted him for the remodeling of the ground floor and the courtyard of the 16th century palace of the Querini Stampalia Foundation.

First, the Institute requested a new access to the building directly from the square, then make accessible the spaces on the ground floor that were regularly subjected to the phenomenon of "acqua alta" and, finally, the redesign of the small but valuable rear garden.

The first operation carried out by Scarpa therefore was the rehabilitation of spaces to return them to its initial conformation, the so-called "Portego" and the great central hall perpendicular to the course of the canal. The completion of the access bridge, the creation of the water defense system and the transformation of the yard followed.

The high water problem is wisely treated by Scarpa on the ground floor project,which is normally used for temporary exhibitions and conferences. The architect fully accepts the presence of water, and instead of treating it as an obstacle to entry, welcomes the building."[1]

1 (Anon, n.d.)

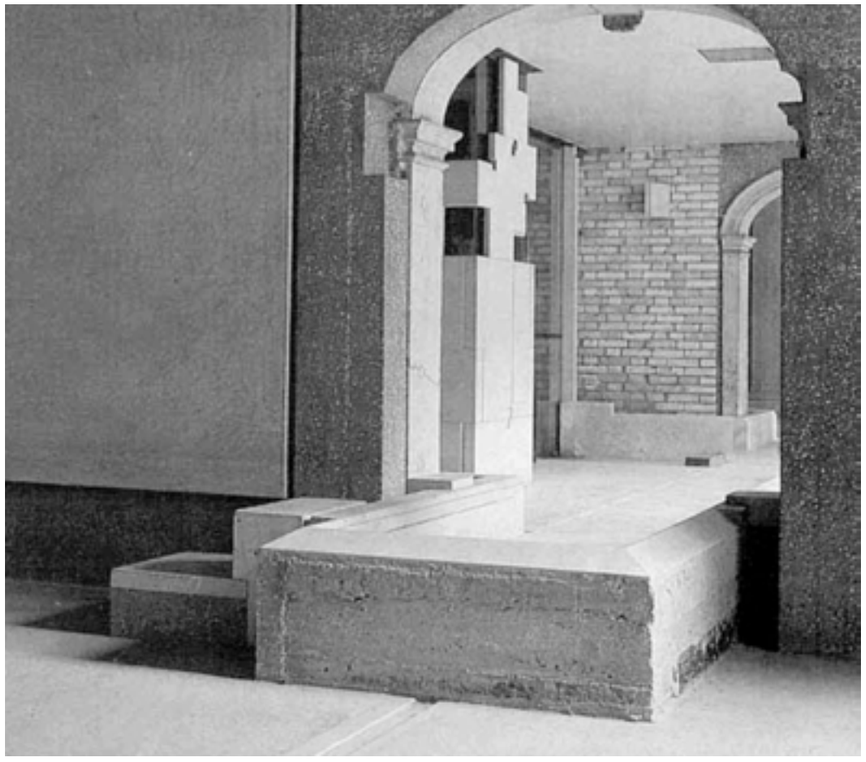


Fig. 22

1.2

Plan

Fig. 23

The building consists of pathways that run over water, but also sink into the water. The water runs out and connects to the courtyard outside. I love this concept and, although this precedent isn't directly linked to my project, it could be of help as my project is deeply revolved around water and the flow of water through the tanks.

Each room seems to have that simple connection of water and that could somehow work its way into my project.

Fig. 24 & 25

E

ELEMENTS

Proposed elements
of
The EcoLux Hotel

ROOFTOP GREENHOUSE BAR

One of the features of my programme is the 'Rooftop Greenhouse Bar'. The rooftop bar has a fish farm that runs around it that allows fish to reproduce and grow in a controlled enviroment. At the moment, sea temperatures are rising dramatically and causing fish such as cod and haddock to migrate up north. As well as this, ocean acidification is reducing the number of fish able to reproduce and grow. This fish farm ensures growth and reproduction of both cod and haddock which can then be let back into the ocean after reaching adulthood.

Half of the fish will be let back into the ocean and the other half will be given as produce to the restaurant, similar to the shellfish. This ensures the restaurant has 100% organically grown food which fits into the environmentally friendly concept of the programme.

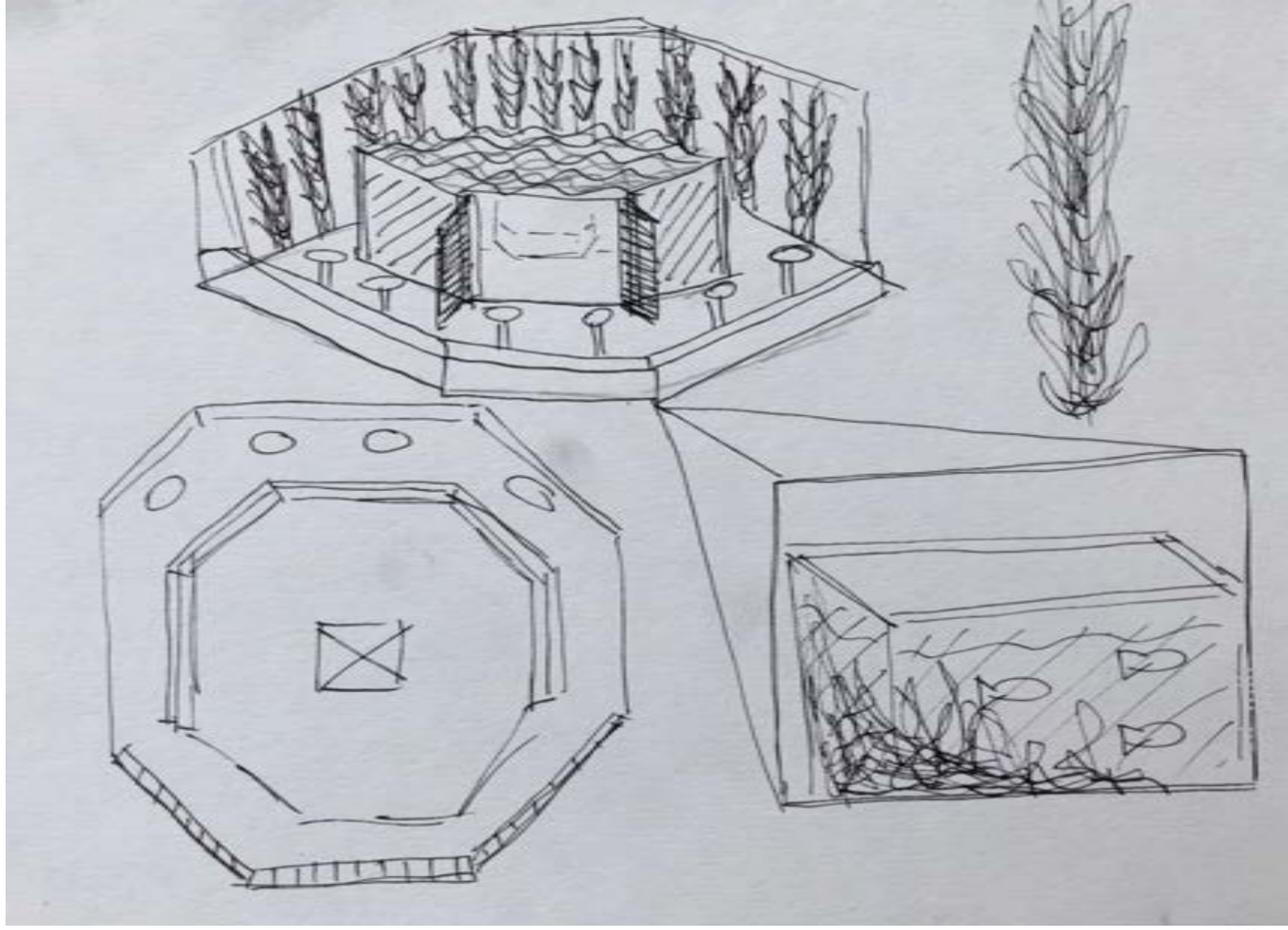


Fig. 27

Fig. 26

To add this, hydroponic plants will be planted just above the tanks, so that their roots sit within the water. The produce grown from the hydroponic plants will be used in the restaurant so that the produce is 100% natural and organically sourced. The fish's' waste will act as organic fertilisers for the plants to avoid those toxic chemicals that are in store bought fertilisers.

I have designed a few different ideas for the shape of the rooftop bar. At the moment, the glass is the main material used as the sunlight needs to reach the hydroponic plants. It also opens up to outside seating and a distant view of the sea.

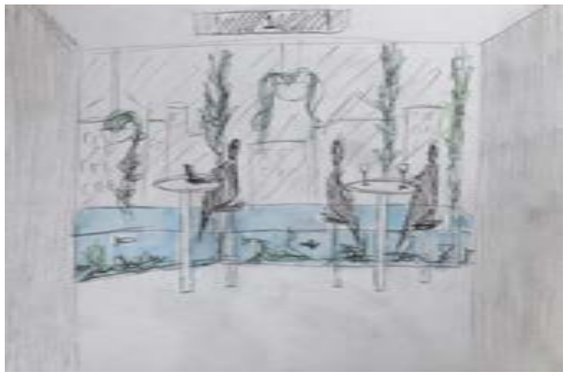


Fig. 28

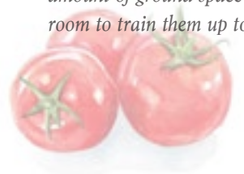
HYDROPONIC PLANTS

The hydroponic plants will produce 100% organic food that will be grown specifically for the restaurant. The bar will be situated within the fish tanks and plants to give customers a chance to see the extent of how organic and fresh their food and drink is. It also gives a different atmosphere from any normal bar.

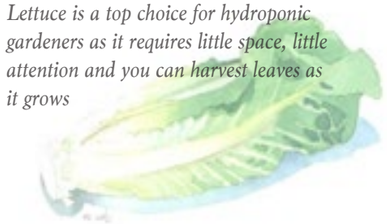
So, what is hydroponics? And what produce can you grow?

You can grow a number of different plants and vegetables using hydroponics. This method can actually lead to better results of produce if controlled properly.

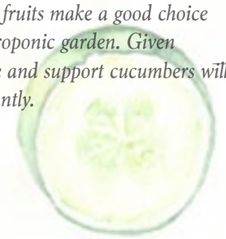
"Vining plants such as tomatoes are ideal for indoor gardens as they require a small amount of ground space and you'll have room to train them up to the ceiling.



Lettuce is a top choice for hydroponic gardeners as it requires little space, little attention and you can harvest leaves as it grows

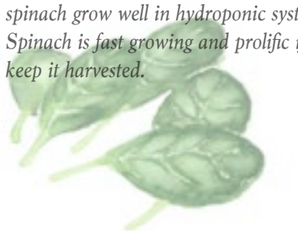


Water loving fruits make a good choice for your hydroponic garden. Given enough space and support cucumbers will grow abundantly.



Peppers will grow in very similar conditions to tomatoes, however raising night time temperatures and decreasing daytime temperatures improves fruit production after plants reach their mature height.

Just like lettuce other leafy vegetables like spinach grow well in hydroponic systems. Spinach is fast growing and prolific if you keep it harvested.



Strawberries thrive in wet conditions and grow well in hydroponic conditions. Providing bigger fruits than in soil and can provide harvest all year round.

Blueberries require high acidic soil conditions and therefore grow better in hydroponic conditions. Controlling the ph content and nutrients are much easier and will make for a much bigger, healthier crop."[1]

1 https://www.easy-grow.co.uk/top-10-hydroponic-fruit-vegetables-and-their-health-benefits/

I think all of these vegetables and fruits named above would be perfect to grow and harvest within the greenhouse I propose. The roots from the plants will sit within the tanks of the fish farm.

Fig. 29, 30, 31, 32, 33, 34 & 35

REJUVENATING SHELLFISH RESTAURANT

One of the features of my programme is the 'Rejuvenating Shellfish Restaurant'. This is the restaurant that will be situated in the middle of the Hippodrome. The centre of the hippodrome is located right below the dome shaped roof that gives it that iconic look. However, this restaurant isn't any ordinary restaurant, it contains 'floating' tanks that hang above the dining tables and chairs within the centre of the building.

These tanks contain shellfish that have half disintegrated due to ocean acidification. They will have been collected from the ocean and relocated to our tanks which have a controlled environment which means that the pH is controlled and sodium carbonate (which is what they use to build their shells) can be pumped in to help the shellfish build their shells back up again. After the shellfish have rebuilt their shells, half will be given as produce to the restaurant, and the other half will be released back into the oceans.

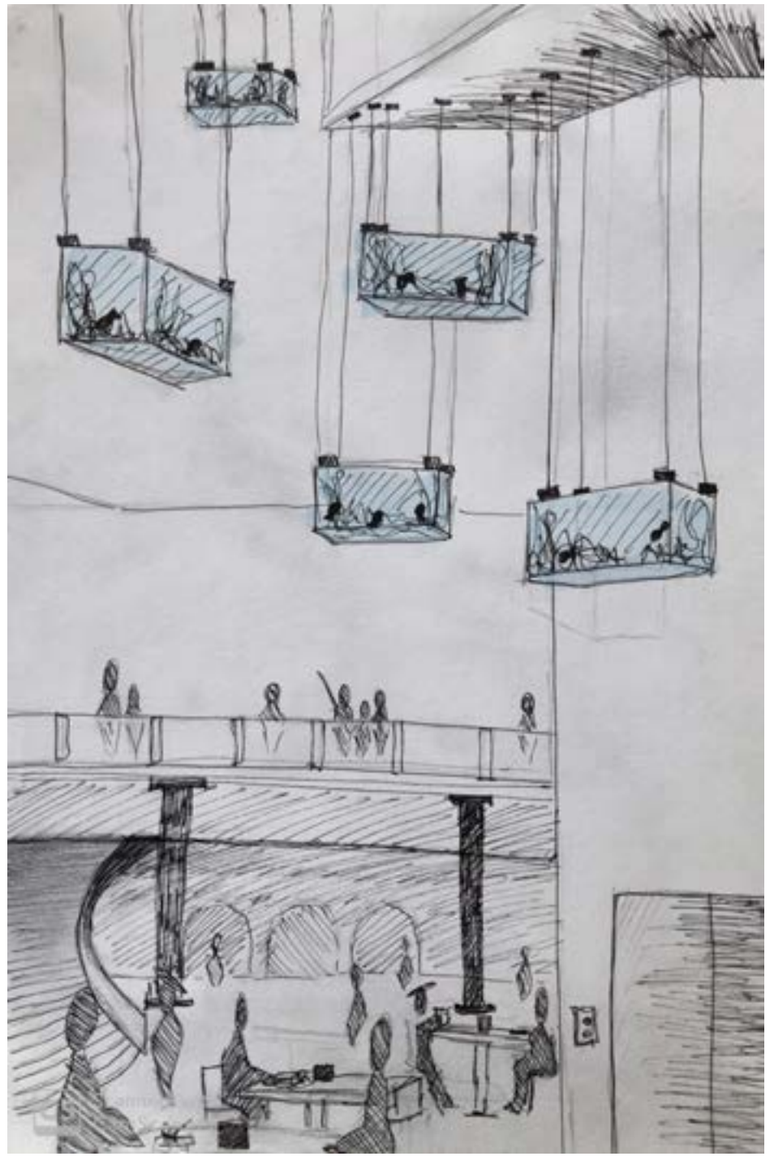


Fig. 36

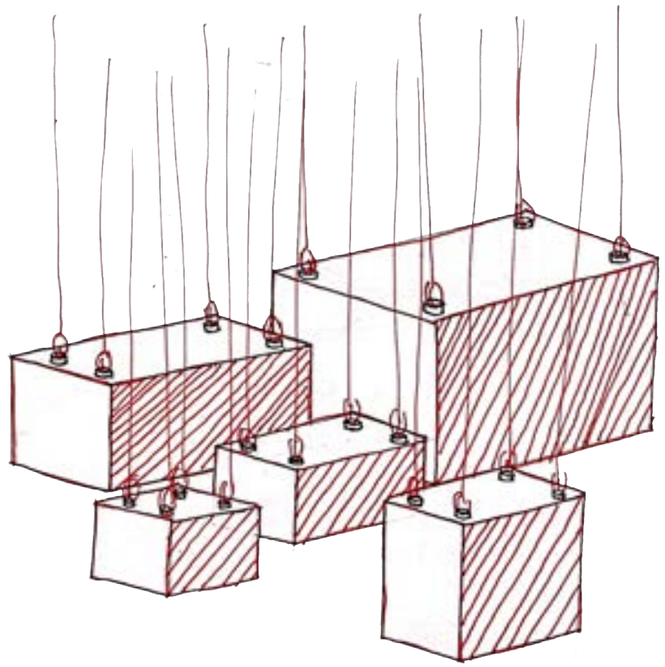


Fig. 37

The tanks that will be suspended will be different sizes, this is just to add aesthetic to the design. Many of them will hang from the roof of the dome and be attached by clips and bolts that will attach to the tank itself.

