Plymouth Before Time

Plymouth History Centre

Caroline Pile

I plan to redesign the educational process for the new Plymouth History Centre. The main focus will be on the natural history section. Additionally, I plan to redesign the education room. The educational process is aimed at primary school children aged 4-11 covering Key Stage 1 (ages 4-7) and Key Stage 2 (ages 7-11). Also, I would like to experiment with making the experiences suitable for secondary school children as well. I've taken inspiration from the Clore discovery centre in Cardiff Museum, especially as the entire room is interactive with games and multiple objects the children can touch.

The learning aims set out by the government for Key Stage 1 (ages 4-7) are individual depending on the subject. The History programme learning outcomes cover a range of areas but I plan to mainly cover the area about "Significant historical events, people and places in their own locality" Similarly in Key stage 2 (ages 7-11) there are a range of learning outcomes. However, there are few I would particularly like to look into, these are "A local history study" also I'd like to look into the "changes in Britain from the stone age to the iron age." I would like to make an experience where the children can travel through time, go back to the Stone Age and work their way through to modern day.

The educational experience is going to be an interactive, immersive experience, through the children using their different senses, e.g. small archeologically dig, fossil rubbings or letting the children look at items through telescopes. Technology is going to play a big part in the experience, potentially through Virtual Reality or using tablets during their time at the museum. As the experience has a lot of technology they will be able to update the systems/apps to keep them up to date. For example, if a new artefact is found they could add it to the system and try and incorporate it into the programme. The educational centre will need to be accessible to all, which is why I have planned a visit to talk to a local special needs school to find out what requirements will have to be put in place and whether the experience will have to be personalised for each individual child.

Additionally, I will be redesigning the education room to incorporate it into the educational process better. I want to make the room more exciting for the children. I will need to take into consideration the age groups of the children as their attention span is going to vary quite a bit. The room will be kitted out with all the right learning tools for each age group. The theme of the room will change every few years to ensure it does not start to look dilapidated.

At the end of this 13-week project I will have tested out my design through models and sketches. I will end up with a set of professional standard plans and elevations, illustrating my design. Additionally, a range of different scaled models to further convey the design giving a greater understanding of the concept.

Week 1 Start research about other museums, how they get children interacting with the exhibits, look into public realm space design and site specific artists. Visit Cardiff Museum and look at their Natural History section and their Clore discovery centre.	Week 2 Further research into the Plymouth History Centre. Based on the previous research start to write the design proposal.
Week 3 Whilst in Budapest I will be visiting a range of museums and taking notes as to their design layouts, how they are interactive.	Week 4 As a group, we will start to make a group model of the site, so that we can all start making maquettes and placing them in situ. I will email with the head teacher of the Special needs school to organise a visit during Easter. Also get in contact with a primary school to find out their learning out comes for each Key Stage.
Week 5 On the 28th we're going on a site visit where I can get a better understanding of the site and the area I have to work with. Also, create some work based on information from the site visit. I will analysis the space to get the most out of the trip.	Week 6-8 Whilst at home for Easter, I plan to re-visit Cardiff museum.. I also plan to visit the special needs school. Additionally, continue to work on the project.
Week 9 Small presentation to show what we have got so far. Develop the idea through making and testing models also making plans, based on my research over Easter. Potentially go on a second site visit.	Week 10 Looking into branding the experience, continuing to develop the idea looking into colours and materials. Further research in to VR.
Week 11 Draw out plans and elevations of the final scheme, making sure to have annotation. Create a 1:5 detailed drawing. Build final model. Plus, a little one to place on the group model.	Week 12 Add the finishing touches to everything. Create the final visual and presentation sheets. Have a mock presentation.
Week 13 Final finishing touches after the mock presentation. Final presentation in front of Atkins.	

Time table for the childern

9:30 - School children arrive.

9:40 - They receive an introduction along with the wristbands.

9:45 - introduced to Danny and his dinosaur friends.

9:50 - Children and teachers dress up as adventurers.

10:00 - In small groups (15 max) they enter the natural history exhibition (2 hours).

12:00 - Lunch.

12:30 - Back to the classroom where there are a range of play based learning activities.

2:30 - leave and go back to school.

Genius Loci

The prevailing character or atmosphere of a place.

Plymouth museum and art gallery is the largest in it's area. It was originally built in 1907-10. It is now under going major refurbishments for 2020. In time for the mayflower 400th anniversary. The Mayflower was the original ship that transported the English Separatists, otherwise known as the pilgrim, from Plymouth to New world (America) in 1620.

The Library has moved location in to the high street area. Whereas the museum and the old library will become part of the new Plymouth History centre. St Luke's church is also include in the refurbishment as it will become a contemporary art gallery.

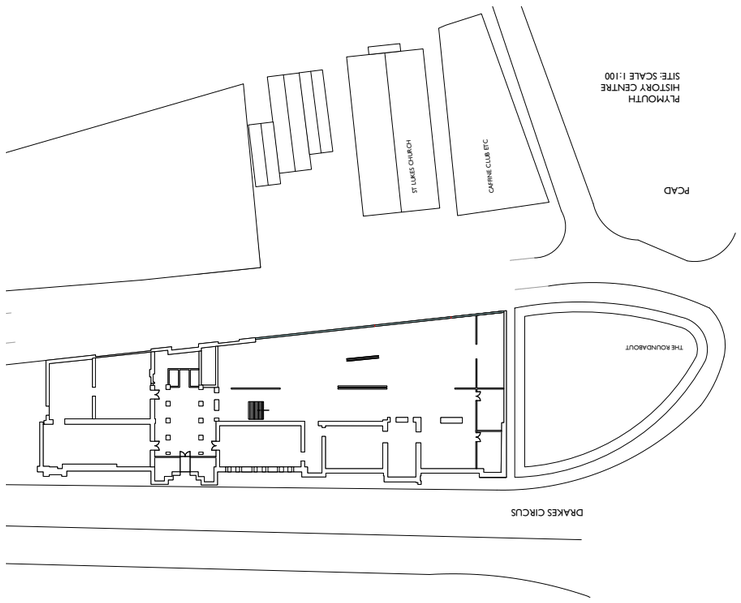
Love our past, Step in the future,.

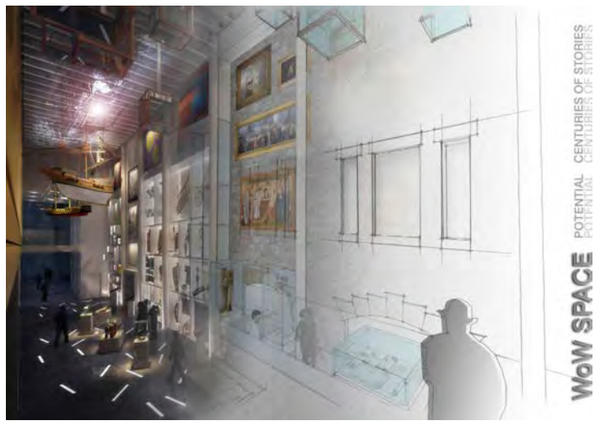
During the blitz of the second world war the library was destroyed and rebuilt in the 1950's. This included over 70,000 books. Where as the museum and art gallery managed to survive. However, there is evidence of this is the building with the massive cracks in the floor. This are planning on staying and giving a nod to the past and what the buildings have been through.

The at Luke's church was originally built in 1828, unfortunately, the 2,000 seater building stopped functioning as a place of worship in 1964. It then became occupied by library administration staff and used for the storage of older books. In 1968. Where as in most recent years it has been opened up to the public after being shut for nearly 50 years.

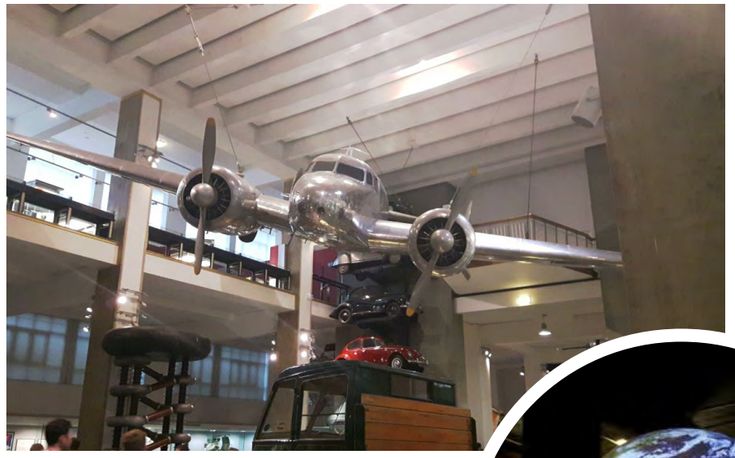
Atkins are the Architects in charge of the project. With Wilson Dickson as the main contractors, and event communications named as the interior/exhibition designers. The project had an original budget of £35 million but is likely to go up.

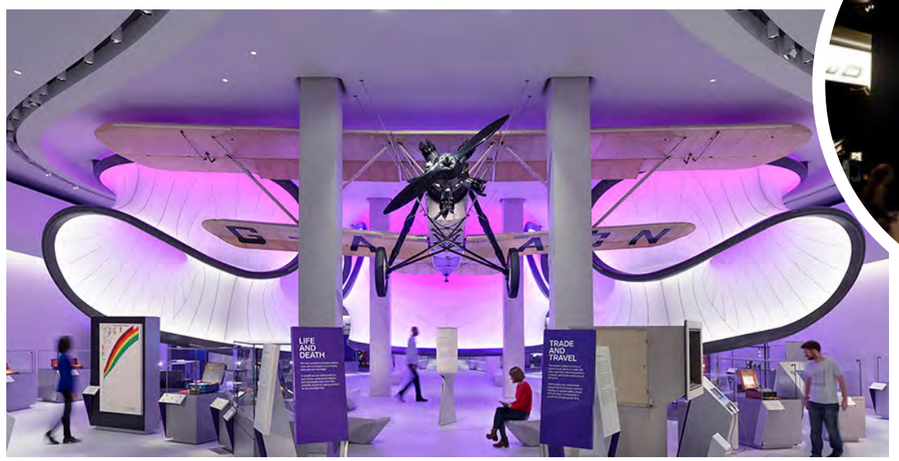
Plymouth history centre will be the biggest museum south of Bristol. They are collaborating with SWIB and SWOFTA, plus other to make the place a central hub of culture. There is going to be a large range of exhibits including a natural history exhibition, with a large mammoth as it main exhibit. Plus other large installations like the figure heads.





SCIENCE MUSEUM





Who am I? It invites people to explore the science of who they are. Through though provoking art work and hands on exhibits.

Science Museum London

The Science museum was originally build in 1857, but has more recently, had a refurbishment by Zaha Hadid. Zaha Hadid Architects have recently opened the new space dedicated to the study and exploration of mathematics. It was inspired by Hadley Page aircraft. The design of the space came from observing equations of airflow. The lines and layout of the gallery represent the movement of airflow around the plane in flight.

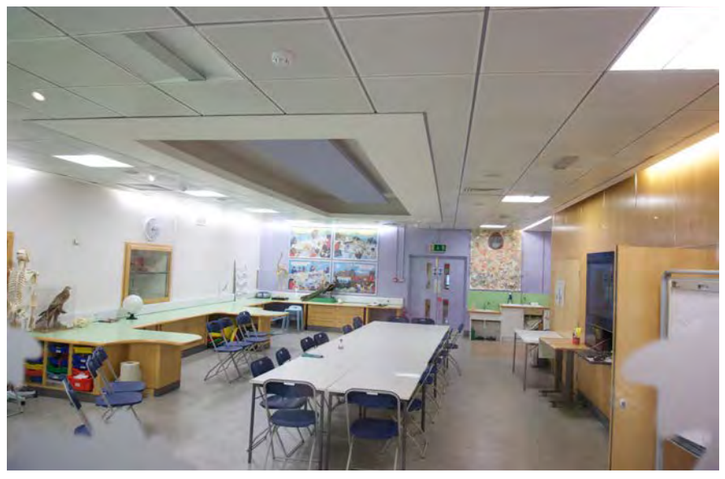
The science museum is aimed at everyone and has the tough task of engaging people of all ages. There is a large range of interactive exhibits and games for people to play. Suitable for all ages.

Cardiff Museum

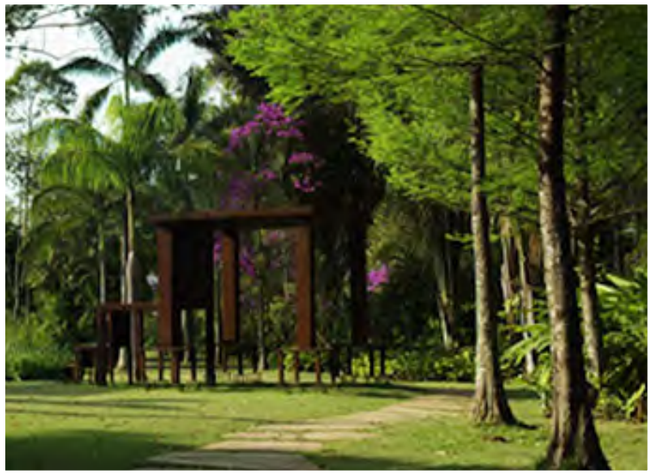
I visited Cardiff Museum and look at the way they exhibit things and the journey you're taken on. They followed the journey of the earth, from big bang to the present. Originally starting of with a geology section, which was interesting how they presented facts on a curved bored so all people could view it from different angles. However I did notice that the children were most interested in the dinosaur section. As they could see 3D representations. As well as sound affects in the background. It was really interesting how they managed to change the atmosphere of the exhibition so quickly. From the lighting and sounds used. However, the exhibitions did seem to just stop at a certain height. I feel like it would have been good to some sort of cover or art instillation as it would improve the exhibition so much. The most controversial bit was the moving mammoth. They were tucked away in a cave themed tunnel. Most people seemed to enjoy it and there was always crowd watching. However, they did scare a few of the younger Children. Plus they made a few extra noise where they clearly needed some maintenance.

Cardiff Museum

Though out the museum there aren't many interactive elements. They mainly had videos that people could watch. Additionally, their class room type area was quite boring and reminded me of a science room in school. However, they used more creative ways to display there exhibits. For example having a "man holding the exhibit." Quite a few of the objects are in glass cases it would be good if they could have replicas that people could touch, do rubbing's of etc.



Cardiff museum clore section is an interactive learning zone. It is open to the public but also used for school visits. The room is full of artefacts that people can get out and investigate. Using microscope placed around the room. Also, information leaflets about item. A few game like activities.