Each tank will be suspended at different random heights to ensure visibility from all the levels of the building. Some will hang relatively close to the ground, just a metre higher than the average height of a person, to allow people who are dining in the restaurant to be able to look up and be a part of the immersive experience whereas other tanks will be suspended higher up to allow people of the first floor to be able to look up into the tanks.

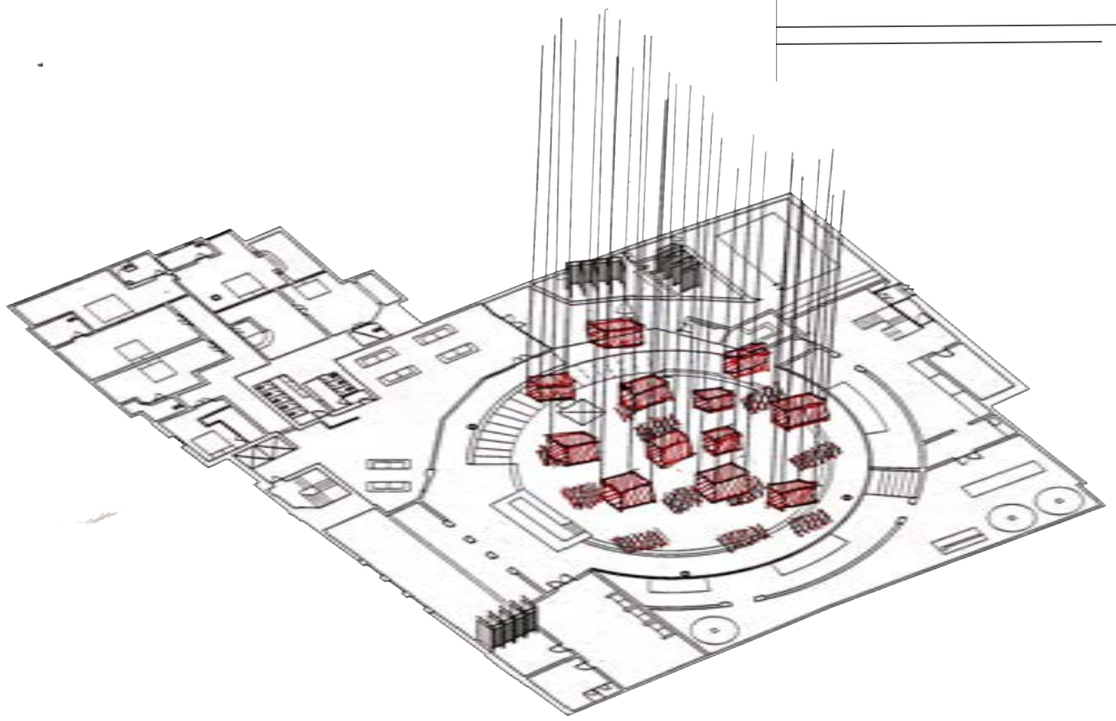


Fig. 38

FLYTOWER
HOW TO ACCESS THE TANKS

Fig. 39

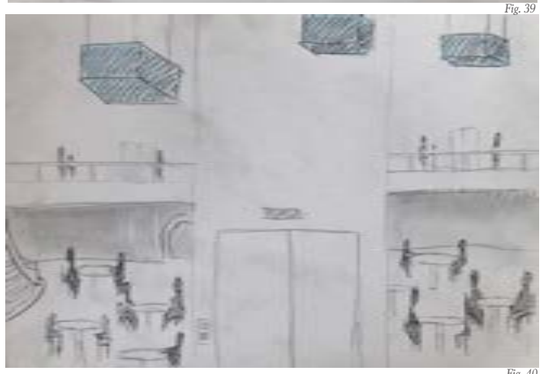


Fig. 40

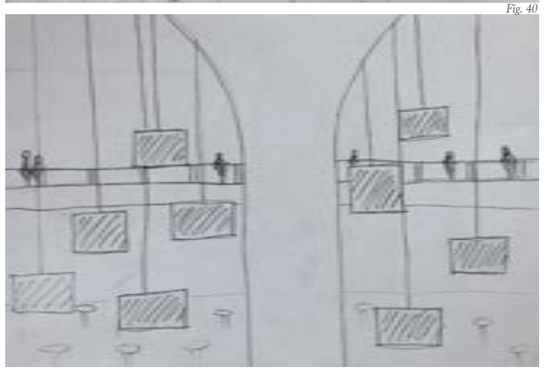


Fig. 41

Fig. 42

But how will the staff access the tanks to change, clean or moderate them?

Already in the existing Hippodrome is there a fly tower located towards the back of the building. The extends from the first floor right the way up to beyond the roof. This still has all the compartments where the stage set would have been stored in previous years. So, instead of inserting new machinery, we would use this as a way of preserving some parts of the building that could be useful to the programme. In this case, the ropes that would hold up the stage set before, would be attached to the tanks. The ropes would run out of the fly tower, up the inside of the roof and fall down attached to the tanks at different positions. Once the tanks need changing or cleaned, the tanks will be slowly lowered to the ground floor using the fly tower ropes. In this case, the restaurant would need to be closed off for this occasion. Then, after they are cleaned, they will be halted up again to the desired heights.

KITCHEN & WORKSHOP

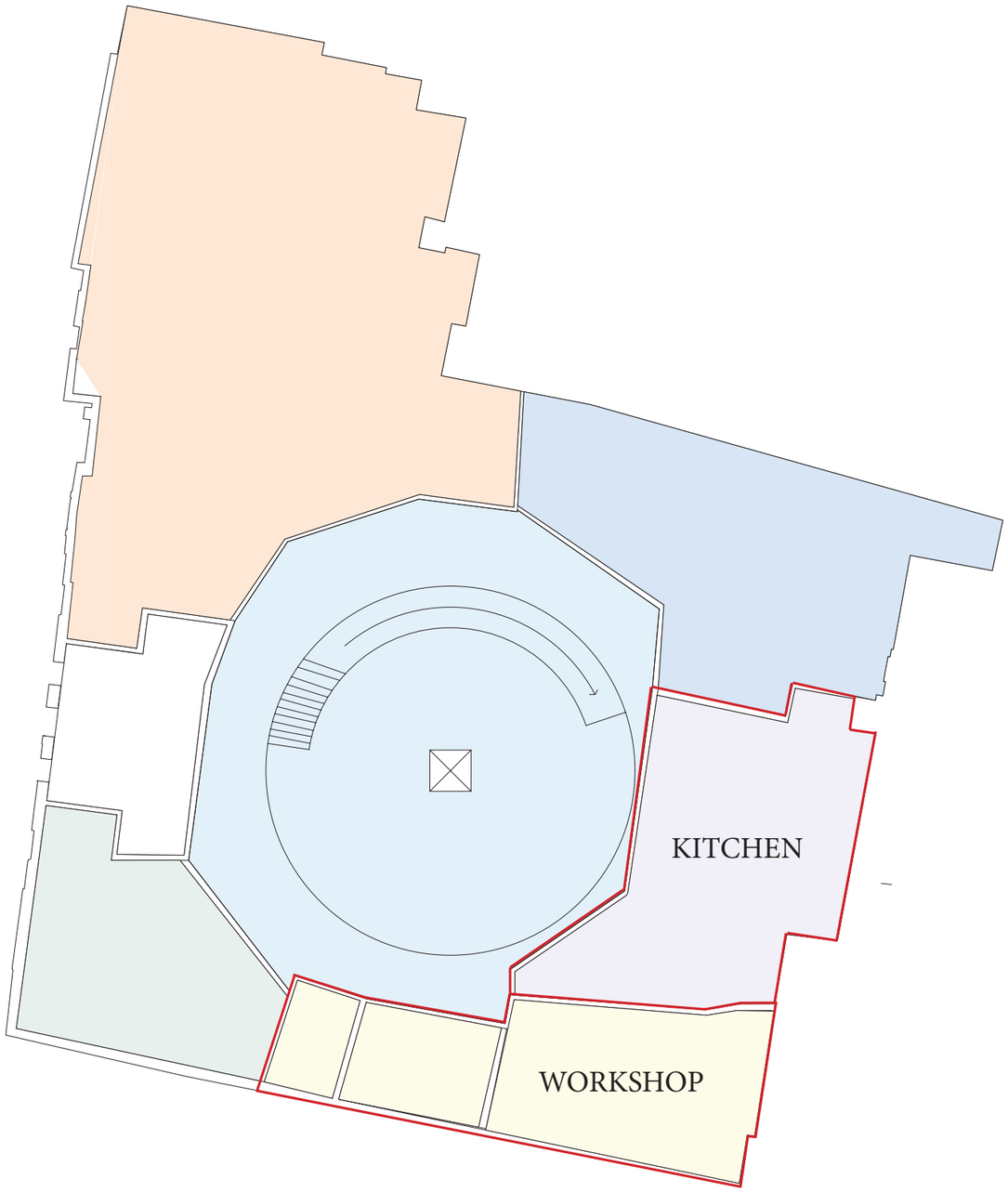


Fig. 43

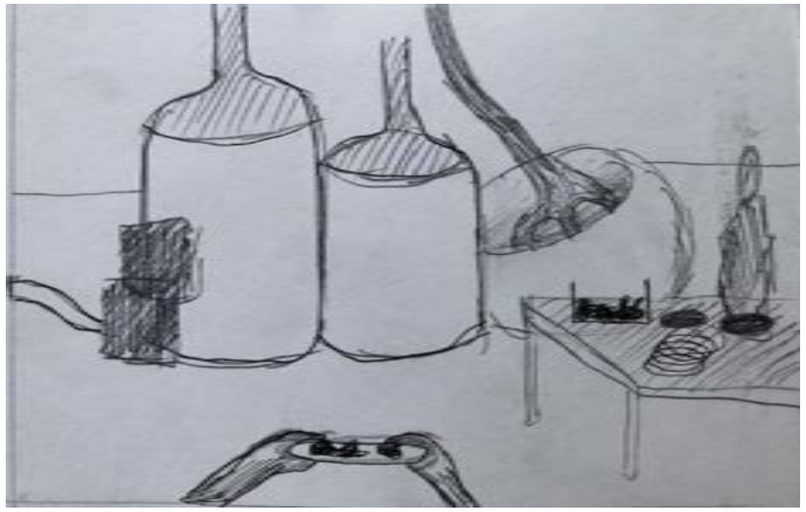


Fig. 44

In the building I have situated a kitchen and a workshop. The kitchen will be where the food is made and prepared. This will be located right at the back of the building. The workshop will be around the corner from the kitchen, they will be connected. The workshop will be where recyclable materials will go and be upcycled into something useful for the hotel, for example, the old used seashells from the restaurant will be brought in from the kitchen, washed and made into concrete that will be moulded into different items like crockery for the kitchen and gift shop.

Other items that will be recycled to the workshop are old fishing nets used to catch the fish and shellfish that are no longer needed. These can be stripped down and made into carpets for the hotel, and also rugs that can be used in the hotel rooms and sold in the gift shop.

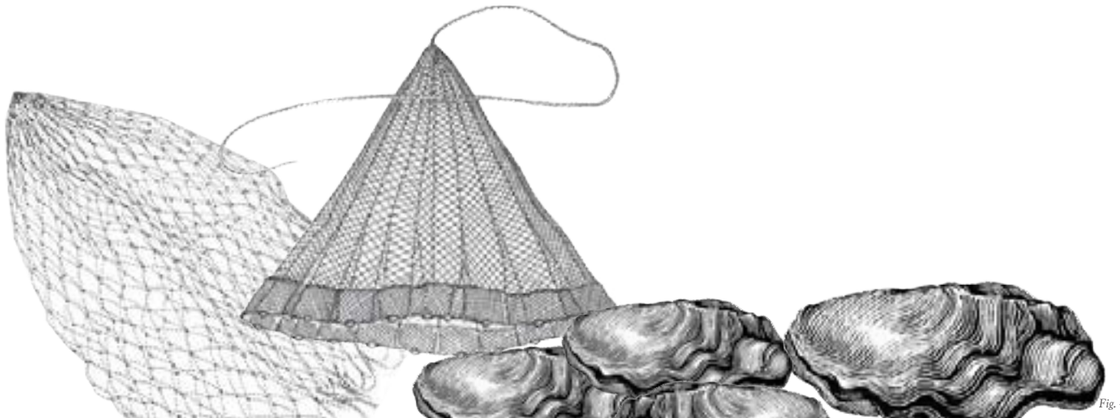


Fig. 45

HOTEL ROOMS

When understanding where I should position the hotel rooms, I tried many different places which will be explained further on, however, I didn't want to take up too much room as I wanted to make sure there was enough space for the other elements of the design. In the existing building, there is a part to the left of the facade that sticks out of the building, I thought this would be a perfect opportunity to make use of this area for the hotel rooms as it is large enough to a reasonable amount but not too many.

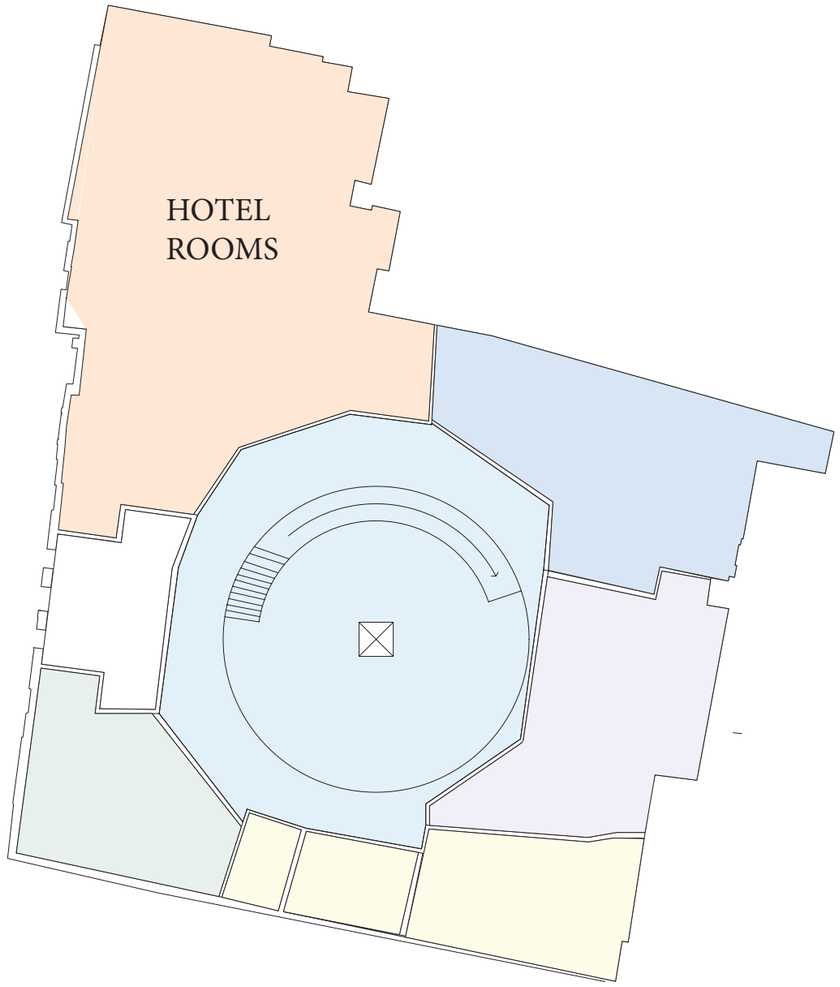


Fig. 46

Fig. 47

When deciding how many rooms, or the density of rooms the hotel should have, I decided to have a look at the amount of rooms a small hotel should have and how it is laid out. On the right, you will see a plan of the hotel in Berlin called Hotel Berlin, Berlin. It is not too big but provides me with enough information to set out the rooms in my hotel.

S

SPACIAL TESTING

Iteration testing using sketch models to work out space allowence

ITERATION
1.

In this first iteration of what I could propose to design, I decide to get a general overview of what sections of the design could go where, for example, where could the hotel rooms go? Where could the restaurant be situated? Where about on the roof would the rooftop bar go?

This plan shows where each area might go very loosely, the rooms aren't shown in detail just yet.

I wanted to show a general look of the rooftop bar being situated just above the roof, in the centre of the dome. The rod of wood that runs through the middle of the dome up to the top is meant to resemble a lift that takes visitors up to the bar.

The bar would essentially be sitting within a fish farm and greenhouse; this grows certain produce using hydroponic plants for the restaurant. This would be an immersive experience.

Fig. 48

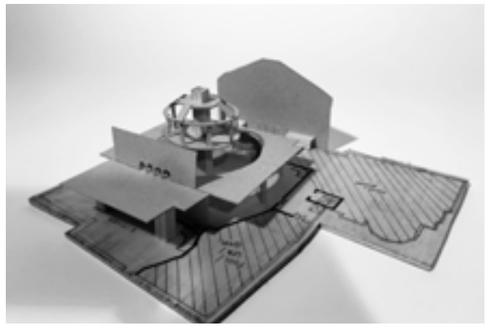


Fig. 49

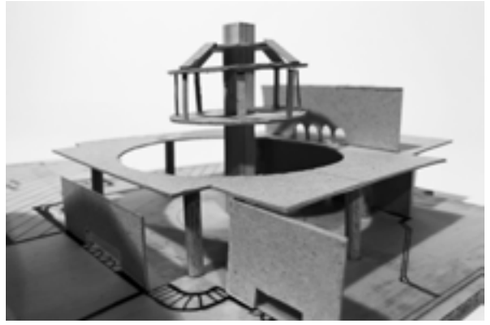


Fig. 50

Fig. 51

Fig. 52

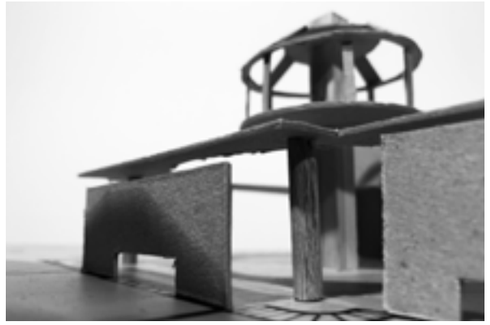


Fig. 53

ITERATION
2.

For iteration 2, I decided to focus on what walls I can reuse within the existing building. I tried to look at the floorplan mainly in this iteration to see in detail where each area would go where. The hotel rooms are the densest area of the hotel in this iteration. However, it still shows the different areas in detail of the communal areas, for example, lounge, pool and gym, and restaurant.

KEY:

Orange: Hotel rooms

Blue: Pool and Gym

Green: Lounge

Red striped: Resturant

For this iteration, I wanted to include the idea of having balconies that protrude out into the centre of the dome, to overlook the tanks that could hang down. However, after carefully consideration, I soon discovered that this would mean a lack of privacy for the people whose rooms look out onto the centre.

Fig. 54

Fig. 55

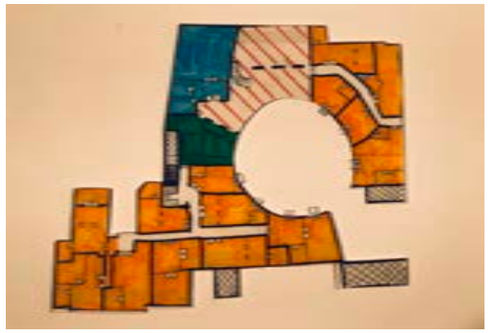


Fig. 56

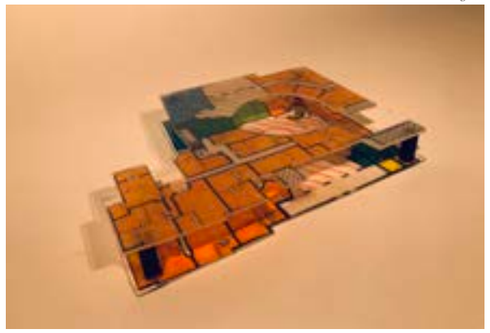


Fig. 57

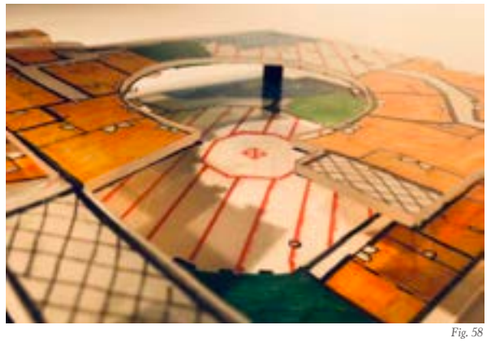


Fig. 58

ITERATION
3.

Iteration 3 shows another floor plan with certain modelling to it. I have tried to look more into the flow of the different path's visitors may take, whether they are staying at a room in the hotel or just eating at the restaurant. I wanted the different sections to integrate with each other more within this iteration and overlap. There are less rooms and bigger open spaces for hotel guests as well as visitors to enjoy.

I remade the greenhouse rooftop bar model that sits within the centre of the dome, this time, I have tried to include tanks that would be suspended from the ceiling and hung with rejuvenating shellfish within them. Again, the lift would run through the centre for visitors to get to the top.

Fig. 59

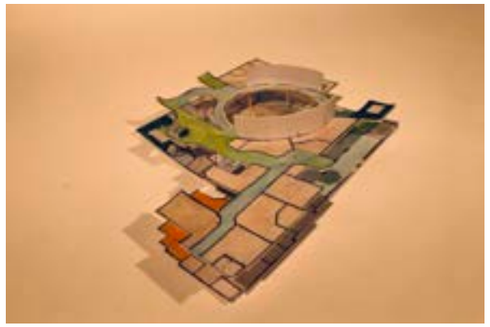


Fig. 60

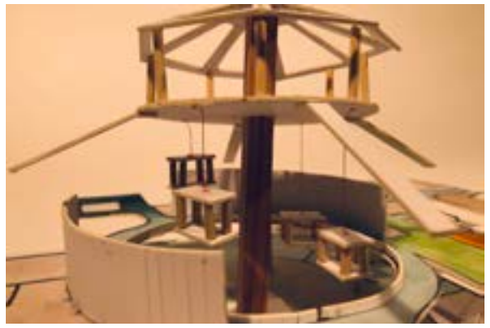


Fig. 61

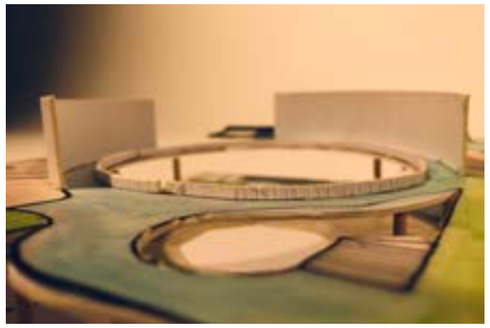


Fig. 62

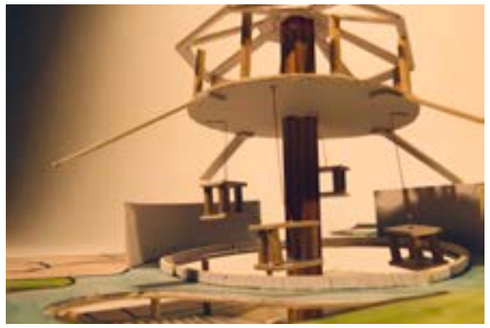


Fig. 63

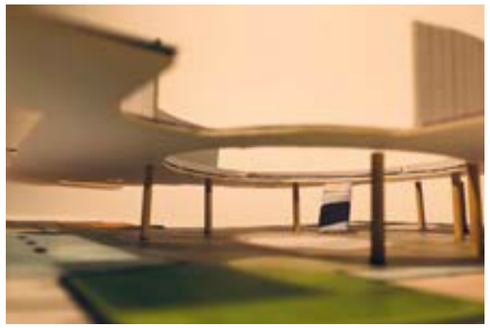


Fig. 64

ITERATION
4.

Iteration 4 is very similar to iteration 3. The flow is relatively similar except I have added a few different extras to the design, i.e., a pathway that runs through the dome, this has been put here to provide a viewing platform for visitors to view the tanks that will hang down.

I had to also consider how I would transport the fish from outside to upstairs to the fish farm within the greenhouse bar. After carefully looking into the existing plans, there is a fly tower at the back of the building.

This fly tower runs all the way up to the top of the building, past the tip of the dome. This would be perfect to use for transportation. The box represents the fly tower.

Fig. 65

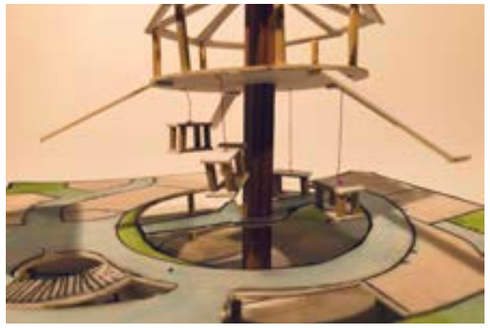


Fig. 66

Fig. 67

Fig. 68

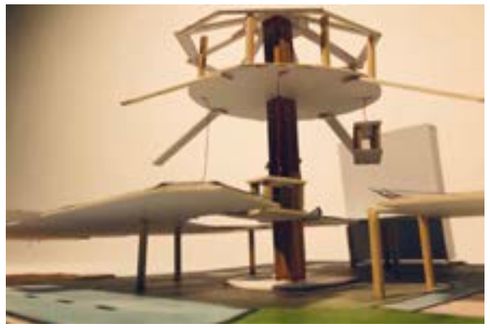


Fig. 69

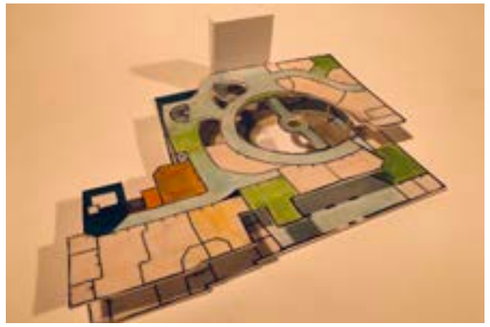


Fig. 70

ITERATION
5.

Iteration 5 is my final iteration. I decided to look into adding workshops into my design as said before in previous pages of research. I wanted to show how they could sit within some parts of original design and how they would work with other areas.

This iteration is very basic and quick. The flow of pathways isn't as fluid as some of the other iterations, but I will integrate that aspect in my final design.

It also includes the fly tower, rooftop bar and a new staircase which winds up the centre of the dome

The dark hatched areas of the iteration are open space. This shows on the first floor. I have added in these pockets of space to make the overall centre feel more open.

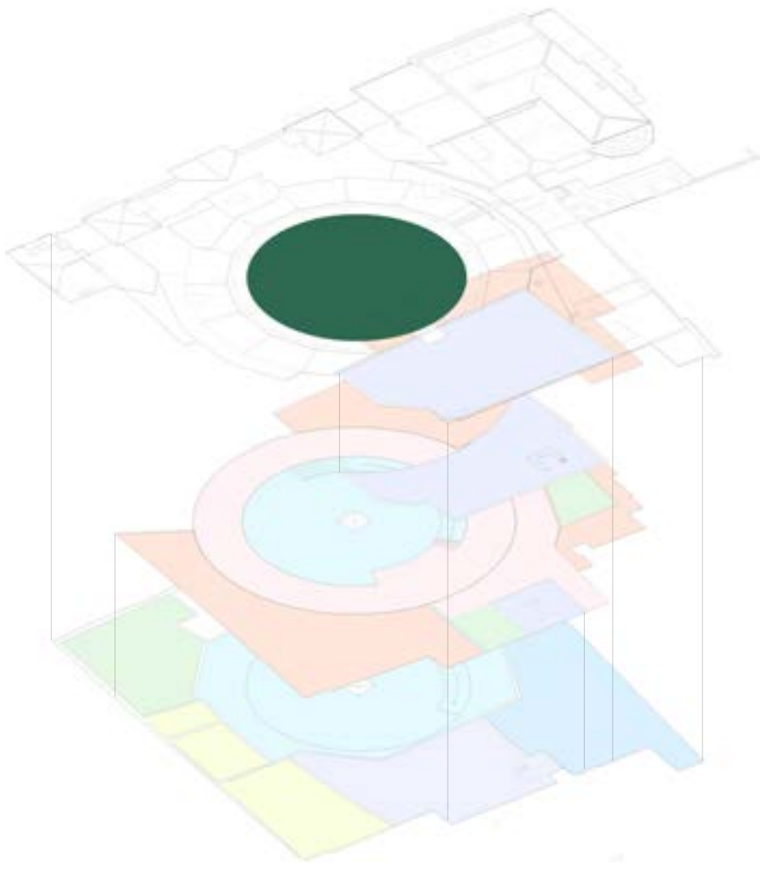
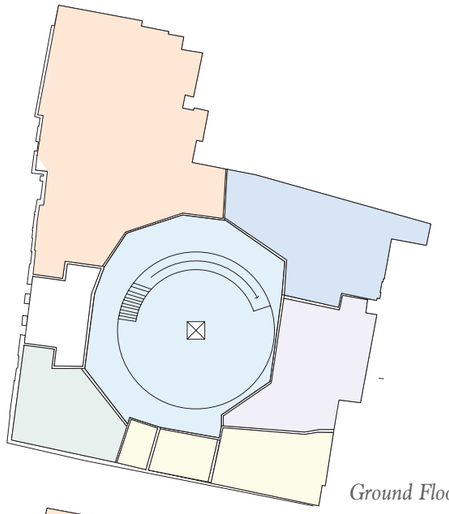
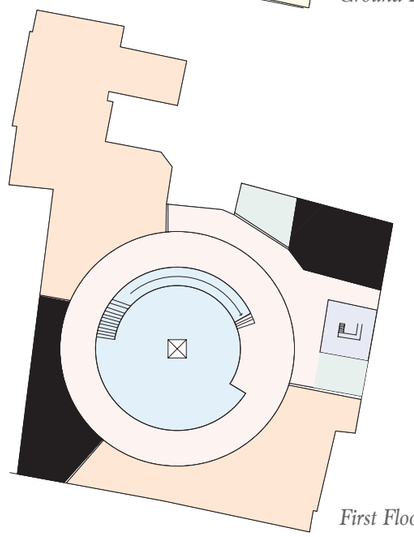