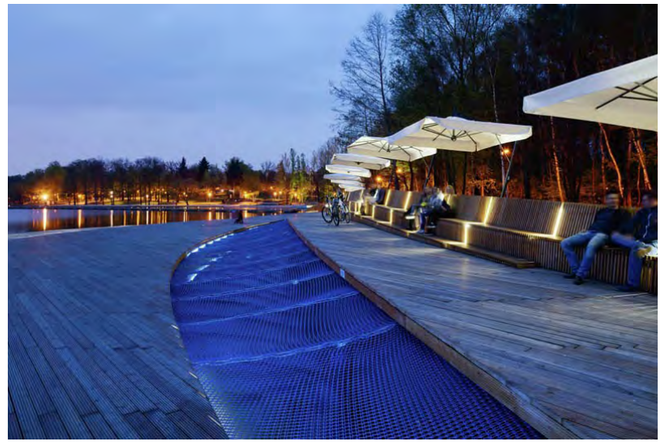
Inhotim

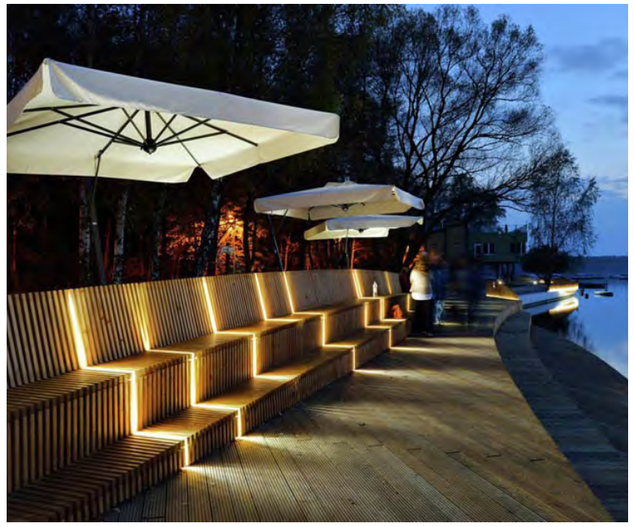
Inhotim is an out door museum in Brazil that has a range of out door installations and indoor gallery spaces. It takes up around 20.23 km². School visit attends public and private educational institutions. The script is built by the educators of Inhotim, in partnership with teachers, focusing on art or botanical themes.

However, you came stay at home because with Google Art Project, you can take a stroll around Inhotim. Enjoy a virtual visit through the gardens and galleries, and see high-definition images of the artworks.

wonderkamers

wonderkamers in the Netherlands is a highly interactive museum that uses technology as a for front for learning. Berlage's museum is a section where people are able to design there own museum. Wow! Is programme set out for the museum where people collect their own personal tablet and play games, set off on a fascinating voyage of discovery and be gob smacked by spectacular set-ups. Points are earned where they can select their favourite artwork and create their very own exhibition. . Art expert, curator, gamer, researcher, architect, dancer and photo model… at the Wonderkamers you can be all of these. A short video showing of the museum.

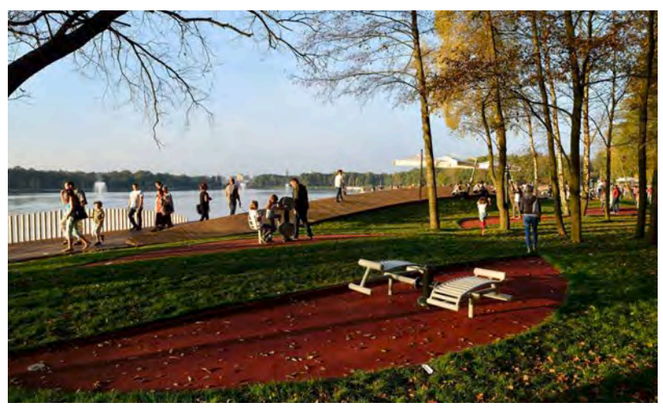


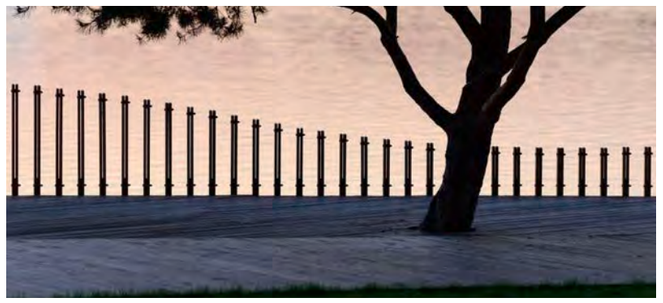


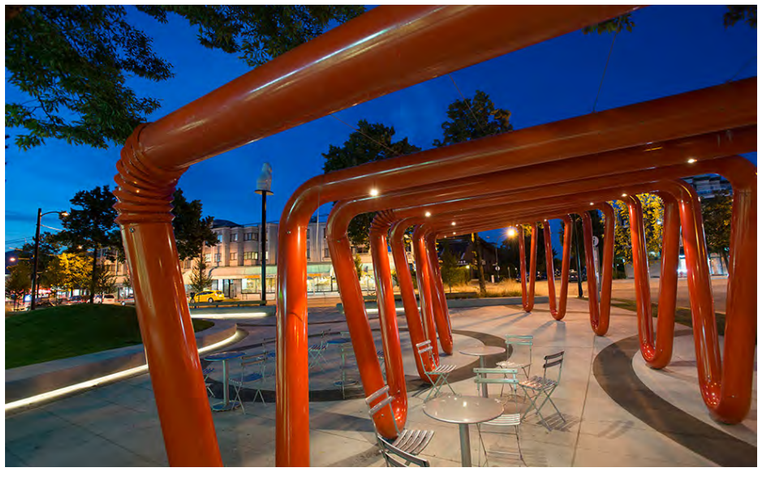
Paprocany Lake

Paprocany Lake in Poland, has a walkway with a net designed in it for people to lay and enjoy their surroundings. It adds a sense of fun to the walk way. The nets also reflect the waves of the lake. The lighting used creates a more atmospheric night walk rather than a brightly light walk way. It interesting how they decided to create small setting areas using the covers. Instead of one large canopy. The whole design is a reflection of the lake.

In 2014 Robert Skitek and RS+. The walkway is made from natural materials to emphasis the natural character of the area. The walkway takes up around 400 m of the bank.







Hapa Collaborative designed an installation in Mid Main Park

It spreads quite long way along the park but the main installation. Is used by quite a lot of people especially young children as a climbing frame. As the model shows the installation is based around the shape straws create.

The installation sits comfortably between a new six-story commercial and residential building and busy Main Street. . It was constructed in 2013.The instatlltion design is aimed representing a 'bendy staw'.The plot of land was originally the palm dairy and milk bar., during 1952 to 1989.

Mangrove forest

Pandora - like Acrylic Mangrove forest is set up for the festival of light in Sydney. Each time the installation will change. The installation is safe or direct interaction with as well as, being good for the environment . As the 'trees' are completely recyclable, because they are made from HDPE plastic (same material milk bottles are made form).

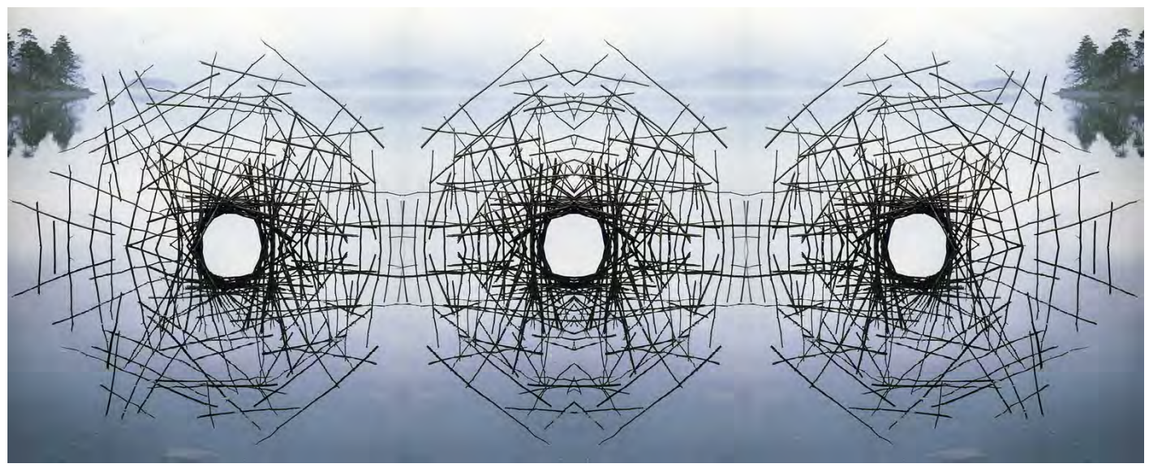
Pandora - like Acrylic Mangrove forest was designed by a group of university students. The light installation that looks like a bioluminescent mangrove forest.

The Acrylic light installation comprises clusters made up of 1900 individual synthetic branch structures that incorporate interactive lighting and respond to changing environmental conditions. The installation echoes the native mangroves of Australia's waterway, with branches and roots spreading out and creating a calm and safe environment for children to weave in and around the structures as they change colour.

Anthony Goldsworthy

Anthony Goldsworthy is a British sculptor, photographer and environmentalist producing site-specific sculpture and land art situated in natural and urban settings. His ice sculpture are very interesting because of how delicate the ice is yet his designs look extremely sturdy. He uses the things found in the surrounding setting to create his sculptures. He is considered to be the founder of modern rock balancing.

Anthony Goldworthy."I think it's incredibly brave to be working with flowers and leaves and petals. But I have to: I can't edit the materials I work with. My remit is to work with nature as a whole"

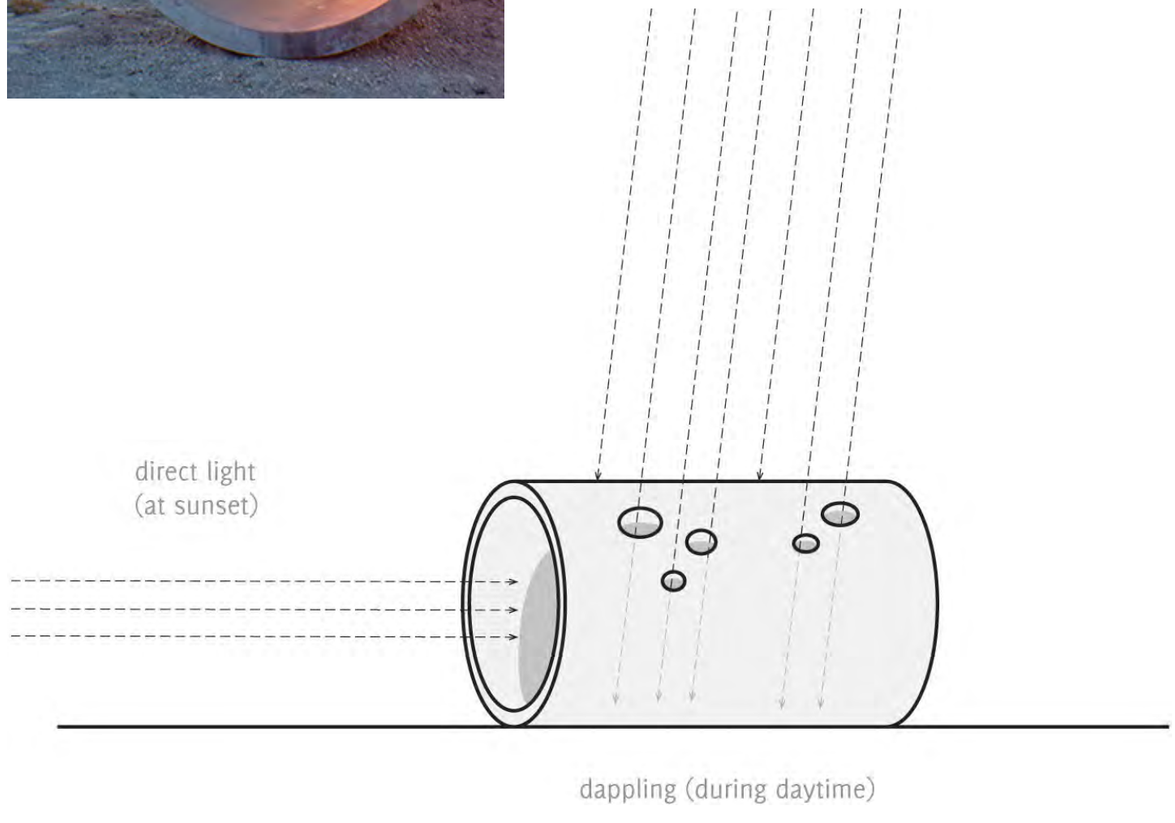


Nancy Holt

Nancy Holt is famous for creating the sun tunnels that are located in the Great Bassin Desert. The work is a product of Holt's interest in the great variation of intensity of the sun in the desert compared to the sun in the city. Nancy Holt searched for and found a site which was remote and empty. Each tunnel reacts to the sun differently, aligned with the sunrise, sunset, of the summer or winter solstice. Holt said of the tunnels, "It's an inversion of the sky/ground relationship bringing the sky down to the earth."

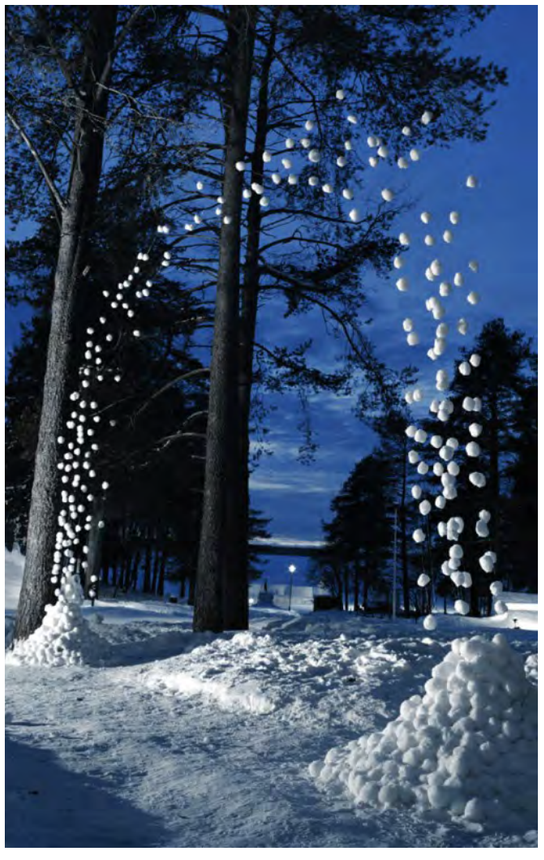
Simple design highlights the scenery perfectly.