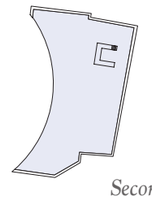
Fig. 71, 72, 73, 74, 75



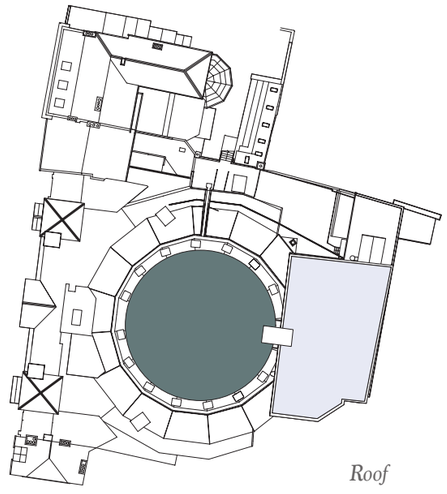
Ground Floor



First Floor



Second Floor



Roof

Hotel Rooms
Lounges (some may be private)
Staff only areas (includes Kitchen, Stairwell and Flytower)
Resturant and Main Stairwell
Pool and Sauna
Workshops
Viewing Platforms
Rooftop Bar
Gift Shop

PATH'S
USED BY STAFF MEMBERS

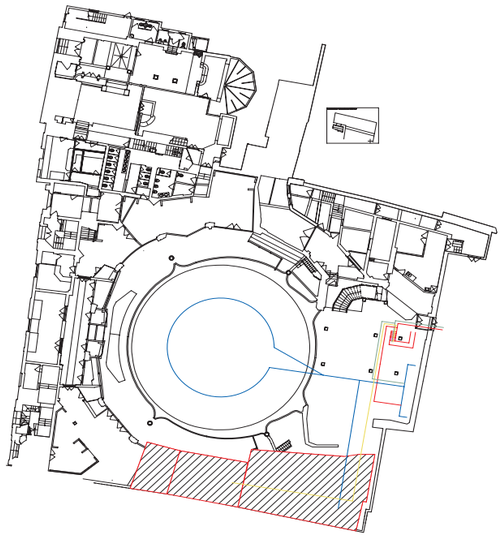
The next four pages that are displayed on tracing paper show the multiple different paths that individual staff members may take to fulfil a certain activity.

The RED path shows how the fish for the fish farm will be transported from outside after arriving at the site, to the tanks of the fish farm up on the rooftop greenhouse bar. It also shows the same route coming back down the stairs, but instead, flowing through into the kitchen to be used as fresh produce for the restaurant.

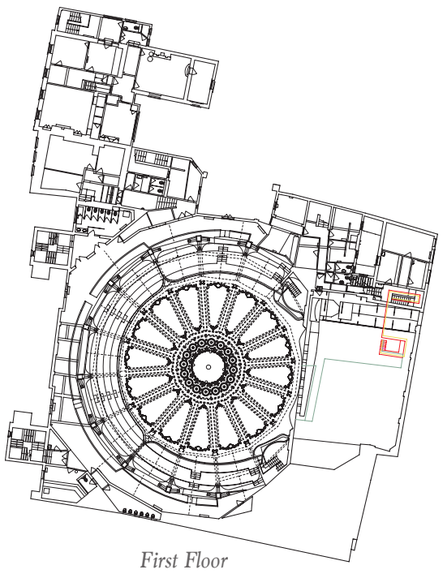
The GREEN path shows which route would be taken when transporting the shellfish to the rejuvenation tanks that suspend from the domes ceiling. The path flows to the fly tower, because this is a pre-existing mechanism which would be well suited to be adapted into a mechanism which allows the tanks to be suspended down to the 1st floor to be either cleaned or to be topped up with shellfish. You will also notice that this path carries on into the kitchen as well, this is because half of the recovered shellfish will be used as produce.

The YELLOW path starts on the roof and heads down the same way as which the red path takes. This indicates how the used fish netting equipment used from the fish farm gets transported downstairs. it then gets taken to the workshops. These workshops consist of two separate rooms. One for recycling the old fish nets to be stripped and made into carpets and rugs. The other room is for the upcycling of shellfish's shells.

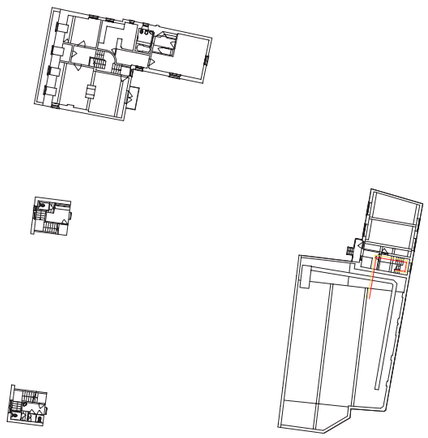
The BLUE path shows the direction a waiter or waitress would take when collecting finished meals that contain empty shells from the rejuvenated shellfish. These will be taken into the shell workshop to be crushed and made into a concrete mixture. This mixture can then be used as building materials or, what is most appealing to me, is to be made into concrete crockery that can be used in the restaurant. The excess crockery, rugs, carpet, materials and items made from the workshops can be sold to customers and the gift shop which sits next to both of the workshops.



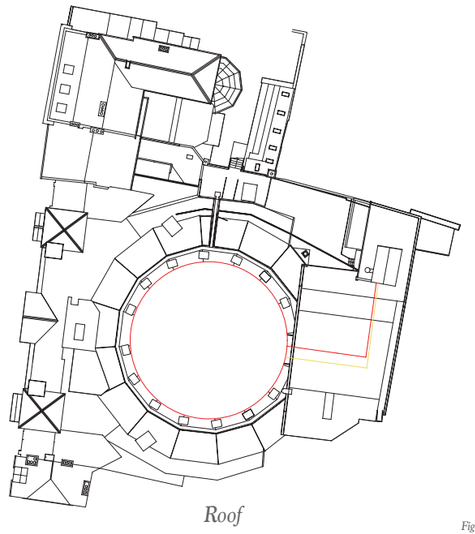
Ground Floor



First Floor



Second Floor



Roof

Fig. 76, 77, 78, 79

CHAPTER 3

"Materials & Systems"

P

PRECEDENTS OF MATERIALS

Research into how the recyclable materials I am using can be upcycled

SEASHELLS

BUILDING WITH SHELLS

The shells of oysters, clams, mussels and so on are incredibly strong. At juvenile stage, they build their shells up from calcium carbonate which makes it a strong component. This is vital for their survival to stop predators breaking their shells. However, as I have previously mentioned, a big problem at the moment is ocean acidification which is causing the calcium carbonate to dissolve.

As the shells are so strong, it poses the question of whether it could be used as a building material? After doing extensive research, I later found out that crushed oyster shells have the quality to act as aggregate or grit in concrete and mortars. When concrete is being produced, it produces a vast amount of CO2 emissions. By using oyster shells as an aggregate instead of purposely making up grit or an aggregate, this would reduce the emissions of CO2 drastically.
All around the world, dozens of shells are thrown away, they also are non-biodegradable, so in order for them not to pollute the land, we need to find other ways to use them effectively. "A South Korean university study found no significant reduction in the compressive strength of the mortars containing small oyster shell particles instead of sand"[1]

So, what are the material characteristics of oyster shells? "Oyster shell is composed of protein polysaccharides and minerals including calcium magnesium, sodium, copper iron, nickel, strontium and some microelements. Chemical and microstructure analysis showed that oyster-shells are predominantly composed of calcium carbonate with rare impurities."[2]

1 (MaterialDistrict, n.d.)
2 (John and Internationals, 2016)

Fig. 80

Fig. 81

Fig. 82

Fig. 83

How does using oyster shells as a building material affect the enviroment? As climate change is affecting the world quicker and quicker every year, researchers are rapidly looking for alternative options instead of aggregate materials, "In particular, the increasing cost of transporting raw aggregate materials such as gravel has led researchers to begin investigating alternative sources for concrete aggregates."[1]

As my project heavily revolves around shellfish, a small part of it is how we can recycle the shells after they have been used. I want to use the shells to crush them up and make them into different materials such as concrete to be moulded into pillars for the interior of the building or as simple as crockery to be used in the restaurant or sold in the gift shop. Researching this has proven that oyster shells is a good alternative to mix with concrete to keep CO2 emissions down as well as recycle the non-bio gradable shells into something that can be used again, but also, it is still as good as grit or mortars.

1 https://materialdistrict.com/article/oyster-shell-aggregate/

FISHING NETS

UPCYCLING FISHING NETS TO CARPETS

Abandoned fishing equipment within the oceans seems to be a massive problem for our oceans and global warming. 50% of 'ocean litter' is fishing equipment which is a huge amount. One idea companies are doing is to try help recycle these fishing nets so they can get upcycled into new products. There is a company called Econyl Regenerated Nylon, who I have previously spoken about, that strips recycled fishing nets down to its raw and purest materials to be then produced into other products, i.e. clothing, carpets, rugs and many more other items.

When looking into the different items fishing nets can be produced into, I found the idea of them being produced into carpets and rugs fascinating and wanted to create a similar idea within The EcoLux Hotel. The fishing nets used for catching the fish and shellfish will then be recycled to be made into rugs for the hotel and to be sold in the gift shop. Because this would be a gradual process whilst the hotel is open, fishing nets could be collected from local fisheries in Eastbourne, Shoreham and Brighton to be upcycled into the carpets of the hotel.

So, how does fishing nets suddenly become a completely different item? Through purification methods and regeneration porcesses, the nylon is stripped back to its original yarn. It is then produced into its new form; carpets or rugs![1]

The amazing thing about this, is that it can be recycled and recycled again and again, being made into new purposes each time.

1 (Econyl, 2018)

Fig. 84

Fig. 85

Fig. 86

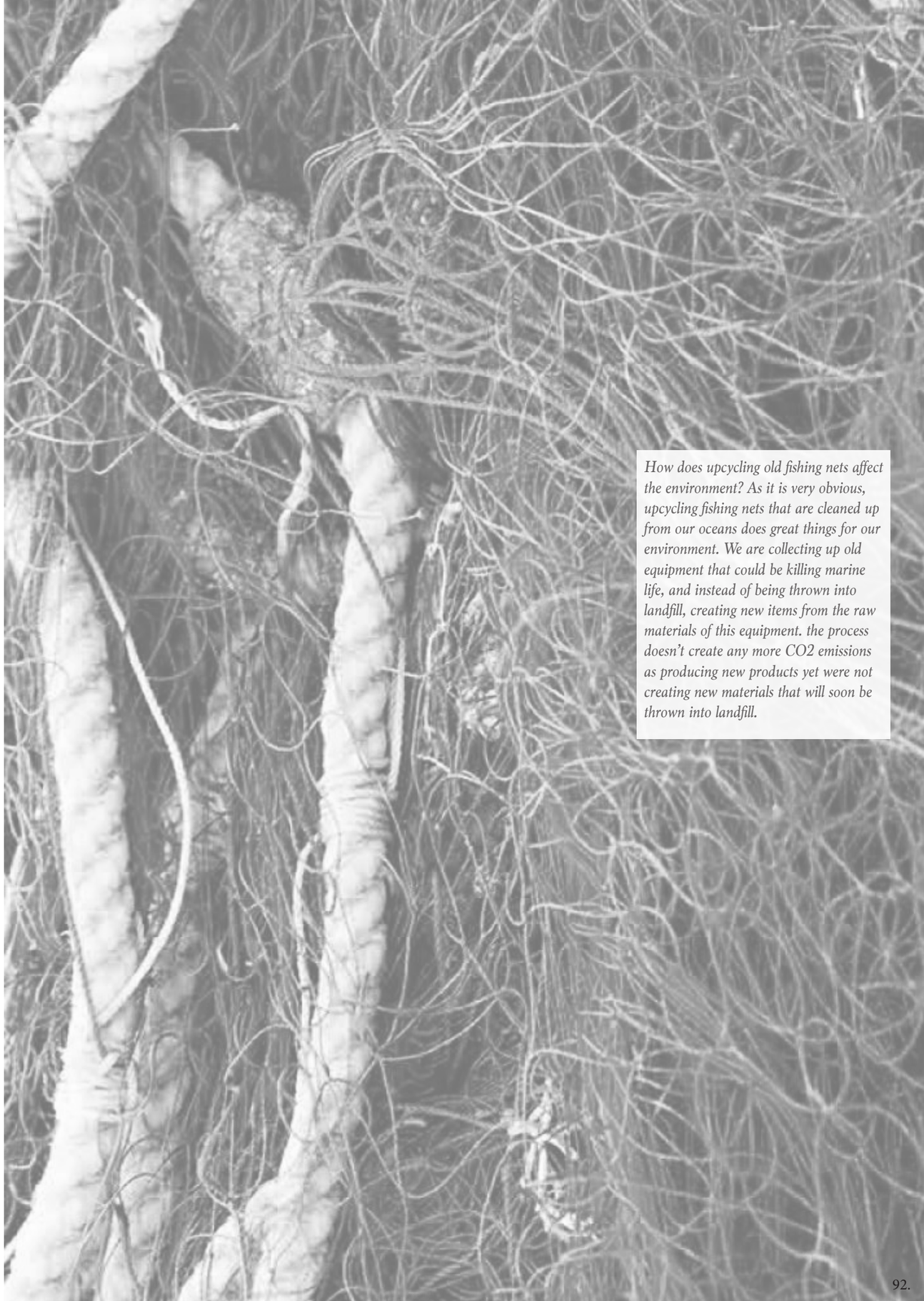


Fig. 87

How does upcycling old fishing nets affect the environment? As it is very obvious, upcycling fishing nets that are cleaned up from our oceans does great things for our environment. We are collecting up old equipment that could be killing marine life, and instead of being thrown into landfill, creating new items from the raw materials of this equipment. the process doesn't create any more CO2 emissions as producing new products yet were not creating new materials that will soon be thrown into landfill.

CRUSHED GLASS

RECYCLED GLASS FOR BUILDING

Another material that seems to be found within our oceans very often is glass, in particular, glass bottles. In my opinion, glass is such a gorgeous material; the transparency, how it looks when light is reflected off it, how it can look with lots of shards overlapping each other, it can give stunning affects and is used in a lot of designs. However, a lot of glass that is used as a new material is rarely from recycled glass, even though there are tons of glass bottles circulating around our seas.

So, what can glass be used for? Obviously, glass can be melted down and reformed into a new object, but also, it can be crushed and used as aggregate, similar to oyster shells.
"Crushed recycled glass can be used as a complete fine aggregate replacement in concrete, while finely ground glass (powder) has pozzolanic properties and can be used as a Type II (pozzolanic) addition."[1]
To add to the benefits of reducing grit and man-made aggregate sources to be produced, adding crushed glass to concrete can have gorgeous design results, so it looks aesthetically stunning as well as be ecological.

"Glass aggregate can replace part or all of the sand and gravel in concrete, for effects that range from colorful terrazzo, to granite- or marble-like finishes, to concrete that reflects light like a mirror. Glass aggregate can even be used to produce concrete that literally glows."[2]

Another way you can use crushed glass is adding it to a resin. Although this has no structural benefit, it's a great way to include recycled materials into my design proposal that also adds to how the interior of The EcoLux Hotel looks aesthetically.

1 (www.concrete.org.uk, n.d.)

2 (Concrete Decor, 2018)

Fig. 88

Fig. 89

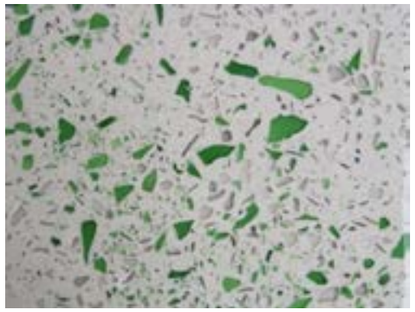


Fig. 90

Fig. 91

How does using crushed glass in building materials affect the environment? The benefits with using glass instead of aggregate or grit is that it will reduce CO2 emissions from the aggregate getting purposely made for the job. Also, one of the obvious benefits is that its reusing glass that would have been thrown away in landfill otherwise.

In my final design, I want the elevator to be in case in a clear resin that has particles/shards of glass in it. The effect of the layered pieces of glass can look really interesting, especially when light reflects of it. Then the mechanics would be on the inside and the lift itself would be made out of steel and glass that would slide up and down the elevator shaft, providing guests an abstract view through the upcycled glass.

SCRAPS OF PLASTIC

UPCYCLING PLASTIC INTO MATERIALS

Plastics is one of the main materials that have been littered into the sea and globally on land too! Plastics are fossil fuels and essentially give off greenhouse gases that is the culprit of climate change. To reduce production of plastics, we need to start recycling and upcycling plastics that have already been made. They aren't bio-degradable which practically means that they can be reused again and again and don't really have a life span.

But what can plastic be upcycled into? Plastic can be upcycled into so many items, such as, toys, bottles and much more sustainable materials like worktops and building materials. One company called 'Smile Plastics' strip the recycled plastics down to their raw material, sort them, and bond them again using different processes (I asked for the process but they said it was top secret!), this can then be turned into gorgeous, patterned worktops or walls. When asking Smile Plastics about how structurally stable the material was, they said that although it is amazing and durable for worktops, it should only be used as an aesthetic feature of a wall instead of being relied on structurally. However, with this in mind, you would still be reusing a material long term within a project to make sure the design is how you liked it.

Within my project, I would be happy to use plastics for the kitchen and bathroom work surfaces, as well as dining tabletops. The patterns that Smile Plastics create are gorgeous and look very high end; they have a marble like look to them.

Plastic can also be used in floor tiles, wall tiles, and decorative items as well. This is an idea I would like to look into and see how plastic could look within a tile.

Fig. 92

Fig. 93

Fig. 94

Fig. 95

What is the process of upcycling plastic? When asking Smile Plastics some questions about the process, they replied:

"Our materials are made from pre-consumer waste, so we take over-produced , offcuts, and scrap from packaging manufacturers which would otherwise go into landfill.

We chip up our material and process it into our sheets of material, using different combinations and proportions to create the different styles. It is hard to say exactly how long it takes to go from the raw material to the finished sheets as there are several rounds of mixing and pre-processing.

Our materials have been used as a cladding on walls to create accent walls – they are not structurally stable enough to be used instead of plasterboard etc. Our custom materials are also used as art pieces on walls."[1]

This gave me a great insight on how the plastics are made, the durability of them and which pieces of plastic can be used.

1 Email from Smile Plastics

SMILE PLASTICS, LONDON

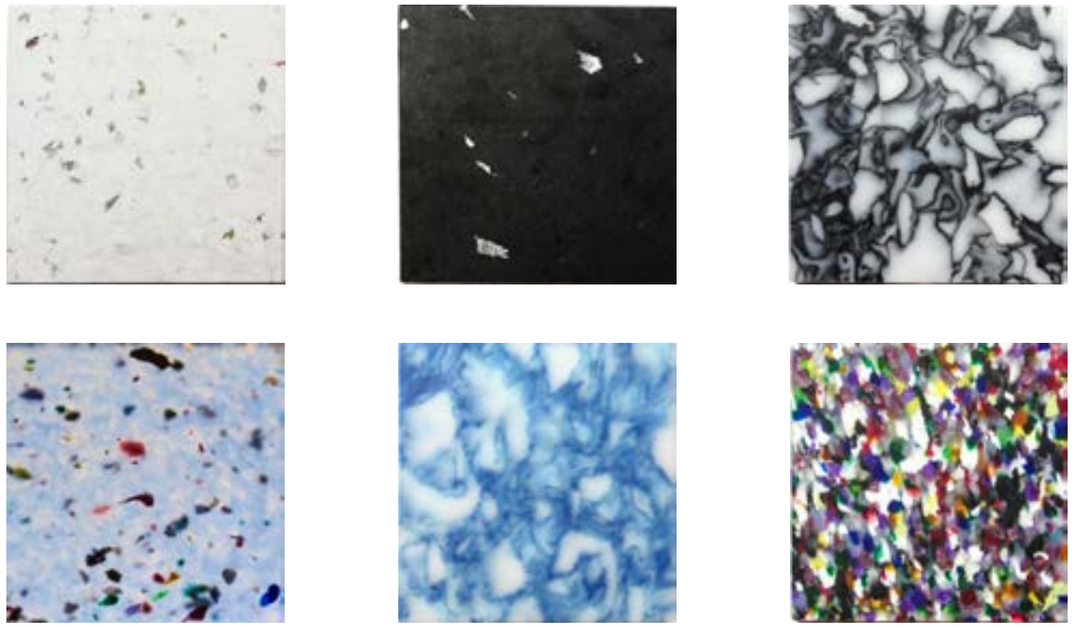


Fig. 96

All of the textures and patterns above are made from 100% plastic waste either found in land or in the oceans. The material it has been made into is hard, dense and waterproof which is ideal when made into different objects and furniture, i.e., table tops, work surfaces, bathroom surfaces. The material is also food grade, so it can be made into kitchen worksurfaces where wet food is prepared. The materials that I think I would be interested in looking into would be 'Black Dapple', 'Blue Dapple', 'Charcoal' and 'Alba' as the patterns on these plastics are subtle and they have classic tones running through them. This works well if I am designing a high-end property so that the materials also ooze luxury as well as being environmentally friendly.

Fig. 97

"Smile Plastics is a materials design and manufacturing house making exquisite hand-crafted panels from waste materials. On top of the classics range of panels, they also offer limited editions and a bespoke materials service, as well as a custom design and build service. The materials have inspired designers around the world and have been used in wide-ranging applications from small products to large-scale installations in both residential and commercial premises."

"Our mission is to change people's perceptions around waste via innovation – to use art and technology to unlock the hidden potential in recycling and open their eyes to the unexpected beauty of scrap. In doing so, we hope to inspire more people about sustainability and recycling."

"Our process begins with us exploring the possibilities of waste materials on a pilot scale. We experiment with different waste streams, colours and patterns before trialling our production on a larger scale.

Developing a new material can take several months, though it sometimes takes significantly longer."[1]

These materials can be used in so many different ways that I will be taking on board all the different ideas and ways they have made these plastics into items etc. This can be used within my project as a luxury material.

1 (Smile Plastics, n.d.)

Fig. 98

Fig. 99

ECONYL® FOR INTERIOR DESIGN

Sustainable textile furnishing materials can contribute to your green building practices. ECONYL® carpet fibres are eligible for LEED® points, as part of the definition of worldwide standards for eco-friendly buildings. So you can create performance-driven carpets, carpet tiles and rugs while giving your clients an innovative sustainability solution.

ECONYL, REGENERATED NYLON

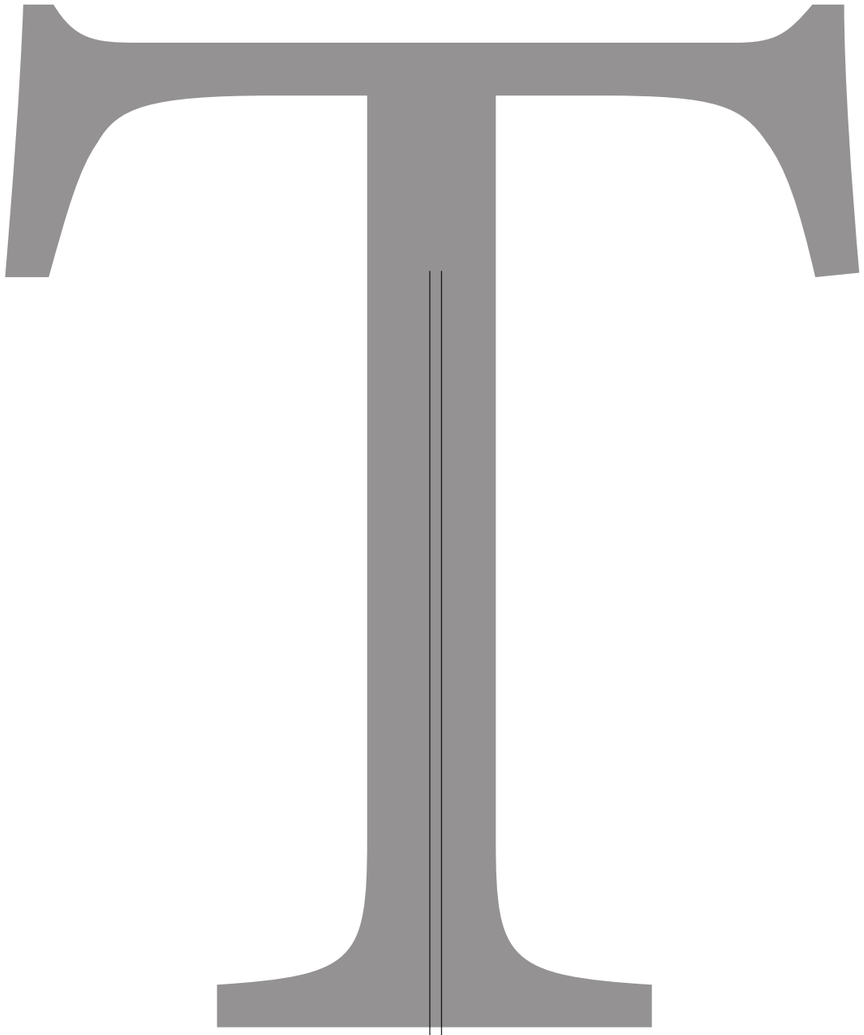
"ECONYL® regenerated nylon is a product that can help you close the loop. Made from waste, it's infinitely recyclable and can unleash infinite possibilities for makers, creators and consumers. It's all part of the ECONYL® brand vision to make the world a better place by pioneering closed loop regeneration processes and delivering sustainable products."[1]

Econyl regernated nylon can be produced into clothing, i.e swimwear and fashion. It can be also used for the interior of buildings, i.e furnishings or flooring.

1 (Econyl, 2018a)

"As well as being a solution on waste, ECONYL® regenerated nylon is also better when it comes to climate change. It reduces the global warming impact of nylon by up to 80% compared with the material from oil."

Econyl have many companies that buy their regenerated nylon which is a great way to move forward with circular economy. The waste is found from the ocean, for example, fishing nets and scraps of fabric. They are then, through purification, stripped back to the raw material and remade into a different product.



TESTING OF MATERIALS

Testing of recyclable materials using plaster and resin.

AIM

The aim of my material testing is to test out how different materials look set within plaster and resin. This is to provide a clear understanding to how these materials would work within my design. Using plaster and resin gives two different aesthetics; the plaster is to replicate concrete that would have been used and the resin is to show the aesthetic of the material being transparent. However, the plaster indicates more strength and stability.

The materials tested and set within the resin and plaster are:

- Seashells
- Glass
- Plastic

These are different materials found in the sea. Two of which pollute our oceans and one of which is the shell of marine life and is not biodegradable. As columns are used throughout my design, I am going to test the materials in the shape of a column. Another form I will show this testing in is the shape of a tile, to show how the materials would look as flooring or a design element on interior walls.

RESULTS OF MATERIALS
TILES

Whilst making the series of tiles I learnt a number of things I would do differently if I had redone the experiments. However, I am really pleased with how the majority of them have turned out and I know that they will be really useful when it comes to showing the design proposal through an exploded axonometric drawing.

The crushed glass tile in particular works really well. When light is reflected onto it, the transparency of the resin and glass creates really interesting affects and will be perfect to use as the material for the elevator and elevator shaft.

However, the plaster tile with crushed seashells in didn't work so well. As the plaster would have leaked over the seashells, I had to line the mould with blue tack and stick the shells within the blue tack so the seashells would actually be exposed, this however didn't give me a true representation of what the tiles would look like in real life. The seashells would actually be used as an aggregate in concrete and when polished down, it creates a gorgeous pearly shine which gives the tiles a uniqueness, so it was really hard to get the likeness.

The resin with seashells in shows a different material set in resin that could be used as an accent wall in the building. this would purely be for the aesthetic of the interior and would have no stability purpose to it. This tile worked relatively well as it still is a really interesting pattern and creates a shine.

The resin with plastic pellets didn't work so well. This is to do with how brightly coloured the pellets are so it isn't a true representation of what it could look like. Plastic can be used as an aggregate also in concrete, and when polished, can give a stunning pattern once the plastic is properly exposed, depending on the colour of the plastic.

Overall, it was interesting to see which tiles would work and which ones wouldn't. I will use the concept of the plaster tiles in my project but based on what they would look like polished down in concrete as you would have seen previously in the research above. The glass tile will be used and possible the seashell set in resin tile.

Fig. 100

Fig. 101

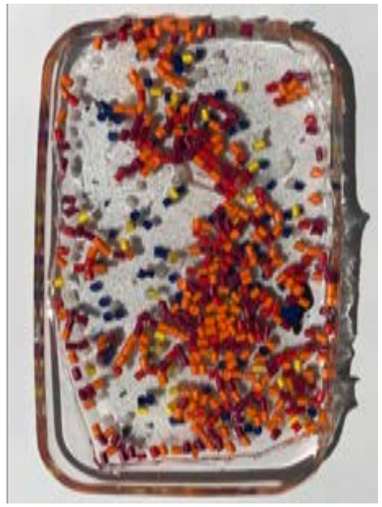


Fig. 102

Fig. 103

Fig. 104

Fig. 105

Fig. 106

RESULTS OF MATERIALS
COLUMNS

Making the columns I found to be a lot harder than making the tiles. This was due to the fact that once the resin and plaster had set, it was a lot trickier to get both out of the mould. However, two of the columns worked really well.

The column set in resin with crushed glass within it gives a similar effect to the tile; it creates a stunning green glow as the sun tries to penetrate through the green glass and resin. I also love the way the edges of the green glass disappear into resin; it seems to soften the look.

The column set in resin with crushed seashells in also worked really well. You can really clearly observe what is inside the resin with this test and it has produced some interesting colours and shapes within the resin. As seashells are not transparent, the light has seemed to get through the column, so it doesn't produce an interesting glow.

However, the column set in resin with plastic pellets within didn't work as well as the other two. I found that the plastic either floated to the top of the resin whilst it set or sank to the bottom leaving a void filled just with resin in the middle which was an ideal outcome. Similar to the tile outcome, the colours of the plastic pellets are too bright for what I intended.

When deciding to create columns made out of plaster to resemble concrete, I used the crushed-up seashells. Just like the tiles, seashells work as an aggregate and when polished, give a stunning effect. However, this was hard to show within these experiments because of lack of the right equipment, so, the plaster columns didn't work as well as I would have liked, however, you can still see some shell through the plaster in one column. I will be using the desired effect of the column using seashells within my final proposal. Another test that didn't go well is my first seashell column I attempted. It is displayed and the bottom of the right-hand page next to the failed plaster column and doesn't quite look like a column. The resin leaked everywhere and only some of it managed to stay within the mould. However, it still has created quite an interesting look, but I will not be using this one within my project.