Sun Tunnels consists of four massive concrete tunnels, each eighteen feet long and nine feet in diameter, laid out in the desert in an open X configuration.



Cornelia Konrads

Cornelia Konrads is a site specific designer who tries get her designs toe merge with their surroundings. She uses materials from the surrounding area to create art work that a lot of the time looks like its floating. Her gravity defying art makes it seem as if she has some magical button that allows her to stop time To create the art installation she uses a series of sting to have the floating objects. He's been practicing her unique style for many years now, with multiple publications and commissioned works under her belt. The snow arch is one of her more interesting pieces because it seems like its a photograph of a snow ball fight.

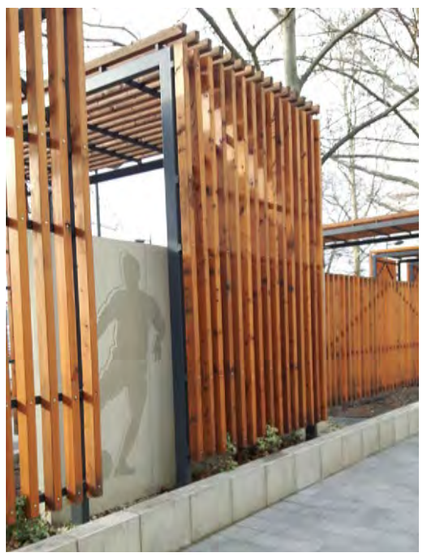


Stuart Frost

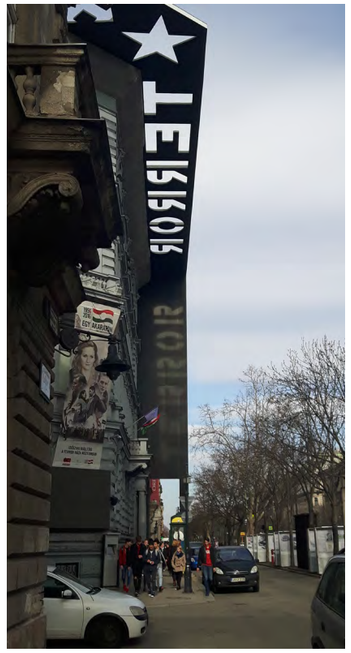
Stuart Frost is a sculptor who investigates the distinctive characteristics of the materials by stretching their inherent properties to extremes. Embla is found in the TICKON Tranekær International Centre for Art and Nature. It's a very cleaver way of completely changing the look of an object and in his case trees most of the time. Without even touching the shape. It gives the trees more character and personality. To create the lack and white birch he used a range of drilling techniques and well as burning the wood.

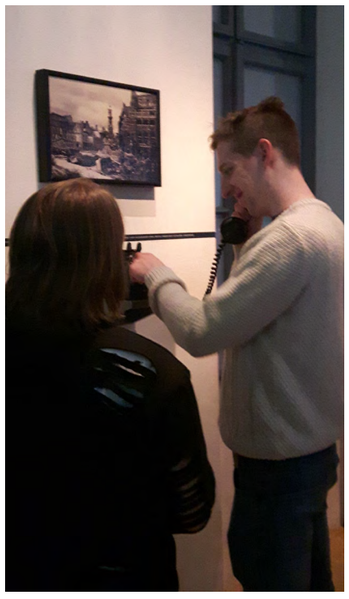
hows it done

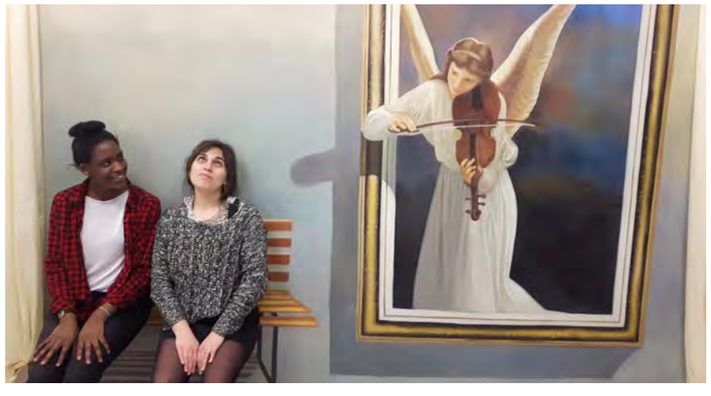
Public realm design in Budapest

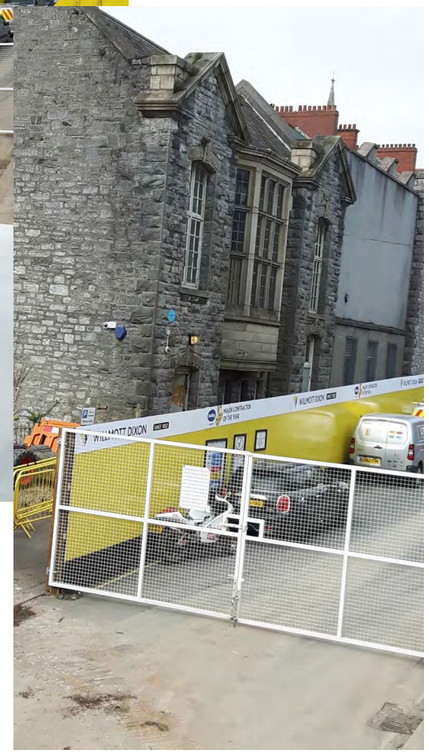


Exhibition design in Budapest





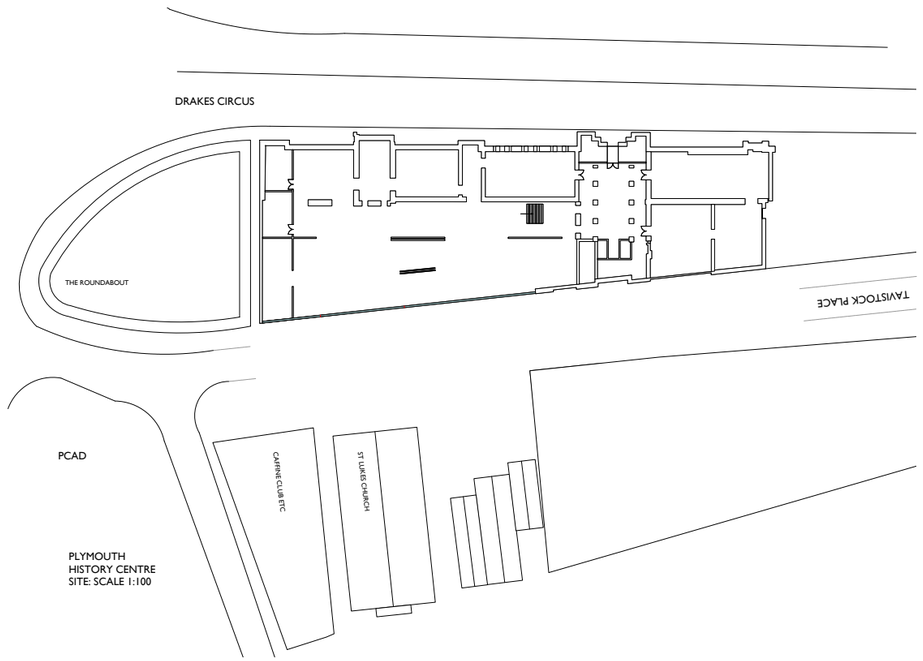




First site visit 28/03/2015.

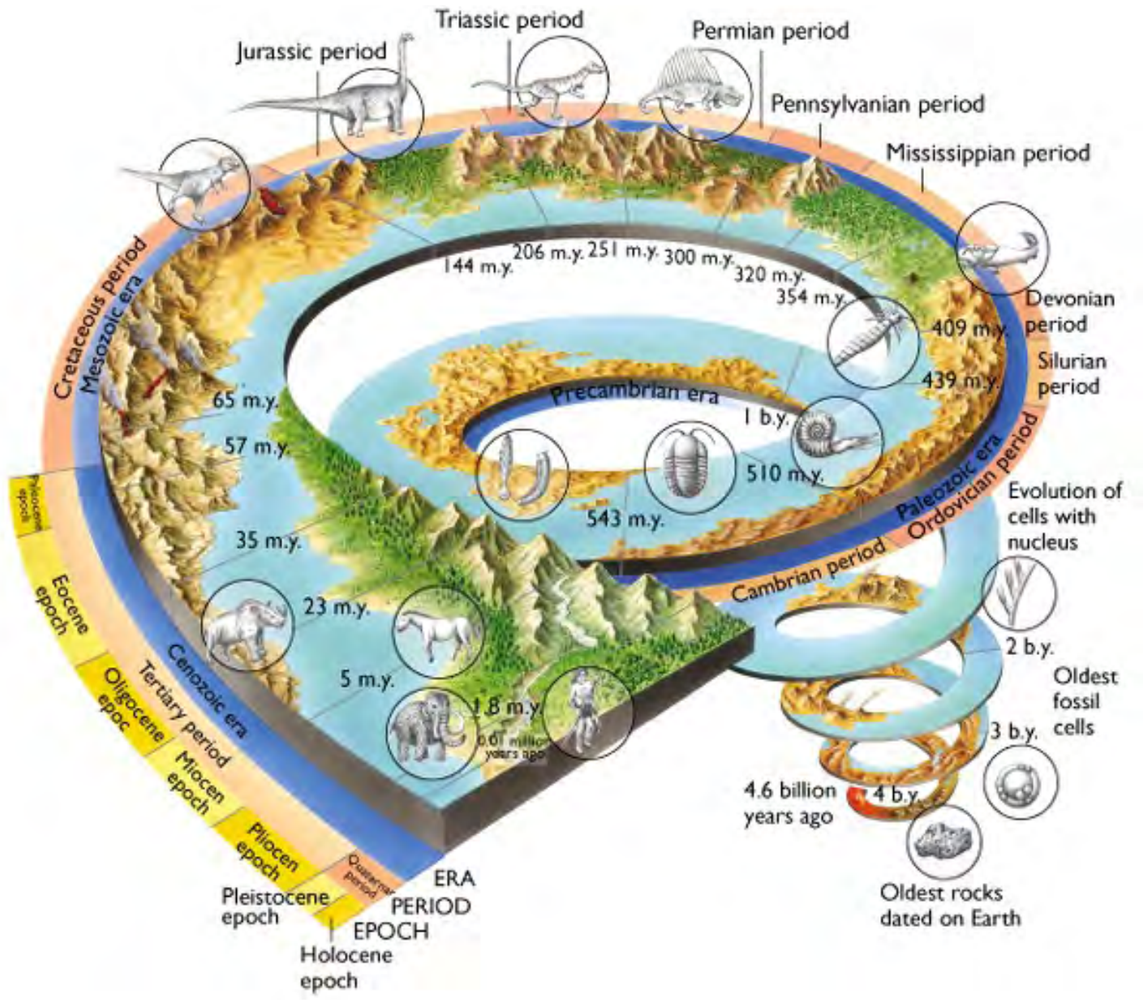
Here are the photo graphs that I was able to get from the first site visit. It was interesting to see the site in development. Unfortunately we weren't able to go into any of the buildings because they were removing w.

Our second site visit allowed us to go into the church. It was great to see inside but neither of the site visits were particularly helpful for my project.



Natural History

Archeozoic (Archean) era	Rocks, oceans and continental plates form. Simplest, oxygen producing life forms appear.	4500 - 1500
Proterozoic era	Oxygen builds up in the atmosphere, causing many species of bacteria to disappear and leading to an extraordinary explosion of Eucaryotic organisms.	1500 - 545
Paleozoic era	Cambrian period: This was a time of great geological upheaval, and may have contributed to the Cambrian Explosion.	545 - 500
	Ordovician period: Proliferation of graptolites, trilobites, primitive fish, coral, etc. Fungi and primitive plants appear on land.	500 - 438
	Silurian period: Atmosphere stabilizes. Large scale glacial melting causes a significant rise in sea level.	438 - 410
	Devonian period: Ferns and seed plants, including trees, appear. Vertebrates (animals having backbones), wingless insects and arachnids (spiders) evolve.	410 - 355
	Carboniferous (coal bearing) period: Spreading of great swamps from which we get our present day coal.	355 - 290
	Permian period: First mammal-like animals appear. Closing of the continents formed one super continent, Pangaea.	290 - 250



Mesozoic era	Triassic period	250 - 205
	Jurassic period	205 - 135
	Cretaceous period: Appearance of ceratopsian dinosaurs such as Triceratops.	135 - 65
Cenozoic era (Recent Life)	Tertiary period Paleocene epoch: Cooler climate. Polar ice caps form.	65 - 55
	Eocene epoch: Oldest known fossils of most modern mammals appear.	55 - 34
	Oligocene epoch	34 - 23
	Miocene epoch: Warmer climate	23 - 5.33
	Pliocene epoch: Ape and human lines diverge.	5.33 - 1.8
	Quaternary period Pleistocene epoch: Most recent Ice Age.	1.8 - 0.01
	Lower Paleolithic:	2.6 - 0.1
	Middle Paleolithic	0.3 - 0.03
	Upper Paleolithic: Last Ice Age occurs.	0.05 - 0.01
	Holocene epoch (completely recent): Last Ice Age has ended as we enter the present interglacial period	0.01 - 0

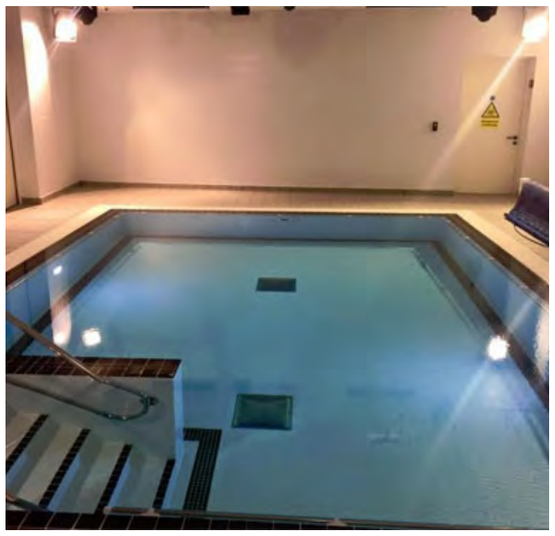
YsgolY Deri is a state of the art school designed especially for children aged 3 - 19 with a range of learning disabilities. The curriculum is delivered through a themed approach with an emphasise on skills. A common theme is developed across the age range.

Sensory design is very inportant, as different disability affect the children in a range of ways. Therefore, making sounds, touching or smelling something. How ever money is tight and they try to makes thing out of nothing basically.

Some of the facilities they have available: halo deck, TV/music studio, professional kitchen ,trampoline, pool therapy, hair salon, aromatherapy, touch therapy, music therapy, physiotherapy, dance therapy, Cafe, 6th form area, Future accommodation (flat), animal care, playground.

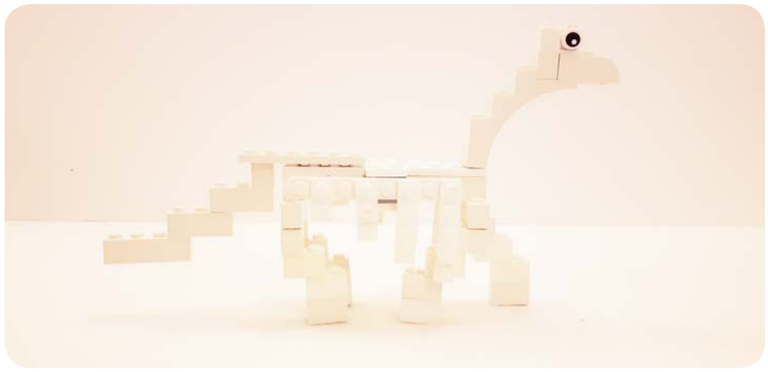
Halo deck

The Halo Deck is a room that projects images on to all 4 walls and the floor. It uses xbox kinetic to make the projection interactive. This means the children can be exported to anywhere in the world. The children in the school choose the name after the Halo deck in star trek.



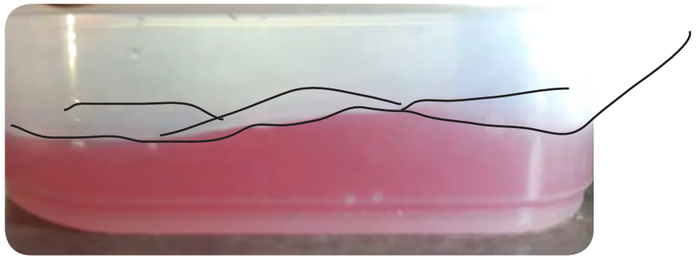
Cognitive Learning

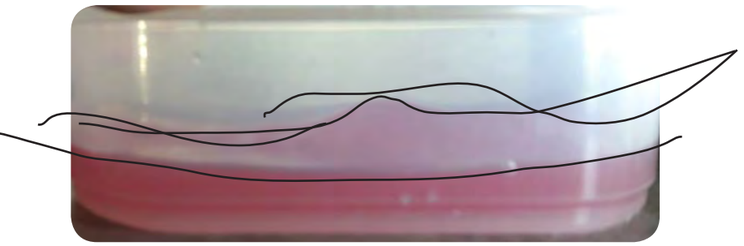
Sand and water play can be an early introduction to science and maths.
Playing ball games, dancing, running and climbing all help to develop body movement, strength, flexibility and co-ordination skill.
Building blocks, jigsaws and shape sorters can help with recognising different shapes and sizes putting things in order and developing logic.
Playing with dough, drawing and painting pictures, dressing up, playing with dolls can encourage creativity, imagination, and expansion of feeling.
Singing, playing simple musical instruments helps to develop rhythm listening and mixing with others.
Games help with turn taking, sharing and mixing with others.

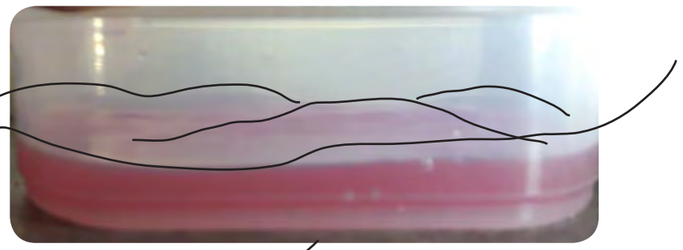


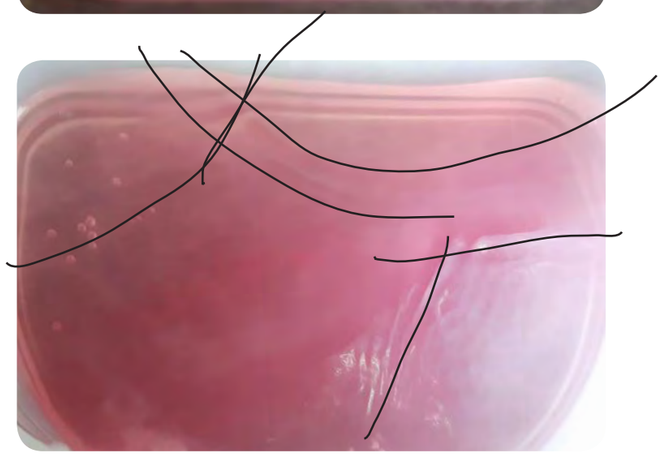
Experiment with learning through play .....

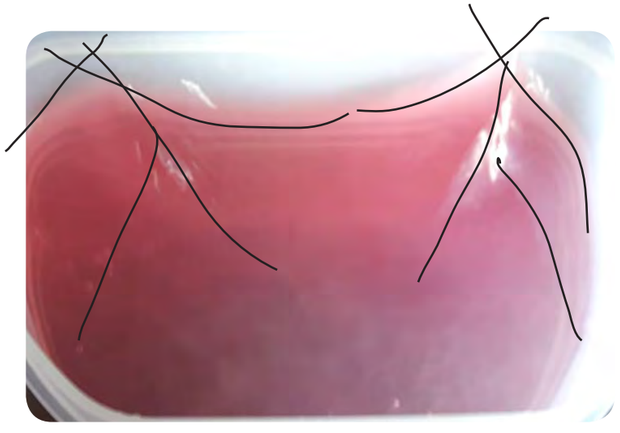
Young children actively explore their environment and the world around them through learning-based play. Play is a vital part of a child's optimal social cognitive, physical and emotional development.



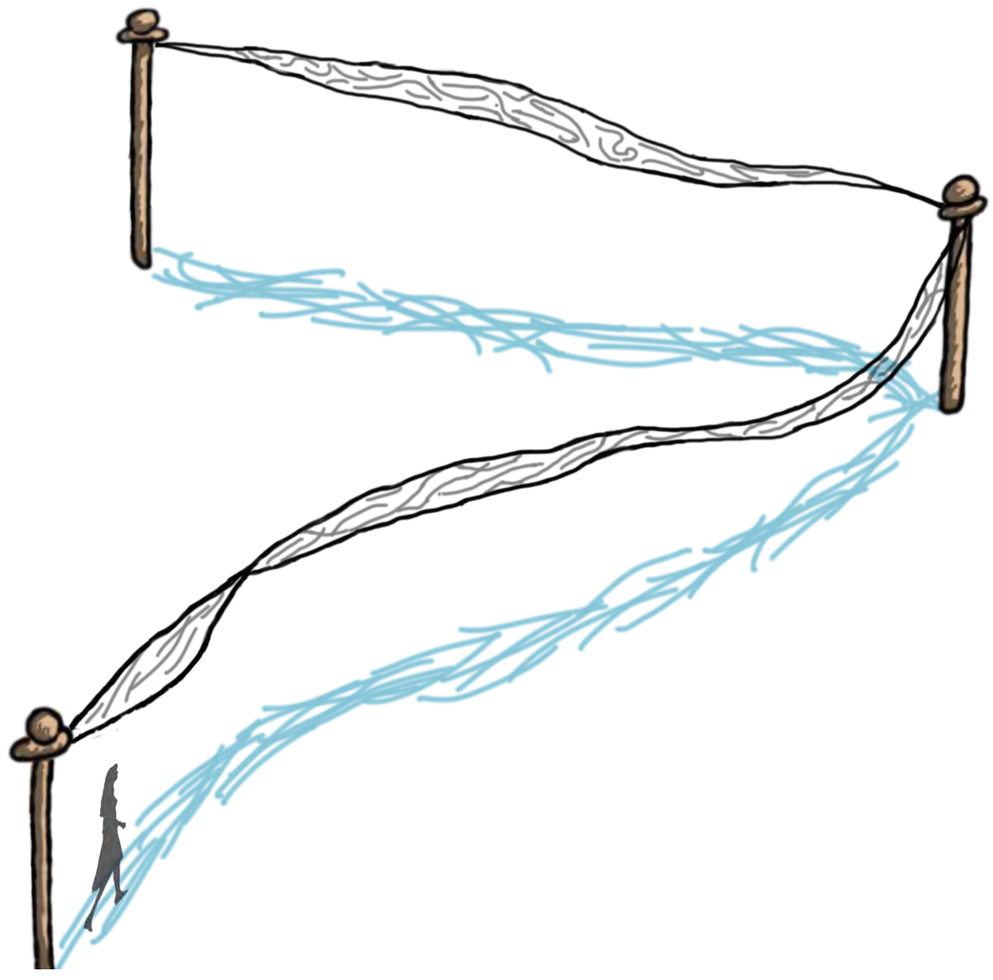




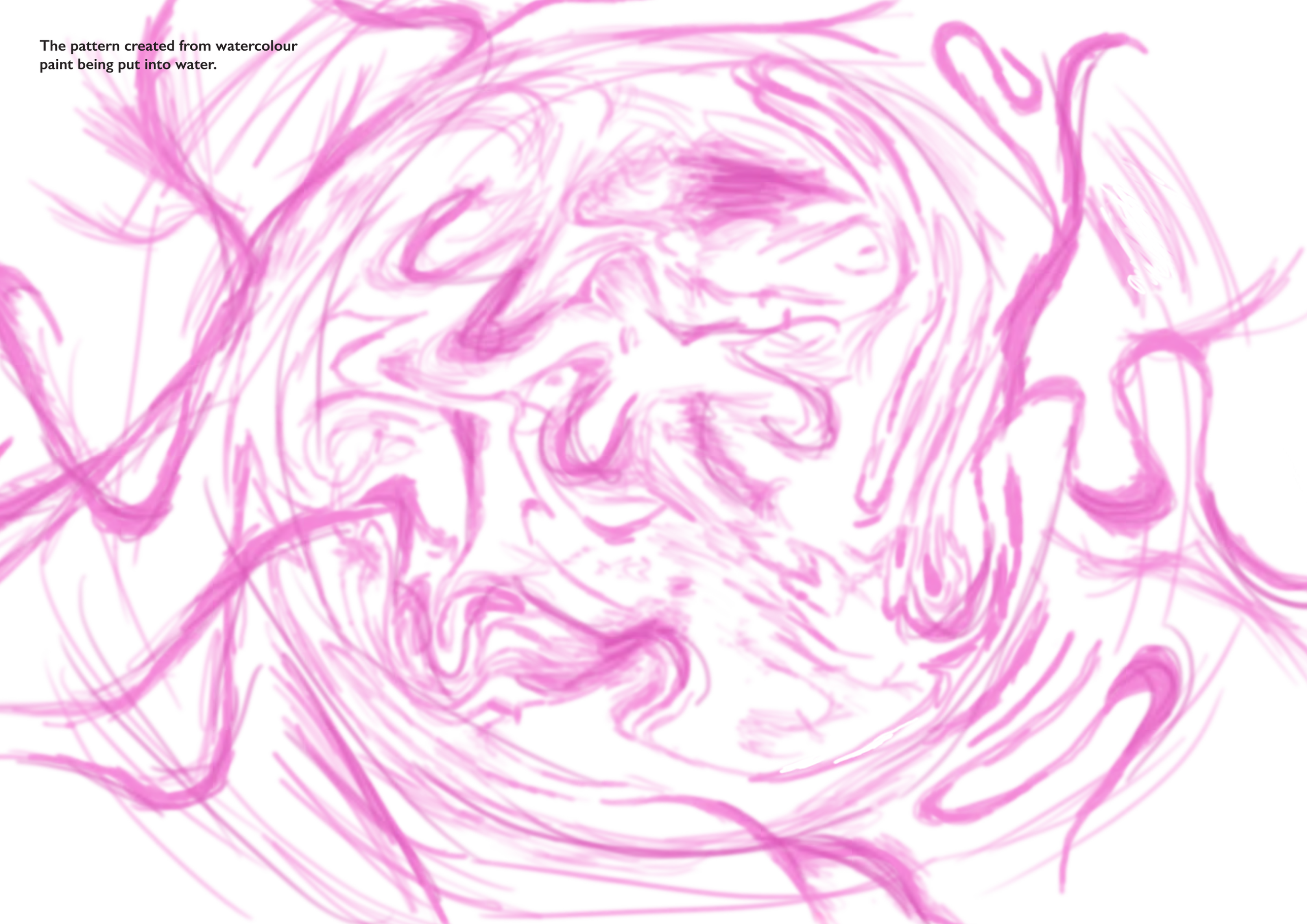


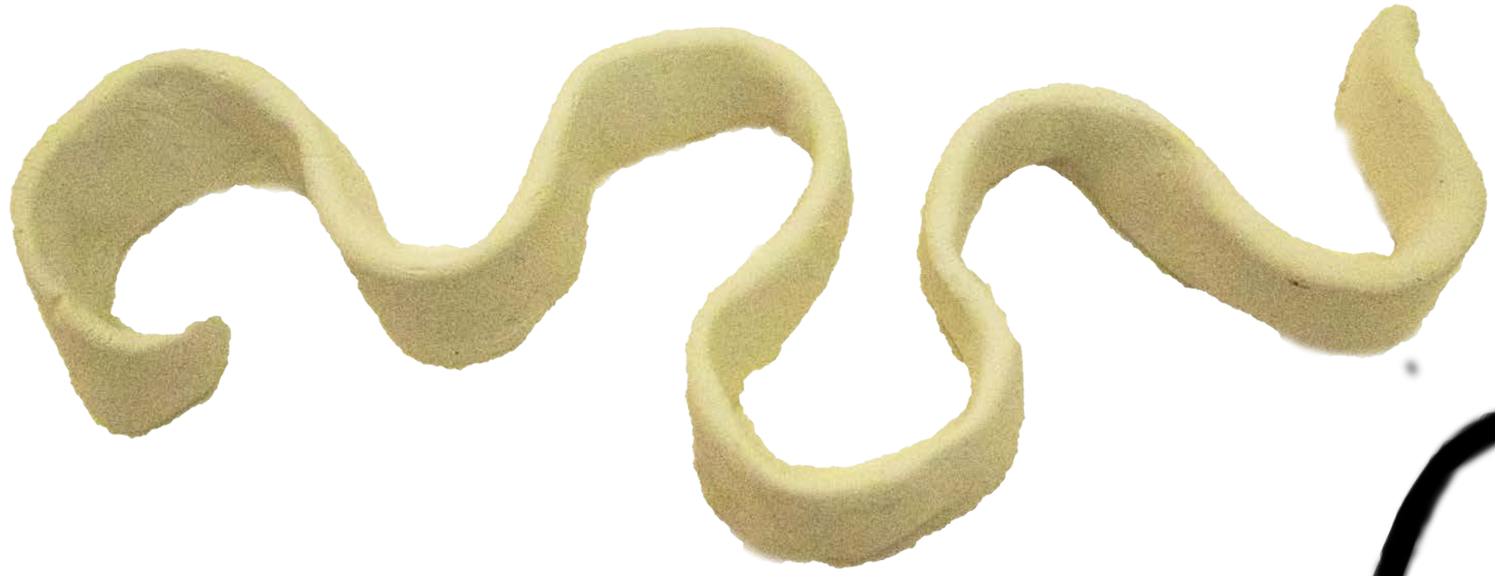


As Plymouth is the ocean city of Britain I wanted to incorporate the theme of water in to the design. I experiment with the way water moves and the shapes formed as a result. Additionally, finding out what happens to the water when paint is added. The result were interesting and very varied. From my finding I did a few sketches and made a model of possible way finding techniques. However, non of them were suitable for any other of the designs. Plus would have been a distraction from the exhibition.