Fig. 108

Fig. 109

Fig. 110

Fig. 111

Fig. 107

Fig. 112

The materials research really helped me form more knowledge on how I would construct these materials and use them within my design. Although I couldn't test all materials that would set in concrete, the research into them gave me a better understanding of how that would work and how it would look.

Within my design, I will be using columns made from concrete with glass as an aggregate and seashells as an aggregate. When polished down, this can give a stunning effect. As well as this, tiles will be made using glass and plastic within the restaurant, and also will be used within the hotel rooms, such as the bathroom tiles in the showers and opposite the basins.

The elevator shaft will be made out of a resin material with shards of recycled glass set in it. This will help upcycle a large amount of glass that has been found in the ocean.

The table tops of the restaurant and the work surfaces of the kitchen will be made out of reconstructed plastic. This material proves to be very durable and fire resistant and also provides a gorgeous marble look. The same material can be used for bathroom surfaces. The crockery used for the restaurant and sold in the gift shop would be made out of concrete with polished shards of glass and seashells within them, they will be coated to make sure no pieces of glass will break off.

Fishing nets, as explained before, can be stripped down and the raw material; yarn, can be made into carpets and rugs, these carpets will be used in the hotel part and first floor of the building. Rugs will be used within the hotel and sold at the gift shop.

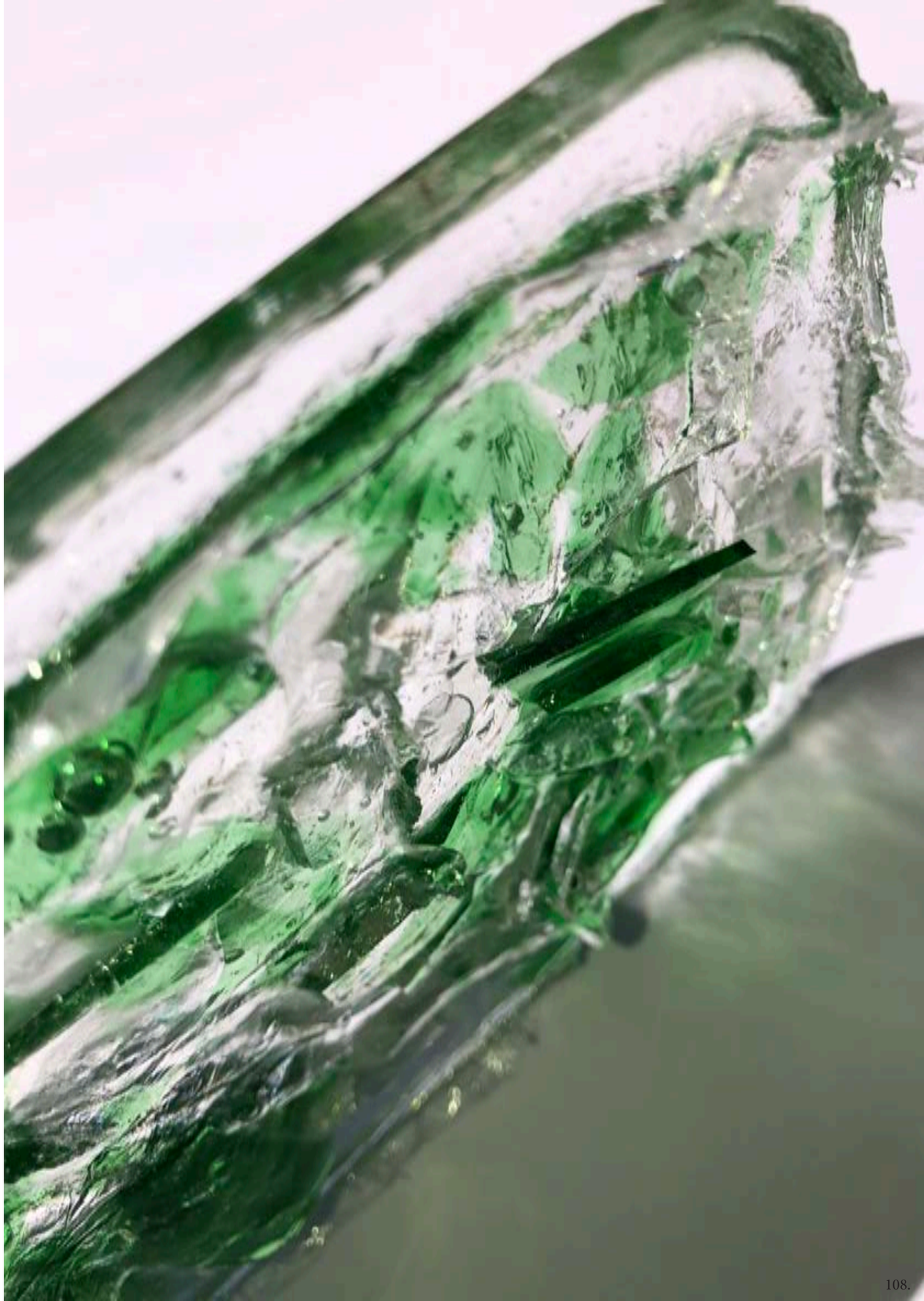


Fig. 113

S

SYSTEMS

Technical mechanisms used within the project

SUSPENSION OF TANKS

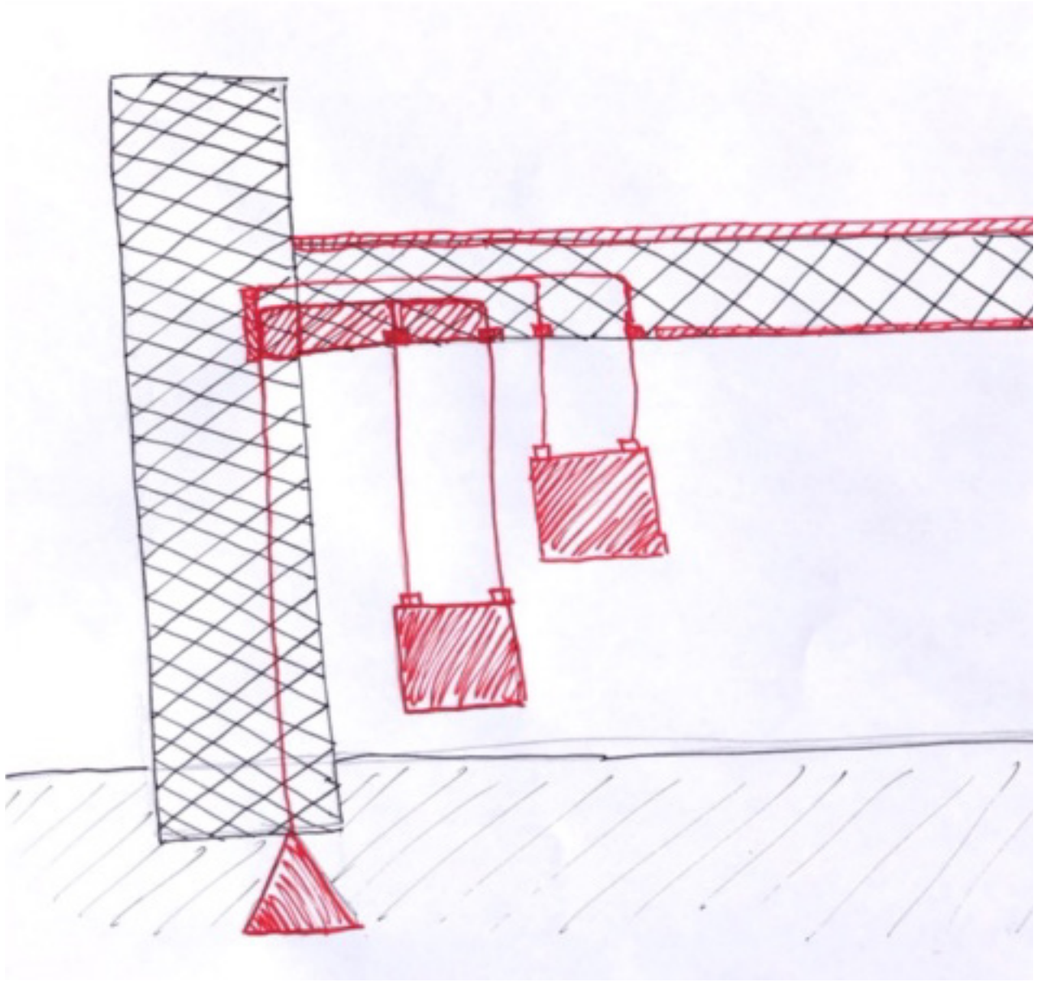


Fig. 114

When wondering how these heavy water tanks will be held up, I had a look into a counterweight system. I first thought that the tanks could be held up by chains that would run up to the ceiling and run down through the elevator shaft, down to the basement; this is where the counterweights would be attached the chains. As you can see for the sketch above, I was working out how this could result in the tanks being lowered to the floor to be cleaned.

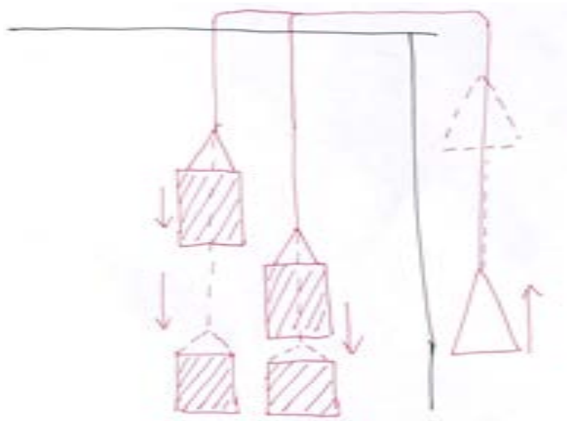


Fig. 115

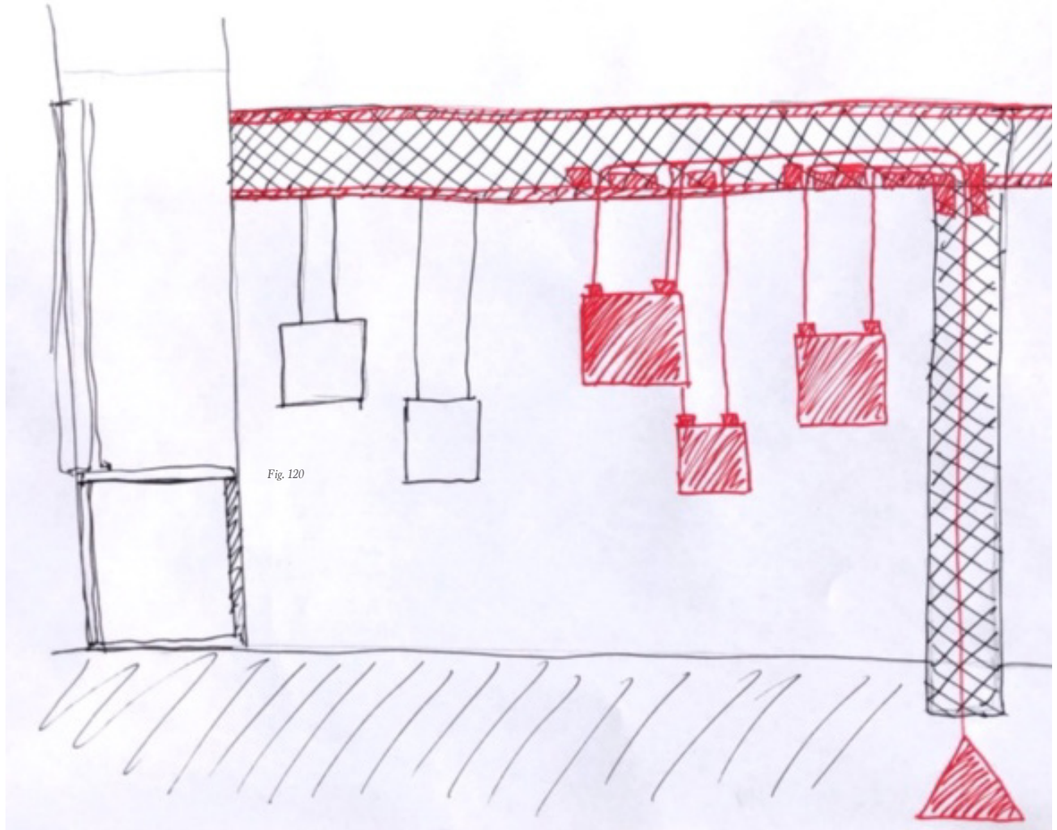


Fig. 120

Fig. 116

I then thought about different points of the building where the chains could run down. In the existing building, there is columns that are situated on the ground floor to hold up the first floor. I was thinking that I could use them and make them bigger so that they run up to the ceiling and the chains could run through them, down to the basement attached to counterweights.

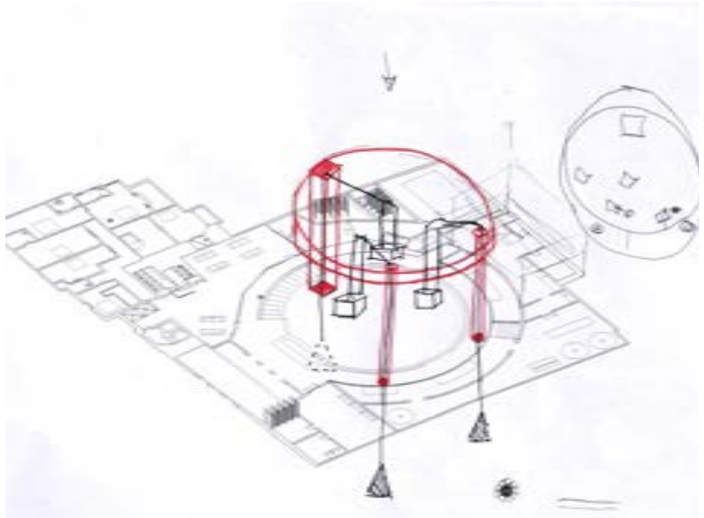


Fig. 117

SUSPENSION OF TANKS

However, after thinking through these ideas, I really wanted to use the existing fly tower to lower the tanks. This is because the fly tower is already situated in the building and would be a waste to not make use of the existing system. The fly tower is also hidden at the back of the building, so this way, the mechanism of the tanks would be subtle within the building.