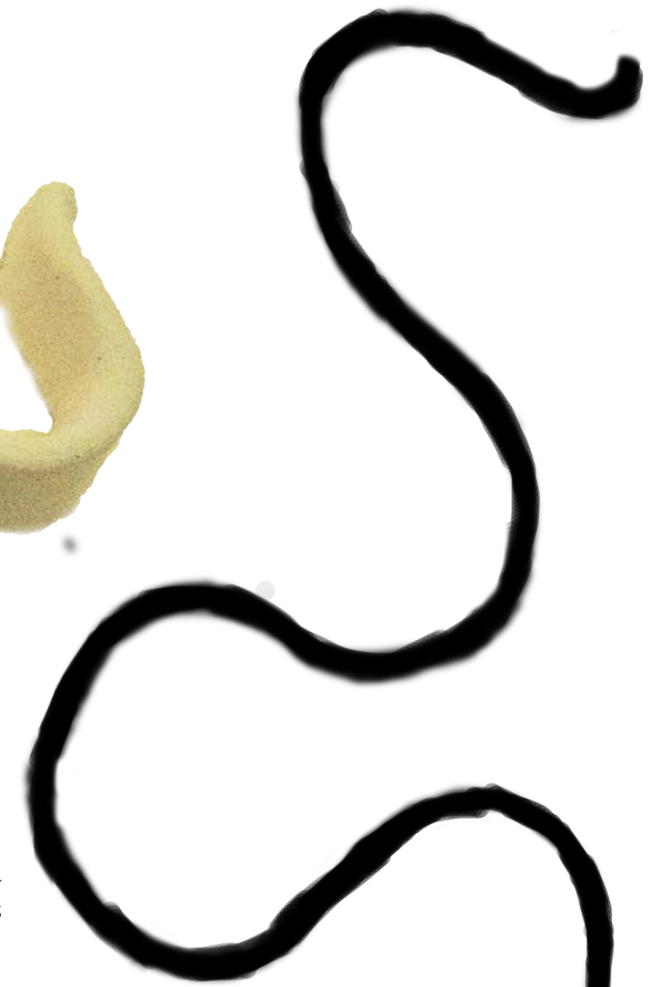
The pattern created from watercolour paint being put into water.





Clay way finding model

Based on the idea of how water flows, this design shows an interesting way of getting around and exhibit and a way of presenting the exhibits. However, this deisign is a bit bland and doesn't seem very playful. Additionally, this design would make it difficult to exhibit the animals and dinosaur bones.

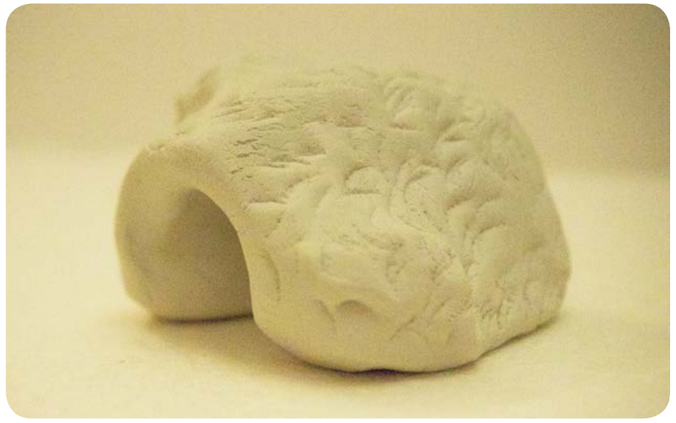


Exhibition model

Twisting the basic shape for exhibiting to liven up the gallery space. It allows multiple viewing heights, however, it makes it difficult for people to view all the information.

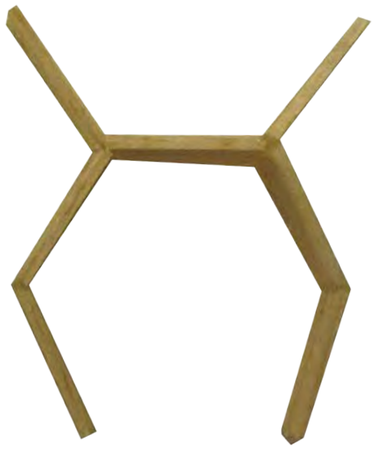
Rock and stone installation model

Looking more into learning from play has help to develop this idea from the original sketches. The idea is to allow people to interact with the exhibit. As the shape is based around a rock. It seemed appropriate to make it suitable for children to climb on.



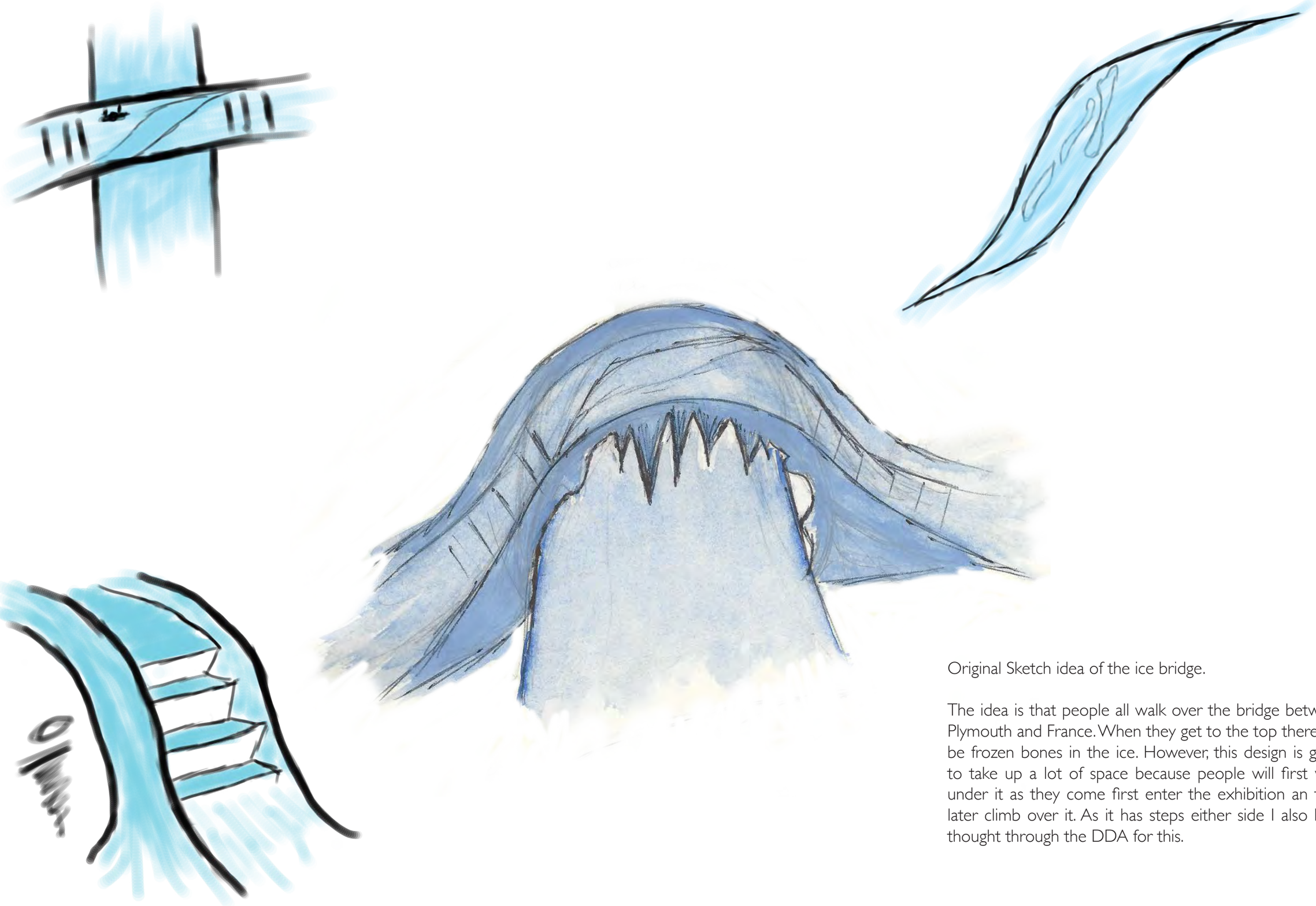
As I decided to redesign the natural history section, I thought multiple path route would be suitable because it is very suited to exhibits based around time lines. It allows people to walk along the path from the centre. Visitors will get to see the artefact evolve with time and the quantity will increase.

Continuing on with the idea of play, the design is a simple climbing frame type structure. However, the design isn't very relevant to natural history. Additionally, there is no way of exhibiting artwork or artefacts on the structure. However it could be a temporary structure outside in the piaza space that invites people into the museum and the natural history exhibition. The idea behind this is for the children to climb and interact with it. This would help the children as playing ball games dancing and climbing all help develop body movement strength, flexibility and co-ordination skills.



The idea was to have a few separate stands that could be re arranged in any order.. This also the design to be flexible and gives the design layout endless opportunities. The point of this deign is to section of the exhibition, Giving each it its own mini exhibition

This design is meant to make the visitors feel more enclosed in the exhibition. Kind of like cutting them self of from the outside world, making themselves fully immersed/ engaged with the exhibit. This design would use s range of sound, smell and lighting affects to emerge the visitors,. However, this means that there would only allowed to be a hand full of people in each one at a time and as a result would make the flow of the exhibit very slow.



Original Sketch idea of the ice bridge.

The idea is that people all walk over the bridge between Plymouth and France. When they get to the top there will be frozen bones in the ice. However, this design is going to take up a lot of space because people will first walk under it as they come first enter the exhibition an then later climb over it. As it has steps either side I also have thought through the DDA for this.

I'll try and answer as best I can:

1. Which schools do they anticipate using the facilities?
   Our main users are Plymouth schools (79% of our school visits during 2012-2016 were from Plymouth) followed by schools from the South Hams and South East Cornwall. Of these, the majority of schools will be Primary-aged. We will be developing resources and activities to try and increase the interest from Secondary schools and target schools outside the city to increase our visitor numbers.
2. What are the maximum and minimum numbers able to use the facilities at one time?
   Tricky one to answer at the moment – I should imagine we'll be able to accommodate up to 300 children at one time over the whole site, but will aim for fewer for their comfort and visitor experience. The mapping exercise required for specific answers around this has taken place yet.
3. How long would they anticipate the educational experience lasting?
   We'll be offering one hour sessions for a single class, half day and full day visits.
4. What is the target age range for the educational centre?
   The age range is basically from 0-100! We work with under 5s, Primary, Secondary, HE/FE right through to a diverse range of community groups – all will use the Learning Space.
5. What is the main aim of the educational centre?
   It's aim is to inspire learning within that range of users. The room will hopefully include object displays, a huge 1950s mural, interesting technology and beautiful furniture. We will host entire learning sessions in there with schools and other groups and will also function as a base for visits out to galleries and spaces within the building. It will hopefully not function as a lunch space. All is dependent on budget!
6. Can I have more detail about the natural history section e.g. specific exhibits, artefacts, or displays?
   The gallery will include a large replica Mammoth, mass-displays of insect and mineral collections and will look closely at subjects such as climate change and evolution. There will be interactive elements throughout, as will the other galleries.

I hope that helps!

Best wishes,

Email received from Adam answering the question I had about the natural history section and the educational process that they have go in place at eh museum.

Natural History learning outcomes

Keystage 1:

Changes within living memory. Where appropriate, these should be used to reveal aspects of change in natural life.

Events beyond living memory that are significant nationally or globally 9events commemorated through festivals or anniversaries.)

The lives of significant individuals in the past who have contributed to the nation and international achievements.

Significant historical events, people and places in their own locality.

Key stage 2:

Changes in Britain from the stone age to the iron age

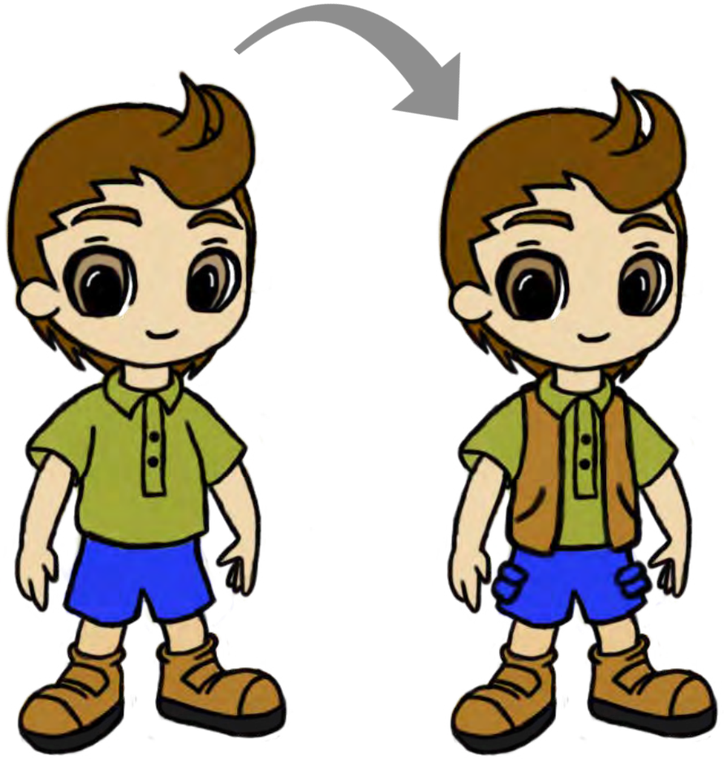
Roman empire and it's impact on Britain

Britain settlement by Anglo-Saxons struggle for the kingdom of England to the time of rewards the confessor

The Viking and Anglo Saxons and Scots.

A study of an aspect or theme in brutish history that extends pupils chronological knowledge beyond 1066

The achievements of the earliest civilization over view where and when the first civiliations



Danny's Dina

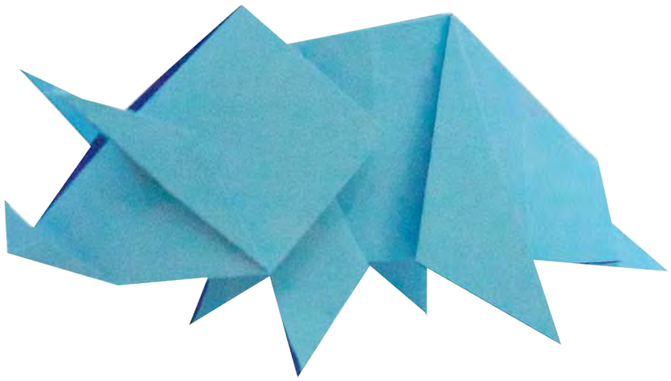
Final outcome for Danny and his 2 dinosaurs. Originally Danny was in a simple outfit but I didn't think he looked like an explore so I gave him a jacket and cargo trousers. Additionally his 2 dinosaur friends were added, to connect him more to the natural history exhibition. Going with origami theme after seeing some of stylo graphics work, I made origami versions of the dinosaurs. I looked into the graphics for the title. I tried out using bones but found that the writing wasn't that clear. Especially for young children when they are learning to read.

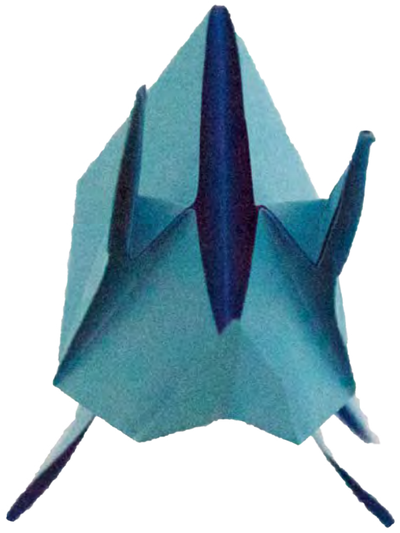
To help direct the children around the museum they have to follow these footsteps around the exhibition. "Its the footsteps left behind by the dinosaurs that have gone missing."

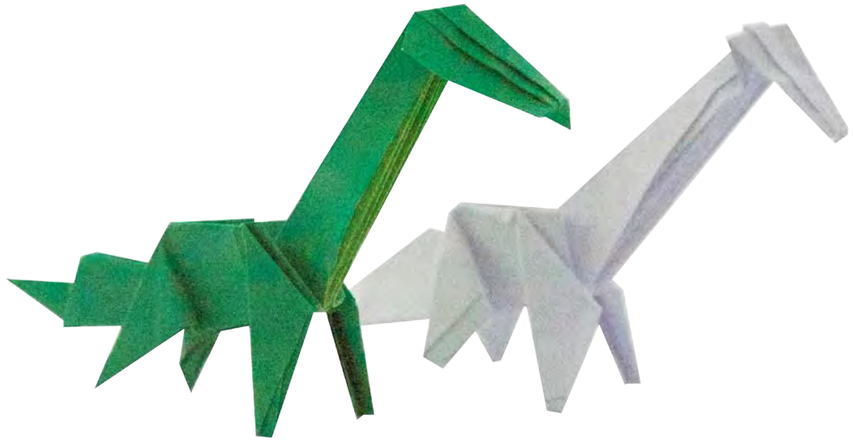
Origami is the Japanese art of folding paper into decorative shapes and figures. Modern origami practitioners generally discourage the use of cuts, glue, or markings on the paper. Cutting the paper in order to make the sculpture id more the characteristic of Chinese paper crafts.

The origami Dinosaurs are a brontosaurus and a triceratops. These are the 2 types of dinosaurs that are Danny's friends. They are found around the museum. In the classroom area there will be a large one for the children to interact will.

Additionally, there will be one placed outside in the piaza space as a type of advertisement for the natural history exhibition. This would be a larger scale then the one in side. As it will act like climbing frame, because children will be able to climb and play with it. The outside one will be made of treated timber to help it with stand the different weathers. It will give the appearance of being folded without actually being made from folds.







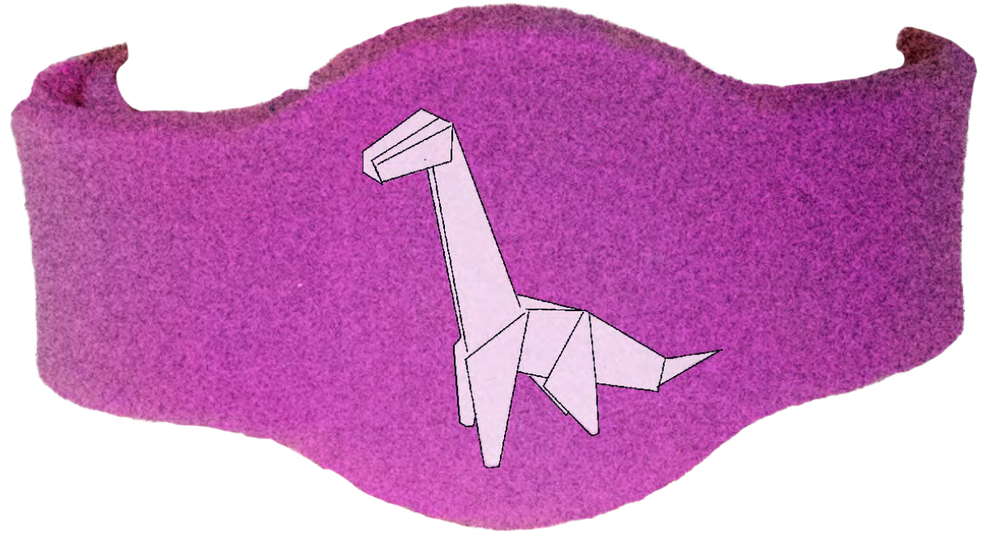
Gonzalo Calvo is and exceptional Spanish origami artist. His designs are extremely intricate and beautiful. It makes it difficult to believe that they are made from only folding one piece of paper.

His main subject matter is focusing on animals but he has created a few other times like this spectacular violin.

RFID stands for Radio Frequency Identification. It is a method that captures, stores and retrieves data using devices called RFID tags. The RFID tag can be on a small adhesive sticker that is attached to a product. These RFID tags contain antennas that enable them receive and respond to radio-frequencies.

RFID wristband

Each child revives an individual wristband that is programmed for their specific needs. For example it will know what year group they're in or what disability they have. All they need to do is present the wristband up to the scanner. Then the display can talk to them giving out the relevant information. Or it might make a sound relevant to the display.



Additionally, it acts as security. As they will all have a wristband on that will be on a system so that they could locate each child and be alerted if they left the building. It also allows them to get food in the canteen at lunch time.

Many RFID wristbands are used these days, they are very popular in large event like festivals for tracking people and regulating events. I looked into the wristbands used in Disney world. The magical wristband makes there experience seamless and it is individually programmed meaning they don't need to take their credit cards, all the bookings and rides are don't through the wristband. Additionally, they get engraved with their name and arrive before they go like an early Christmas present.