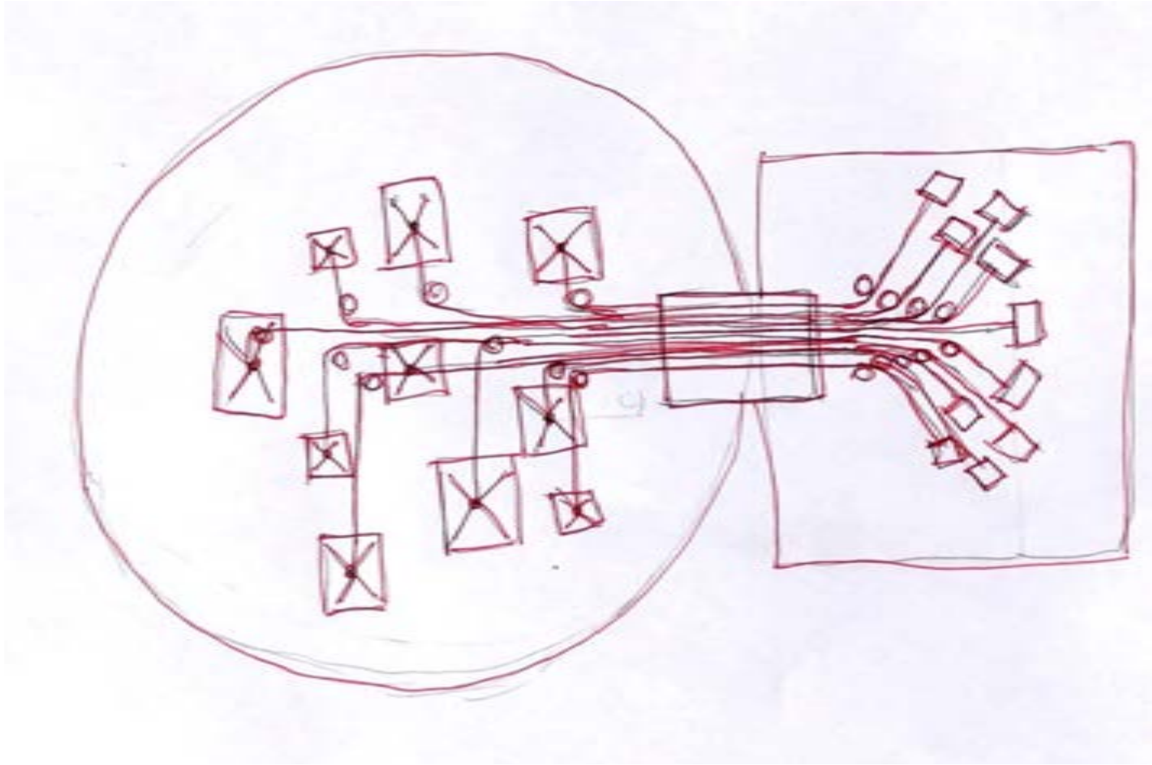


Fig. 119

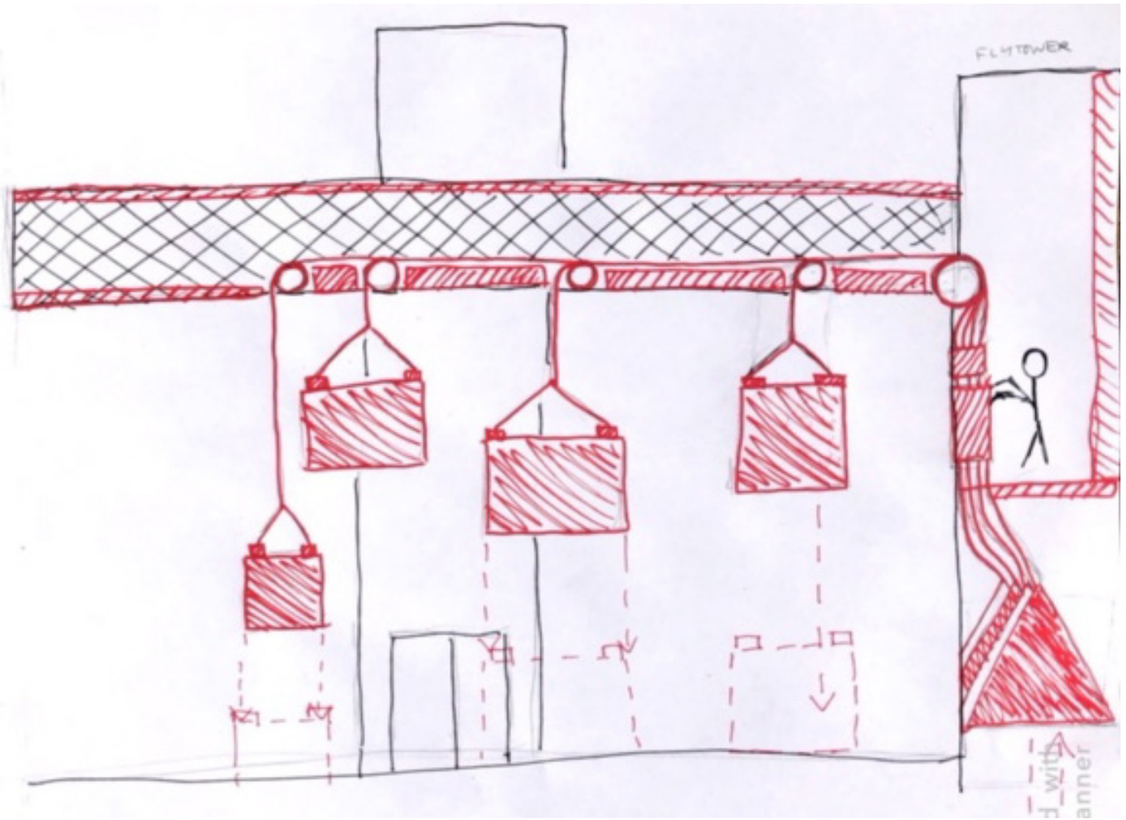


Fig. 118

On the other hand, this mechanism proved to be impossible as the tanks were situated at all different heights and they are different weights. So, I came to the conclusion that each tank would have to be held by its own mechanism; this mechanism would have to be very heavy duty due to the weight of each tank. I realised that each tank could be held up by its own mini electric motor that would crank the tanks down to the floor by electrics. By using some type of cog to change the direction of the chain would not only allow the chain to be position where I would ideally like it, but also it will take stress off of the tanks being held up and lowered down. Each tank would start off with four chains at each corner of the tank, they would join into one in the middle that would be the chain that holds the tank up. This would run up and through the ceiling. The ceiling would be just below the rooftop bar, so there would be a cavity between the ceiling and flooring of the rooftop bar. The chains would run underneath the rooftop bar, straight underneath the walkway of the fire exit situated on the rooftop bar, and to the fly tower where the mini motors would be located. This makes it easier to access, as access points for the motors to be used can be added within the fly tower.

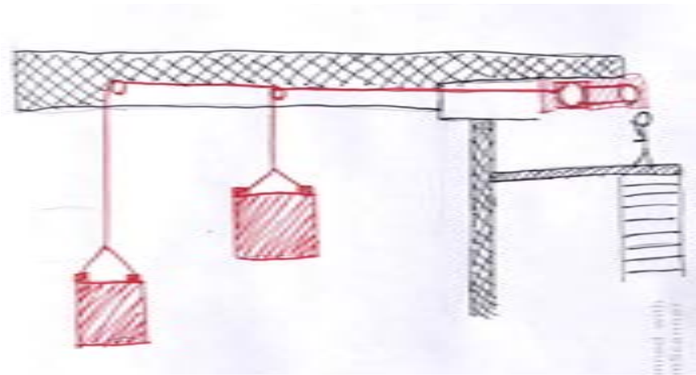


Fig. 120

SUSPENSION OF TANKS

The motors would be accessed in the fly tower. These would have the chains attached to them with excess chain and would sit just underneath the top floor of the fly tower.

The chains connected to the tanks run through the ceiling connected to cogs to reduce stress formed on them. This machinery will be hidden from the public eye and will be connected to the flooring of the roof top bar using reinforced steel.

These diagrams just show a few tanks suspended to get the general idea of the mechanism, however, there will be a lot more. These diagrams include a plan view with the flooring taken off so that you can see the inside of the flooring with the system within it.

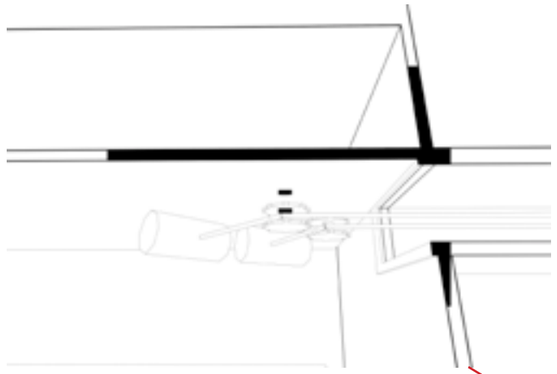


Fig. 121

Fig. 122

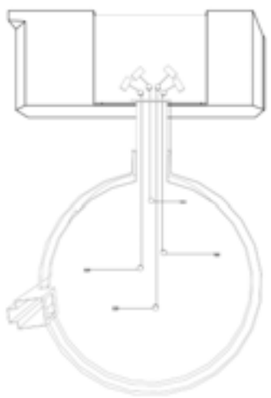


Fig. 123

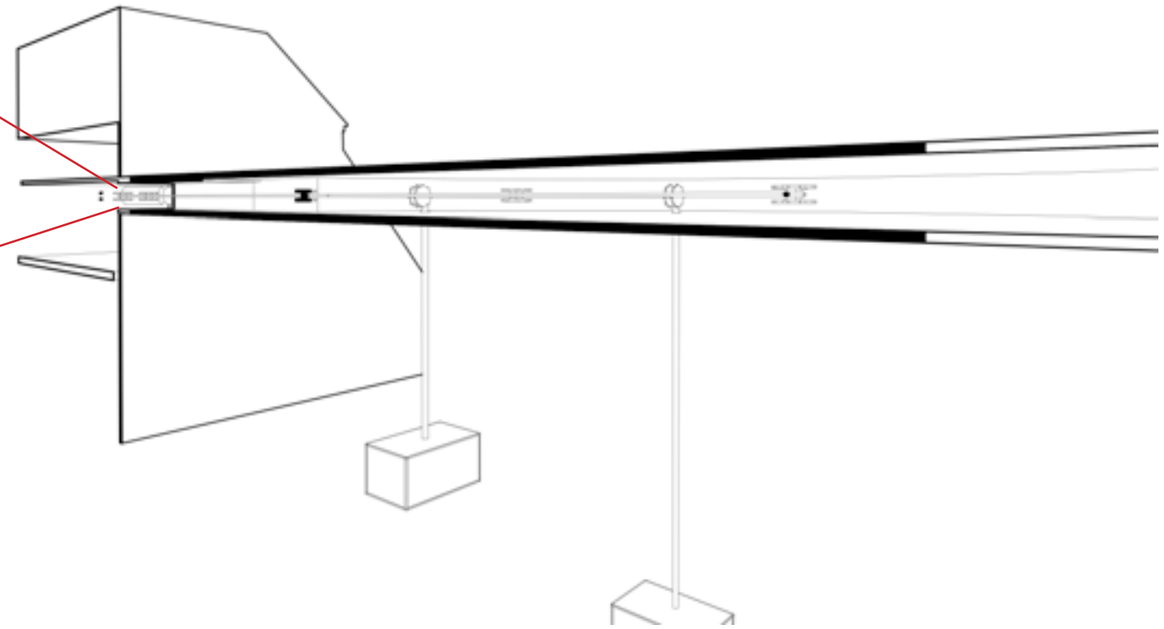


Fig. 124

SUSPENSION OF TANKS

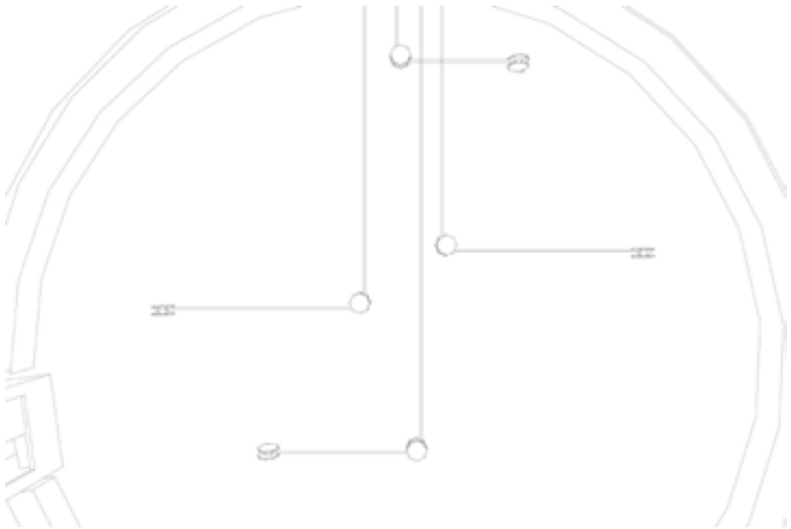


Fig. 125

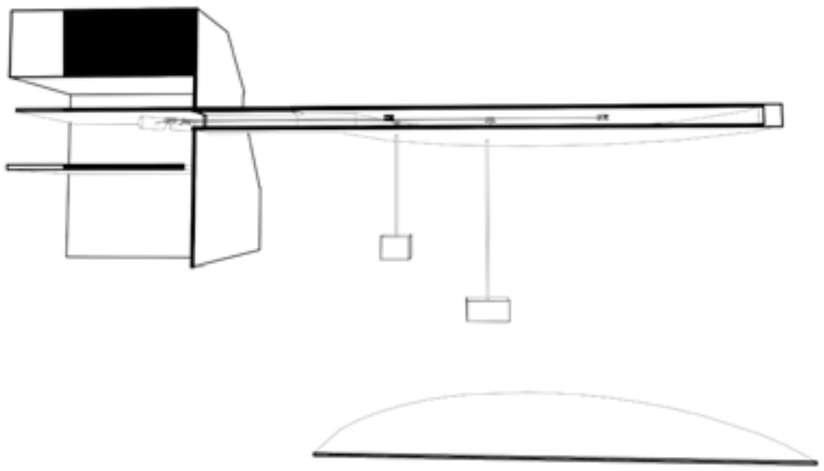


Fig. 126

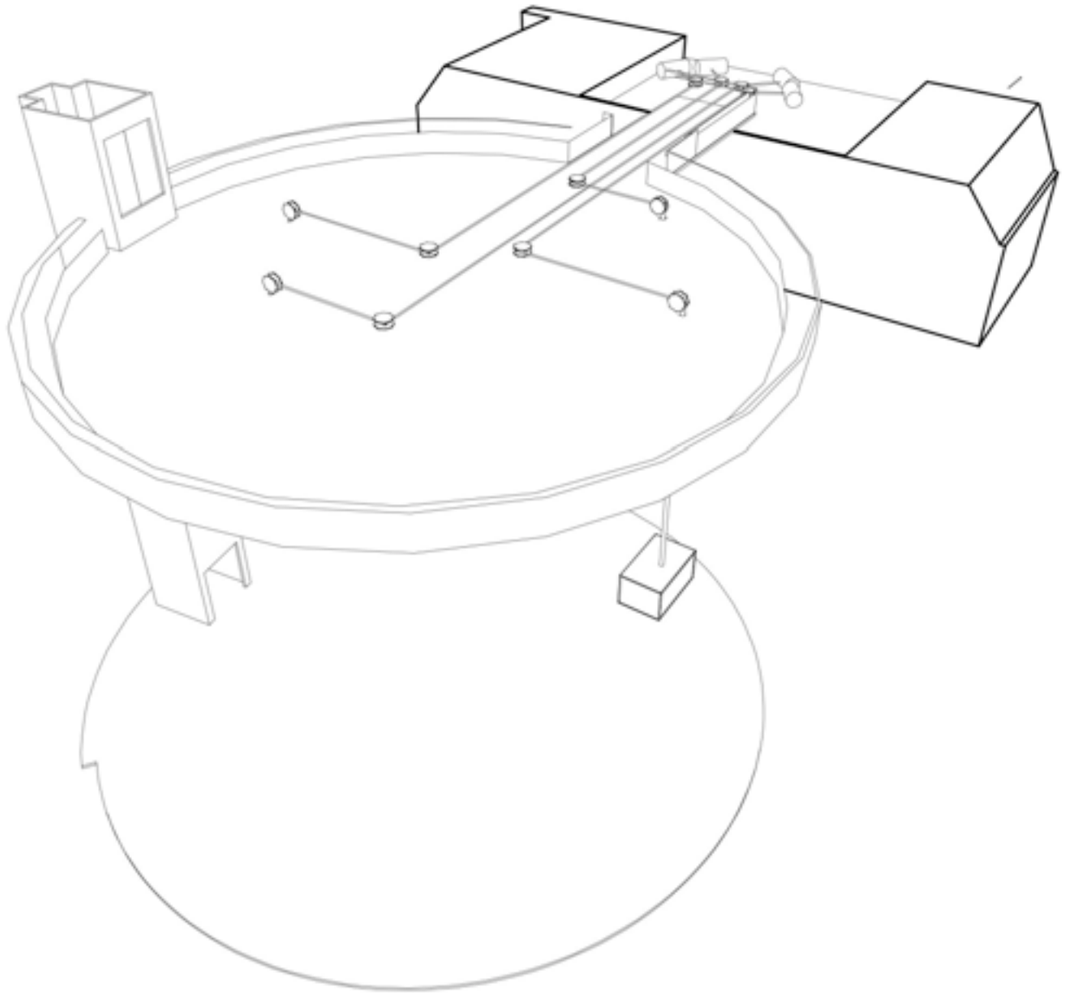


Fig. 127

OXYGEN FLOW & CALCIUM CARBONATE WITHIN THE TANKS

As there is no way the food and oxygen flow can be pumped through a tube in the chains, I figured, the other system that could work is have a mechanism that sits half in the tank and half out of the tank that sucks in oxygen and propels it into the tank, there would also be an outlet pipe too.