SOH CAH TOA

Tangent : $\tan\theta = \frac{\text{Opposite}}{\text{Adjacent}}$

$\tan\theta = \frac{1625}{19800}$

$\tan\theta = 0.08207$

$\theta = \tan^{-1}(0.08207)$

$\theta = 4.69°$

$A^2 + B^2 = C^2$

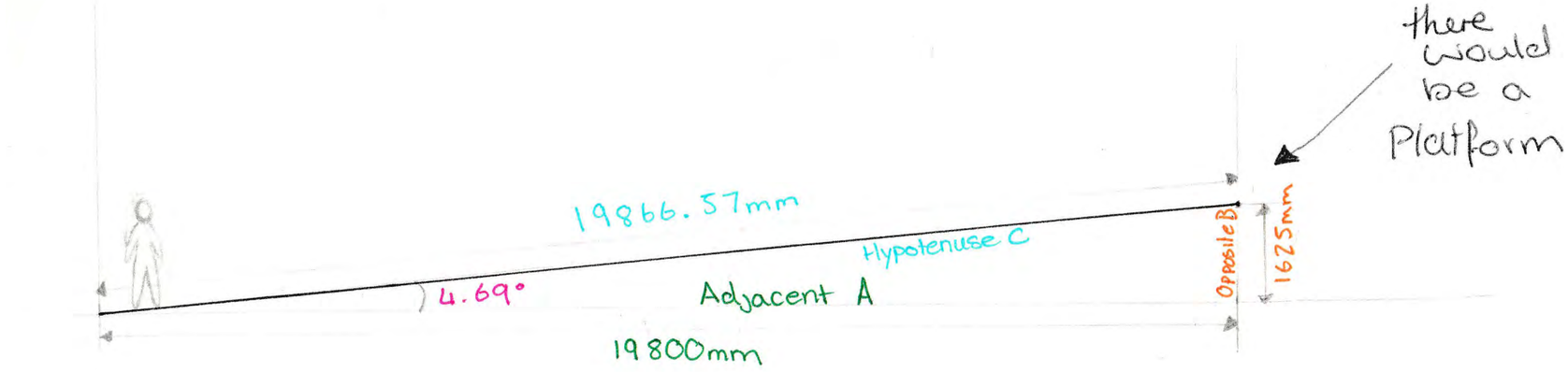
$19800^2 + 1625^2 = C^2$

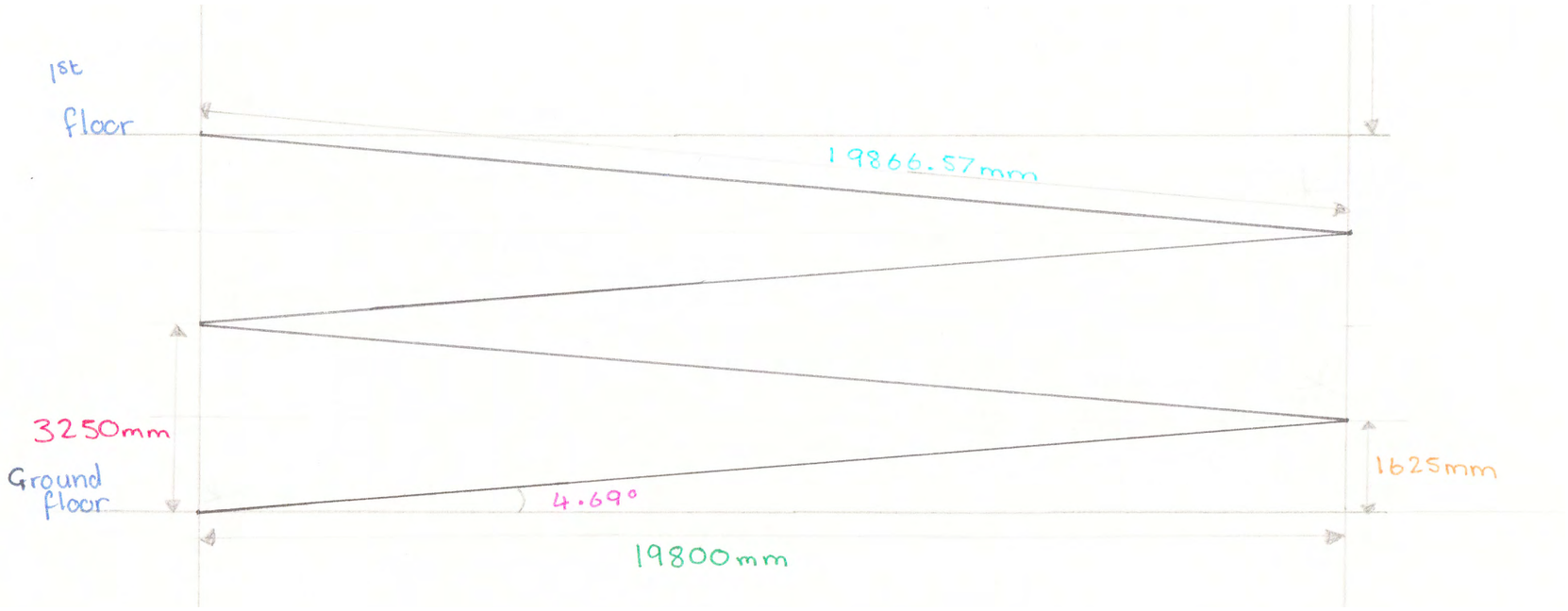
$392040000 + 2640625 = C^2$

$394680625 = C^2$

$\sqrt{394680625} = C$

$C = 19866.57$



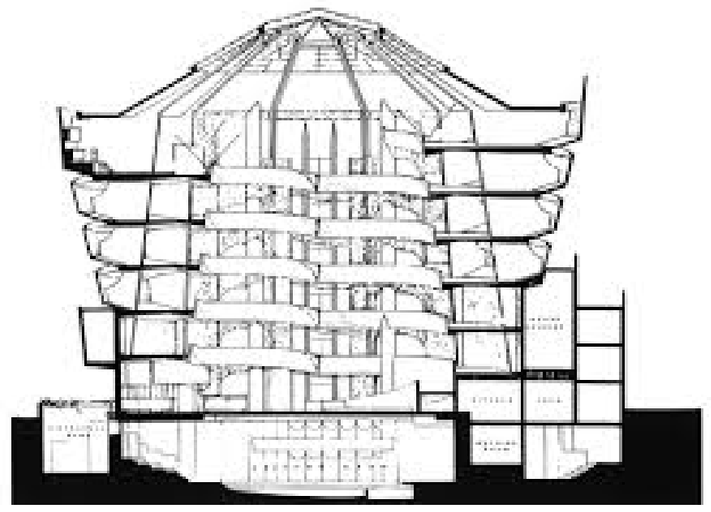


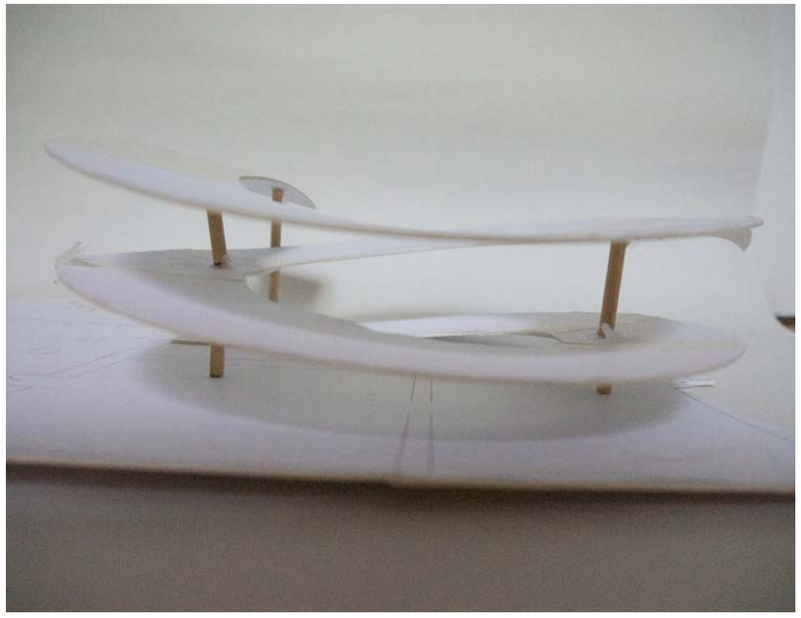
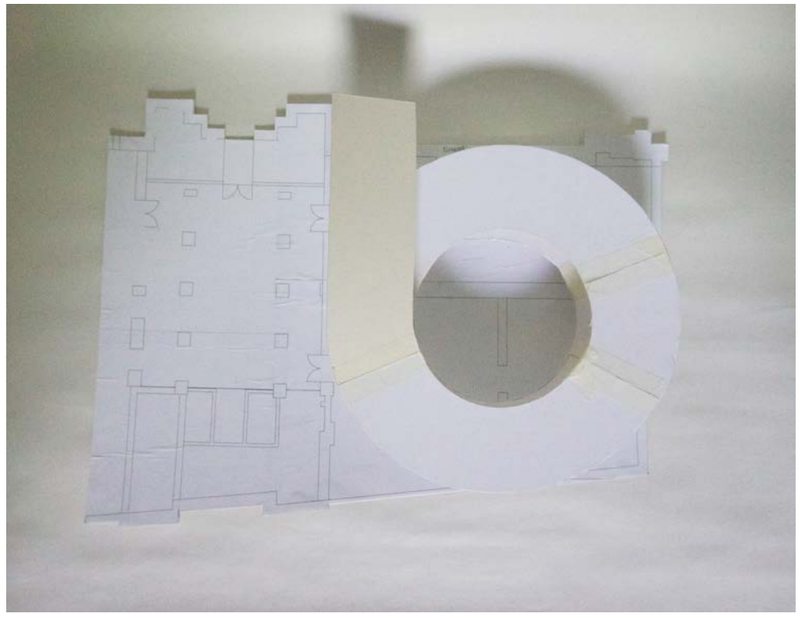
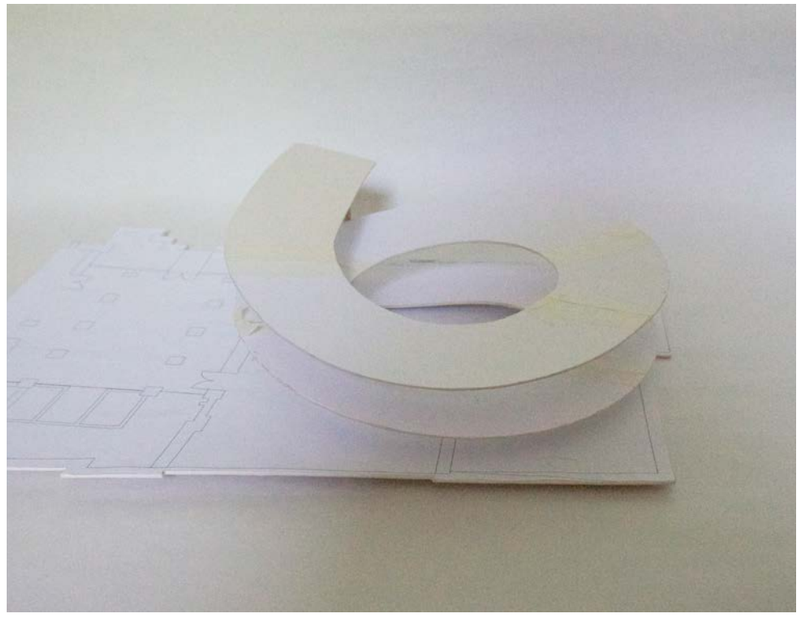
Spiral calculations

To figure out the height and length of the spiral I had to do a few separate test drawings which are in my sketch book. To make sure the ramp was suitable I had make sure it complied with the DDA standards. For a ramp they need a gradient of 1:12 with landings.

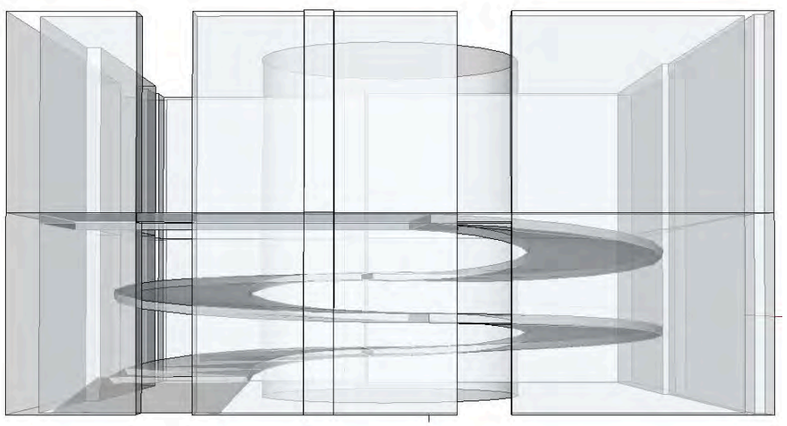
Workings:
19866.57 / 1625 =1:12 (225581538461538)

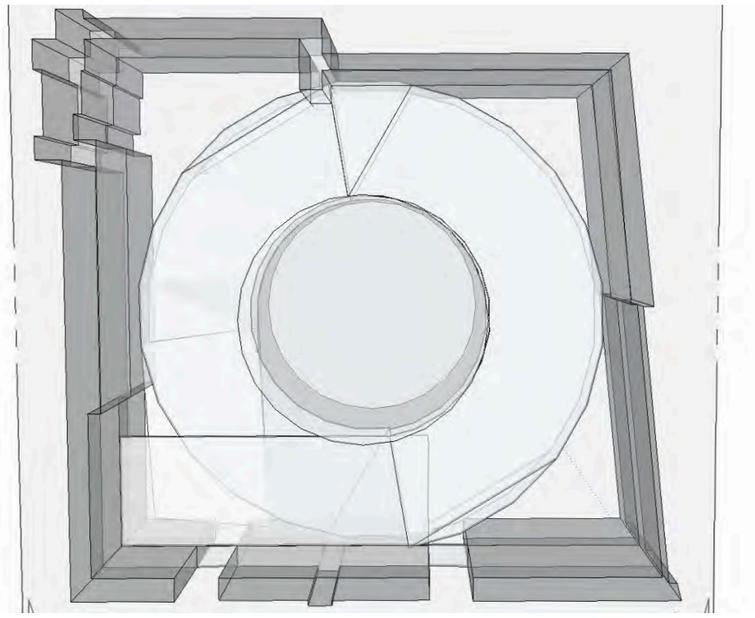
I looked in to the Guggenheim museum in New York as It is famous for it's spiral in the main atrium.

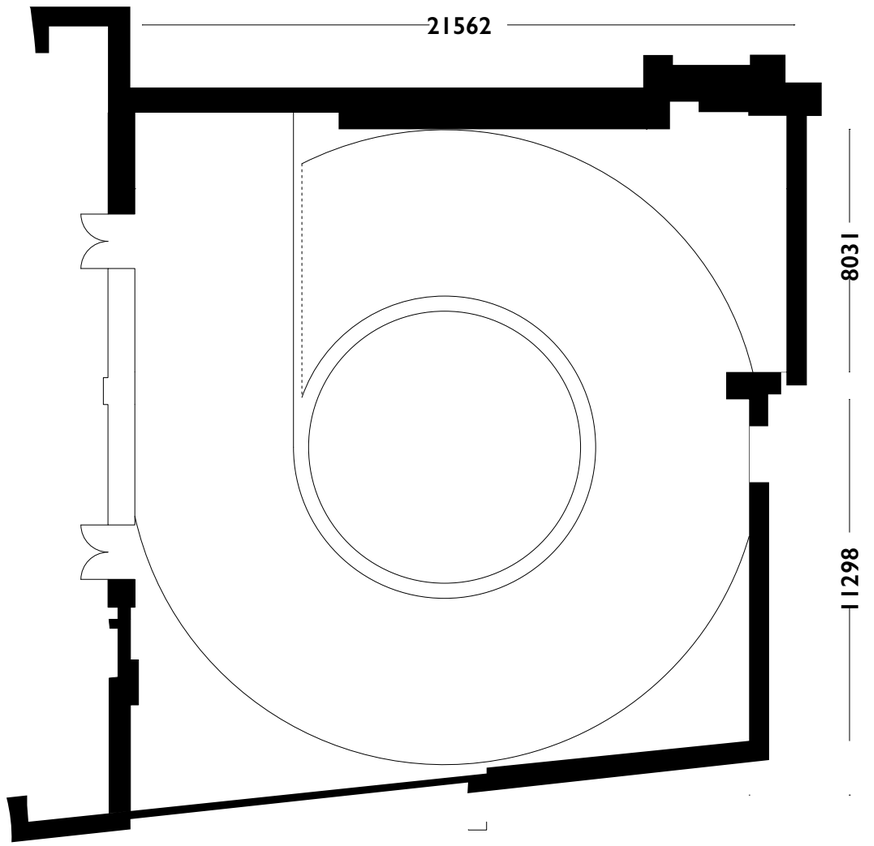


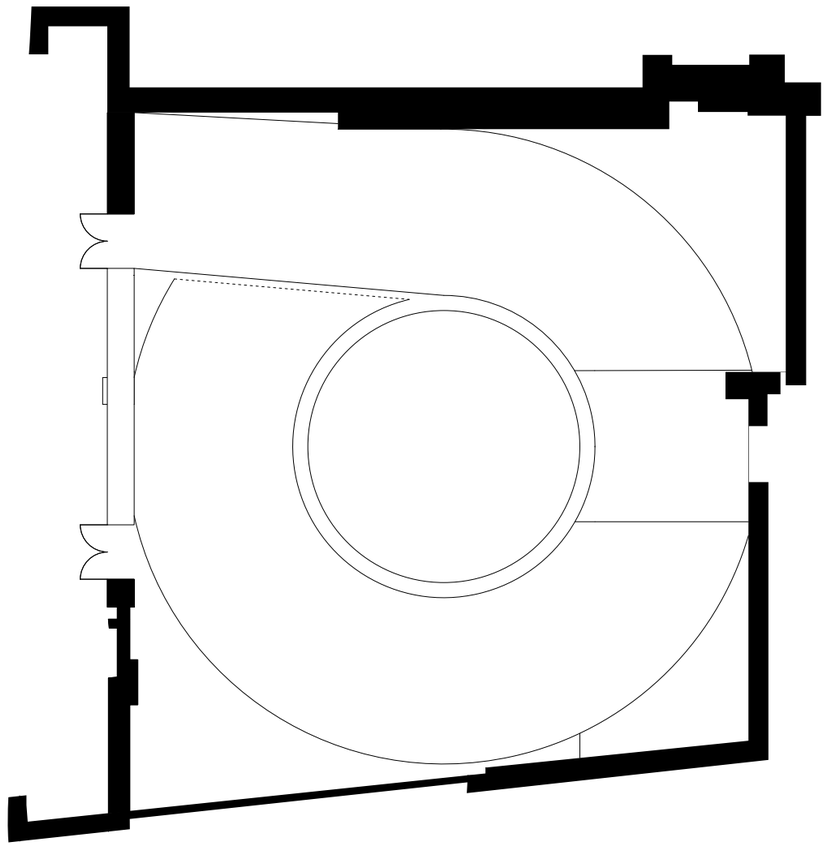




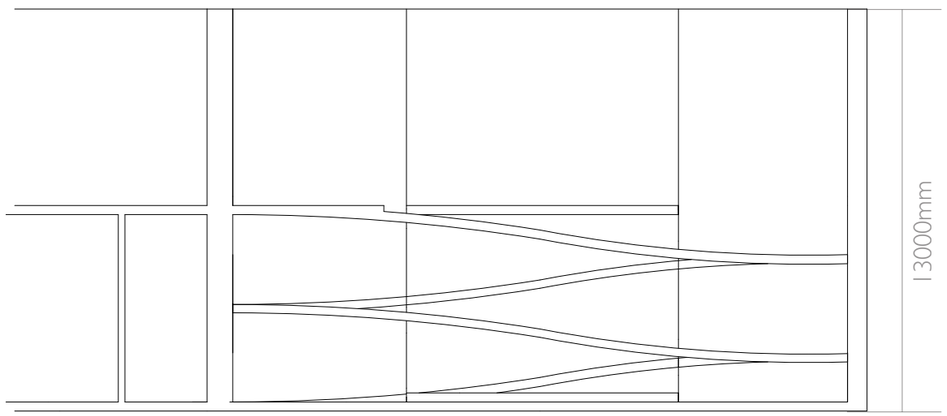
To find out if the Spiral would actually work I modelled it in skecthup originally. This gave me a better understanding of how it would work. Especially the landing, because just having plans it was difficult to see how it would work. As the drawing were only in 2D and it was useful to be able to go round the model and see it from different perspectives. Then I made and actual model at scale 1:100 to see what components would be needed when Laser cutting to and how it would stick together.