Calcium carbonate will be stored within a compartment that will occasionally be pumped into the tank, to ensure the rejuvenating shellfish receive enough to build their shells. This will be set on a timer to ensure they always have enough.

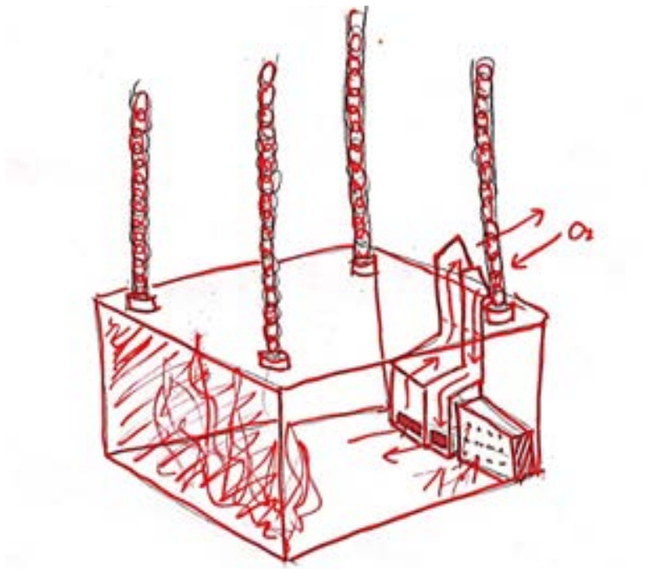


Fig. 128

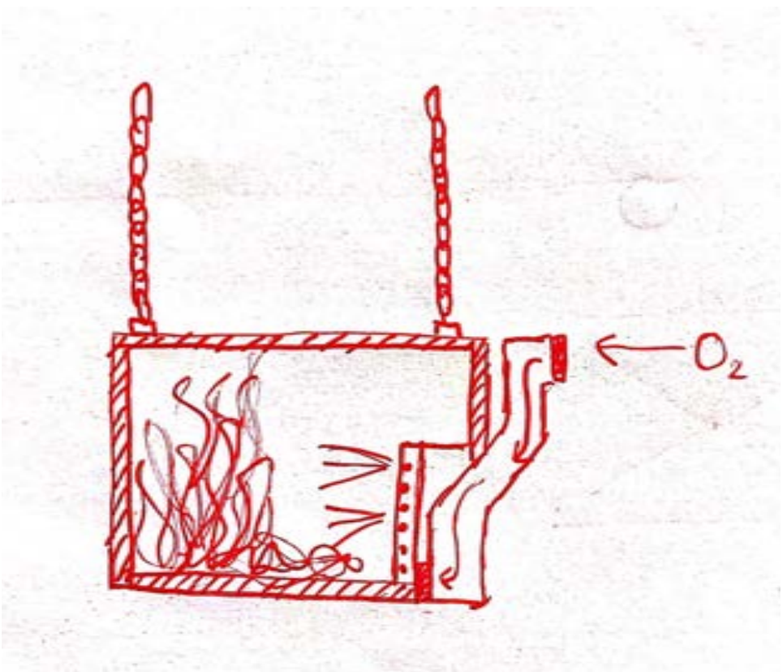


Fig. 129

Fig. 130

Fig. 131

Fig. 132

SECTION OF MODEL SHOWING THE TANKS IN RELATION TO RESTURANT

Fig. 133

4.

THE ENDINGS

"Conclusion & References"

CONCLUSION

As I have come to the end of this project, it has formed a clear picture of what I am designing and path I have gone down. For me, the project revolved around creating a design that benefits/helps the environment as much as possible. I have included many different aspects that contributes to the environment such as the rejuvenating tank system and reducing as much waste as possible by reusing certain materials found within the sea as well as reusing materials used to construct the hotel and used for the different operation systems, such as the fish farm.

One of the aims of the project was to explore and show the idea of luxury being created by upcycled materials and show that, although these materials have been used before for different purposes, their quality still remains as high as purposely made materials. I have also shown that The EcoLuxe Hotel can help tourism within Brighton by restoring shellfish used for restaurants along the seafront. This project has changed and altered my view of how architecture can be beneficial for our ecosystem.

BIBLIOGRAPHY

- Page 6: *Smithsonian Ocean. (2018). Ocean Acidification. [online] Available at: https://ocean.si.edu/ocean-life/invertebrates/ocean-acidification.*

- Page 17: *Ellenmacarthurfoundation.org. (2018). What is a Circular Economy? | Ellen MacArthur Foundation. [online] Available at: https://www.ellenmacarthurfoundation.org/circular-economy/concept.*

- Page 19: *The Conran Shop Journal. (2019). Christmas 2019 • Making Of: The Christmas Windows. [online] Available at: https://www.conranshop.co.uk/journal/making_of_christmas_window_2019/ [Accessed 25 Apr. 2020].*

- Page 22: *www.eni.com. (n.d.). Circular economy. [online] Available at: https://www.eniday.com/en/sparks_en/qo-luxury-hotel-circular-economy/ [Accessed 25 Apr. 2020].*

- Page 23: *British Vogue. (n.d.). Vogue's Guide To The Best Zero-Waste Restaurants. [online] Available at: https://www.vogue.co.uk/gallery/best-zero-waste-restaurants.*

  Silolondon.com. (2011). » Story. [online] Available at: https://silolondon.com/story/.

- Page 26: *Svart. (n.d.). HOME. [online] Available at: https://www.svart.no/ [Accessed 25 Apr. 2020].*

- Page 27: *Dezeen. (2018). Zero Waste Bistro installation provides circular-economy model at WantedDesign. [online] Available at: https://www.dezeen.com/2018/05/21/zero-waste-bistro-installation-circular-economy-linda-bergroth-wanted-design-manhattan/.*

- Page 35: *Theatres Trust. (n.d.). Brighton Hippodrome. [online] Available at: http://www.theatrestrust.org.uk/how-we-help/theatres-at-risk/175-brighton-hippodrome [Accessed 25 Apr. 2020].*

- Page 47: *Tate (2015). Towards Anarchitecture: Gordon Matta-Clark and Le Corbusier – Tate Papers | Tate. [online] Tate. Available at: https://www.tate.org.uk/research/publications/tate-papers/07/towards-anarchitecture-gordon-matta-clark-and-le-corbusier.*

- Page 49: *Coop Himmelb(l)au. (n.d.). Rooftop Remodeling Falkestrasse. [online] Available at: http://www.coop-himmelblau.at/architecture/projects/rooftop-remodeling-falkestrasse [Accessed 25 Apr. 2020].*

- Page 53: *Anon, (n.d.). Fondazione. [online] Available at: http://hiddenarchitecture.net/fondazione-querini-stampalia/.*

- Page 89: *MaterialDistrict. (n.d.). Oyster Shell Aggregate. [online] Available at: https://materialdistrict.com/article/oyster-shell-aggregate/.*

  John, A.T. and Internationals, O. (2016). Chemical Composition of the Edible Oyster Shell Crassostrea Madrasensis (Preston 1916). Journal of Marine Biology and Aquaculture, [online] 2(2), pp.0–0. Available at: https://www.ommegaonline.org/article-details/Chemical-Composition-of-the-Edible-Oyster-Shell-iCrassostrea-Madrasensisi-Preston-1916/972.

- Page 91: *Econyl. (2018). The Process. [online] Available at: https://www.econyl.com/the-process/.*

- Page 93: *www.concrete.org.uk. (n.d.). Recycled glass aggregate. [online] Available at: http://www.concrete.org.uk/fingertips-nuggets.asp?cmd=display&id=783 [Accessed 25 Apr. 2020].*

  Concrete Decor. (2018). How to use Glass as Aggregate in Concrete. [online] Available at: https://www.concretedecor.net/decorativeconcretearticles/vol-5-no-3-junejuly-2005/mixtures-and-additives-using-glass-as-aggregate/ [Accessed 28 Apr. 2019].

- Page 96: *Email from Smile Plastics.*

- Page 98: *Smile Plastics. (n.d.). Smile Plastics, Recycling Waste Materials. Designed to Inspire. [online] Available at: https://smile-plastics.com/about [Accessed 25 Apr. 2020].*

- Page 99: *Econyl. (2018a). About us. [online] Available at: https://www.econyl.com/about-us/.*

IMAGE REFERENCES

Fig 1 - https://ocean.si.edu/ocean-life/invertebrates/ocean-acidification
Fig 2 - Own work
Fig 3 - Own work
Fig 4 - Own work
Fig 5 - https://www.ellenmacarthurfoundation.org/circular-economy/concept/infographic
Fig 6 - https://www.conranshop.co.uk/journal/making_of_christmas_window_2019/
Fig 7 - https://www.qo-amsterdam.com/
Fig 8 - https://www.qo-amsterdam.com/
Fig 9 - https://www.telegraph.co.uk/food-and-drink/restaurants/silo-brighton-review-designed-with-the-bin-in-mind-but-in-a-good/
Fig 10 - https://www.svart.no/
Fig 11 - https://www.svart.no/
Fig 12 - https://www.dezeen.com/2018/05/21/zero-waste-bistro-installation-circular-economy-linda-bergroth-wanted-design-manhattan/
Fig 13 - http://www.arthurlloyd.co.uk/Brighton/Hippodrome/HippodromeTheatreBrighton.htm
Fig 14 - Own photo
Fig 15 - Group work
Fig 16 - Own work
Fig 17 - https://aestheticamagazine.com/gordon-matta-clark-anarchitecture/
Fig 18 - https://aestheticamagazine.com/gordon-matta-clark-anarchitecture/
Fig 19 - http://www.coop-himmelblau.at/architecture/projects/rooftop-remodeling-falkestrasse
Fig 20 - http://www.coop-himmelblau.at/architecture/projects/rooftop-remodeling-falkestrasse
Fig 21 - https://www.oyster.com/berlin/hotels/radisson-blu-hotel-berlin/
Fig 22 - Anon, (n.d.). Fondazione. [online] Available at: http://hiddenarchitecture.net/fondazione-querini-stampalia/.
Fig 23 - Anon, (n.d.). Fondazione. [online] Available at: http://hiddenarchitecture.net/fondazione-querini-stampalia/.
Fig 24 - Anon, (n.d.). Fondazione. [online] Available at: http://hiddenarchitecture.net/fondazione-querini-stampalia/.
Fig 25 - Anon, (n.d.). Fondazione. [online] Available at: http://hiddenarchitecture.net/fondazione-querini-stampalia/.
Fig 26 - Own work
Fig 27 - Own work
Fig 28 - Own work
Fig 29 - Google images
Fig 30 - Google images
Fig 31 - Google images
Fig 32 - Google images
Fig 33 - Google images
Fig 34 - Google images
Fig 35 - Google images
Fig 36 - Own work
Fig 37 - Own work
Fig. 38 - Own work
Fig. 39 - Own work
Fig. 40 - Own work
Fig. 41 - Own work
Fig. 42 - https://enacademic.com/dic.nsf/enwiki/1215718
Fig. 43 - Own work
Fig. 44 - Own work
Fig. 45 - Google images
Fig. 46 - Own work
Fig. 47 - https://www.pinterest.co.uk/pin/217228382011701755/
Fig. 48 - Own work
Fig. 49 - Own work
Fig. 50 - Own work
Fig. 51 - Own work
Fig. 52 - Own work
Fig. 53 - Own work
Fig. 54 - Own work
Fig. 55 - Own work
Fig. 56 - Own work
Fig. 57 - Own work
Fig. 58 - Own work
Fig. 59 - Own work
Fig. 60 - Own work
Fig. 61 - Own work
Fig. 62 - Own work
Fig. 63 - Own work
Fig. 64 - Own work
Fig. 65 - Own work
Fig. 66 - Own work
Fig. 67 - Own work
Fig. 68 - Own work
Fig. 69 - Own work
Fig. 70 - Own work
Fig. 71 - Own work
Fig. 72 - Own work
Fig. 73 - Own work
Fig. 74 - Own work
Fig. 75 - Own work
Fig. 76 - Own work
Fig. 77 - Own work
Fig. 78 - Own work
Fig. 79 - Own work
Fig. 80 - https://www.flickr.com/photos/bxgd/3507514887/
Fig. 81 - https://materialdistrict.com/article/oyster-shell-aggregate/
Fig. 82 - https://www.construction21.org/community/pg/pages/view/40306/
Fig. 83 - https://www.flickr.com/photos/bxgd/3507514887/
Fig. 84 - https://en.wikipedia.org/wiki/Fishing_net
Fig. 85 - Google images
Fig. 86 - Google images
Fig 87 - Google images
Fig. 88 - Google images
Fig. 89 - https://www.pinterest.co.uk/pin/78953799691307659/
Fig. 90 - https://geopolymerhouses.wordpress.com/2011/06/21/how-to-make-glass-aggregate-countertops/
Fig. 91 - Google images
Fig. 92 - https://smile-plastics.com/about
Fig. 93 - https://smile-plastics.com/about
Fig. 94 - https://smile-plastics.com/about
Fig. 95 - https://smile-plastics.com/about

Fig. 96 - https://smile-plastics.com/about
Fig. 97 - https://smile-plastics.com/about
Fig. 98 - www.econyl.com/the-process/.
Fig. 99 - www.econyl.com/the-process/.
Fig. 100 - Own work
Fig. 101 - Own work
Fig. 102 - Own work
Fig. 103 - Own work
Fig. 104 - Own work
Fig. 105 - Own work
Fig. 106 - Own work
Fig. 107 - Own work
Fig. 108 - Own work
Fig. 109 - Own work
Fig. 110 - Own work
Fig. 111 - Own work
Fig. 112 - Own work
Fig. 113 - Own work
Fig. 114 - Own work
Fig. 115 - Own work
Fig. 116 - Own work
Fig. 117 - Own work
Fig. 118 - Own work
Fig. 119 - Own work
Fig. 120 - Own work
Fig. 121 - Own work
Fig. 122 - Own work
Fig. 123 - Own work
Fig. 124 - Own work
Fig. 125 - Own work
Fig. 126 - Own work
Fig. 127 - Own work
Fig. 128 - Own work
Fig. 129 - Own work
Fig. 130 - Own work
Fig. 131 - Own work
Fig. 132 - Own work
Fig. 133 - Own work