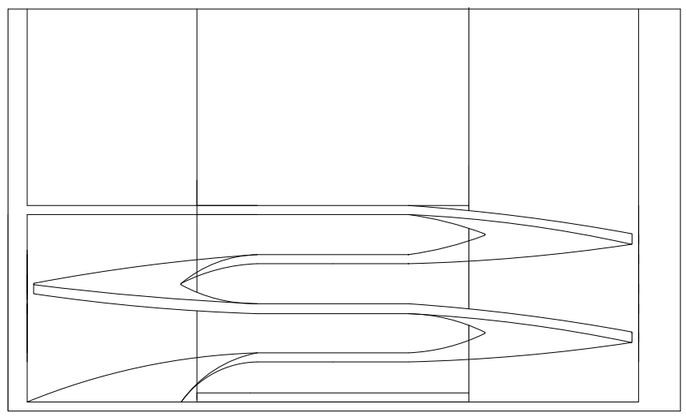




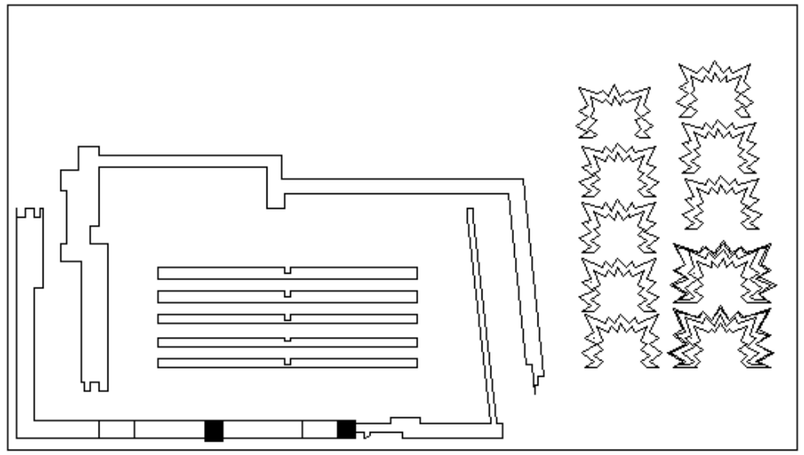


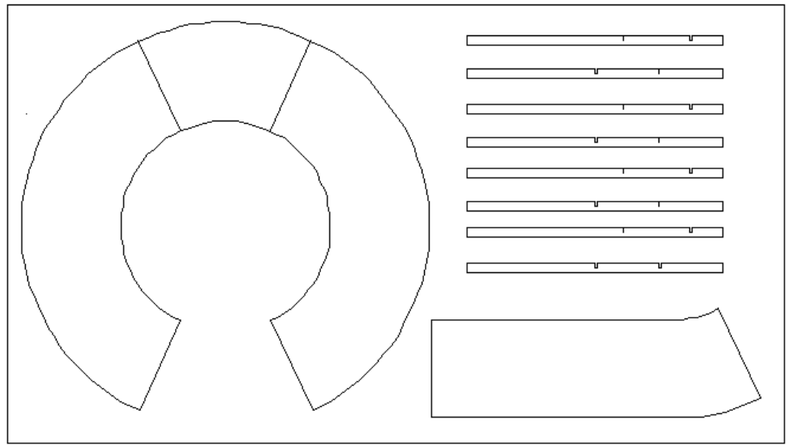


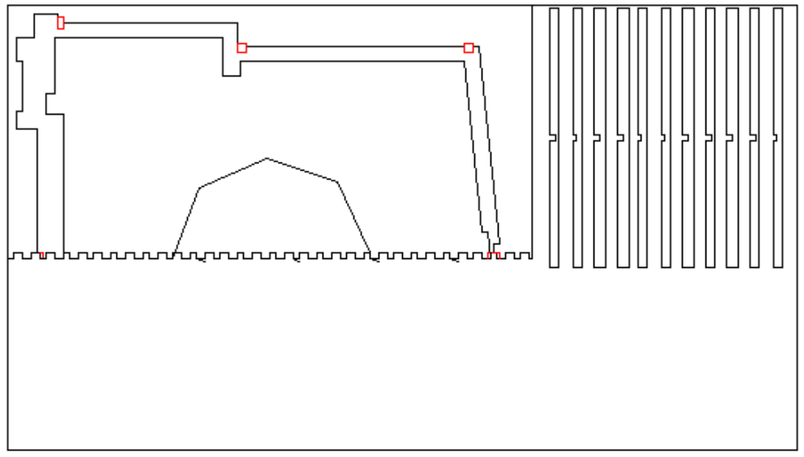


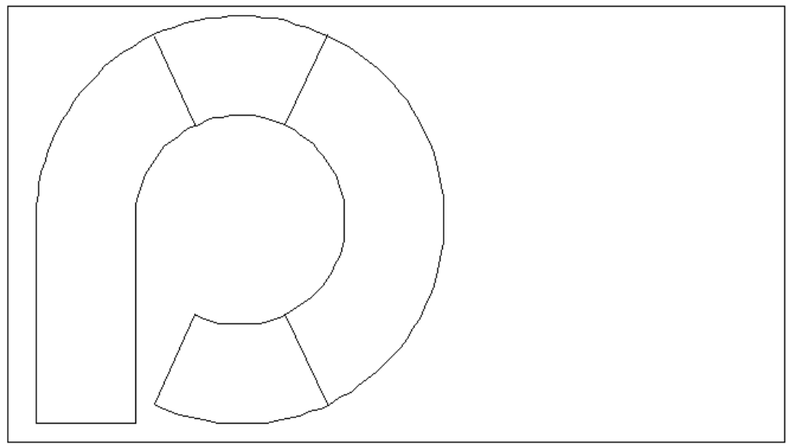


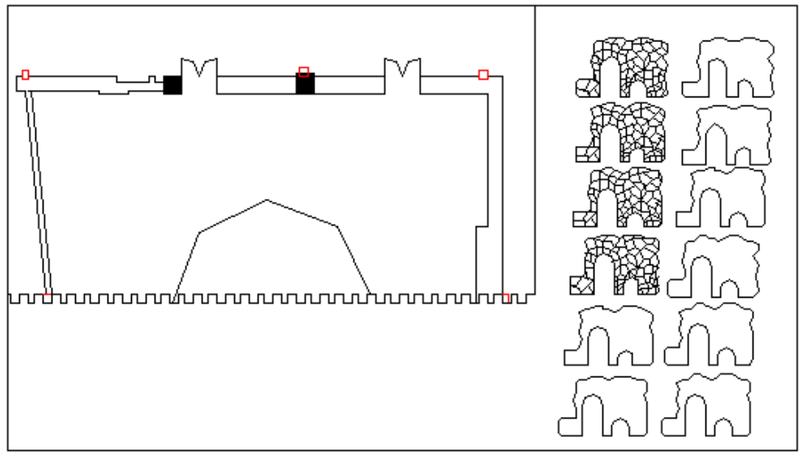
Plans and elevation for the Spiral. Located in the old museum and gallery section of Plymouth History centre. It will take up the ground and first floor.
Scale 1:200

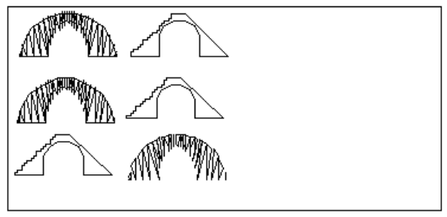


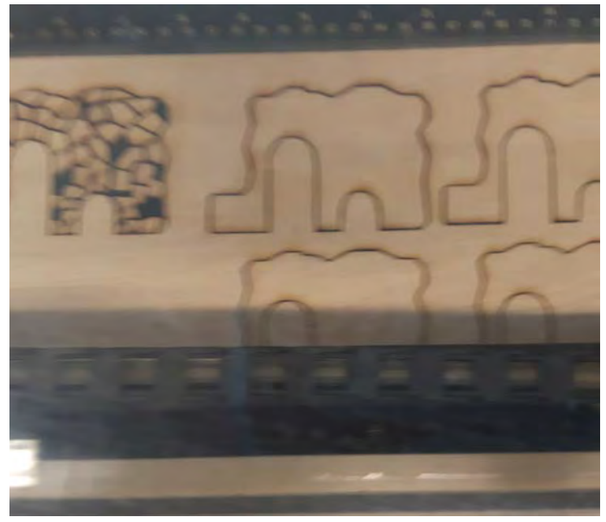








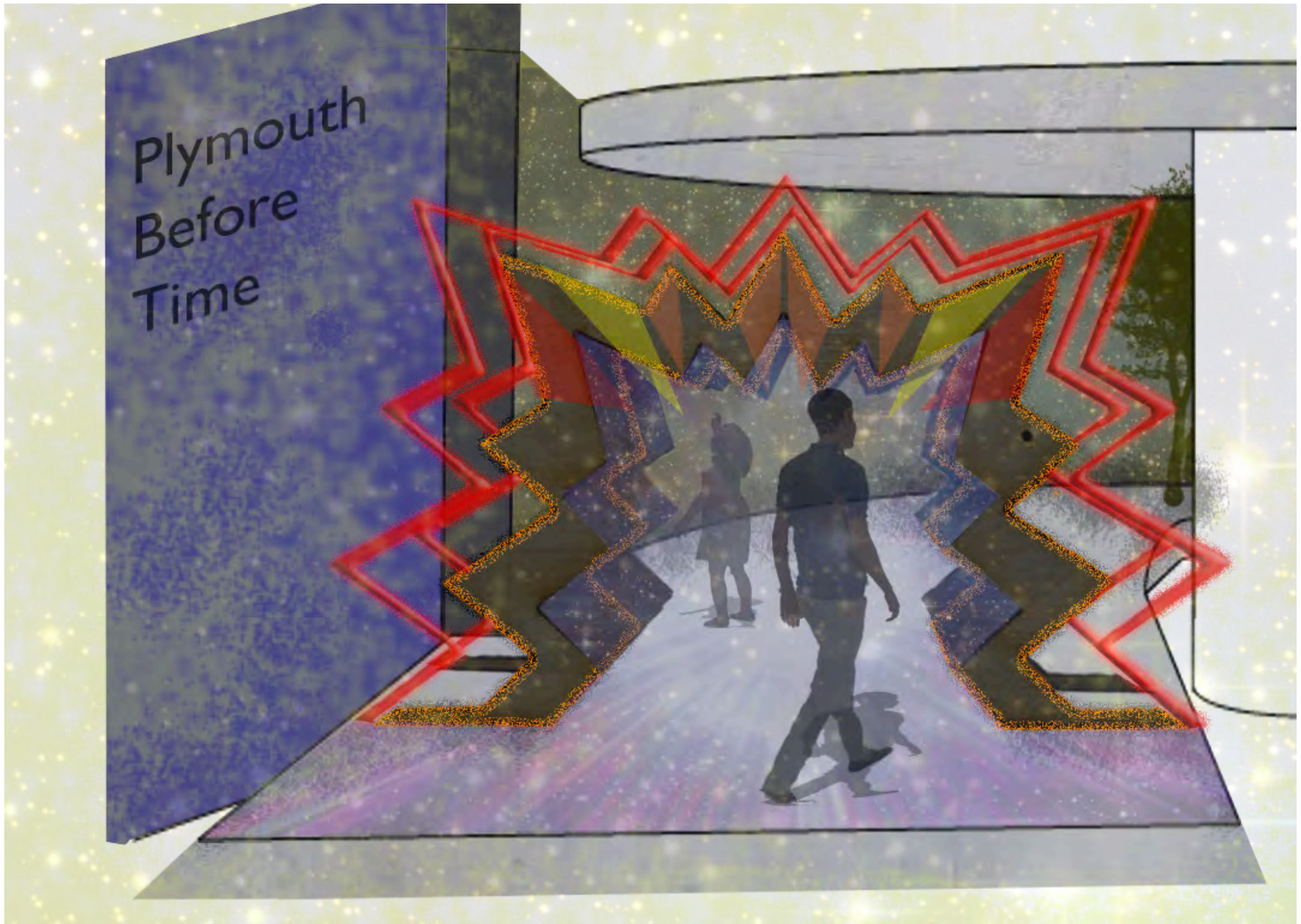




To make a scale model I decided to laser cut the majority of pieces. Due to the large scale of the model some of the piece had to be cut into 2 then laser cut and put ack together. To allow the pieces to be laxer cut i originally drew the individual pieces up on AutoCAD. then transferred the file to Illustrator and then Coral to be laser cut. The materials that I sued and got laser cut were 4mm laser ply, clear acrylic and black/white card

Final Model at a scale of 1:50

The model is there to illustrate how the spiral works and how each of the installations interact with the spiral. Additionally, as I used the laser cut I was able to get an accurate representation of the shape of the building inducing the thickness of the walls.



Big bang is the first installation in the series. It is meant to symbolise the start of the world and how scientist believe we started of a massive explosion.

The design is a multi sensual design that because of the wrist band can be individualised for each student or group. The design aims to use a mixture of light and smell along with giving the option for making a noise.

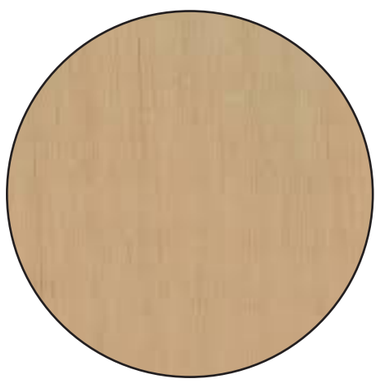
As the visitor walks through the tunnel where there are videos of the event happening. However, firstly they will notice a sharp rise in temperature when they walk through. As the exhibit can reach high 28'c

Material: Plywood, Light weight, strong and resists bending and warping.

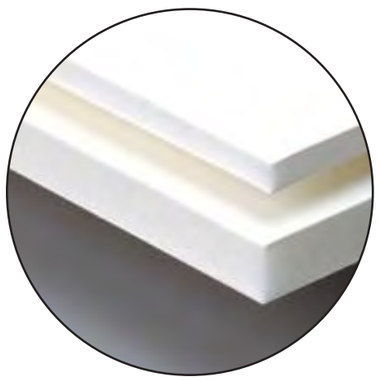
Rock Formation is a simple installation about the how the earth was formed and how the rocks have developed over the billions of years. It will also start to look into fossils and other rick related artefacts the museum might have.

The exhibit allows people to get up close and persona with the exhibit. As well as it being a multi sensory design the temperature of it will play a key part as. The temperature of this section will be 12'c. Is quite average winter weather as this section is mean to Show how cool it would be at that time.

The rock formation allows 3 main routes to get though making a slightly more playful way f getting round the exhibition. It allows the children to switch their minds of and take a small break. The main route is suitable for everyone to walk through abs was mainly aimed at the general public. Ther are 2 other way to get through the large rock sculpture. One is to crawl there way through. The final one being climbing there way over.



Material: Multiplex board (plywood) same material used in climbing walls. This make it very reliable and with a bit of texture material added over the top makes it feel and look realistic.



Material: Forex Smart, it's robust, light weight and inexpensive. Allows them to swap over dinosaur friends very year without it being ridiculously expensive.

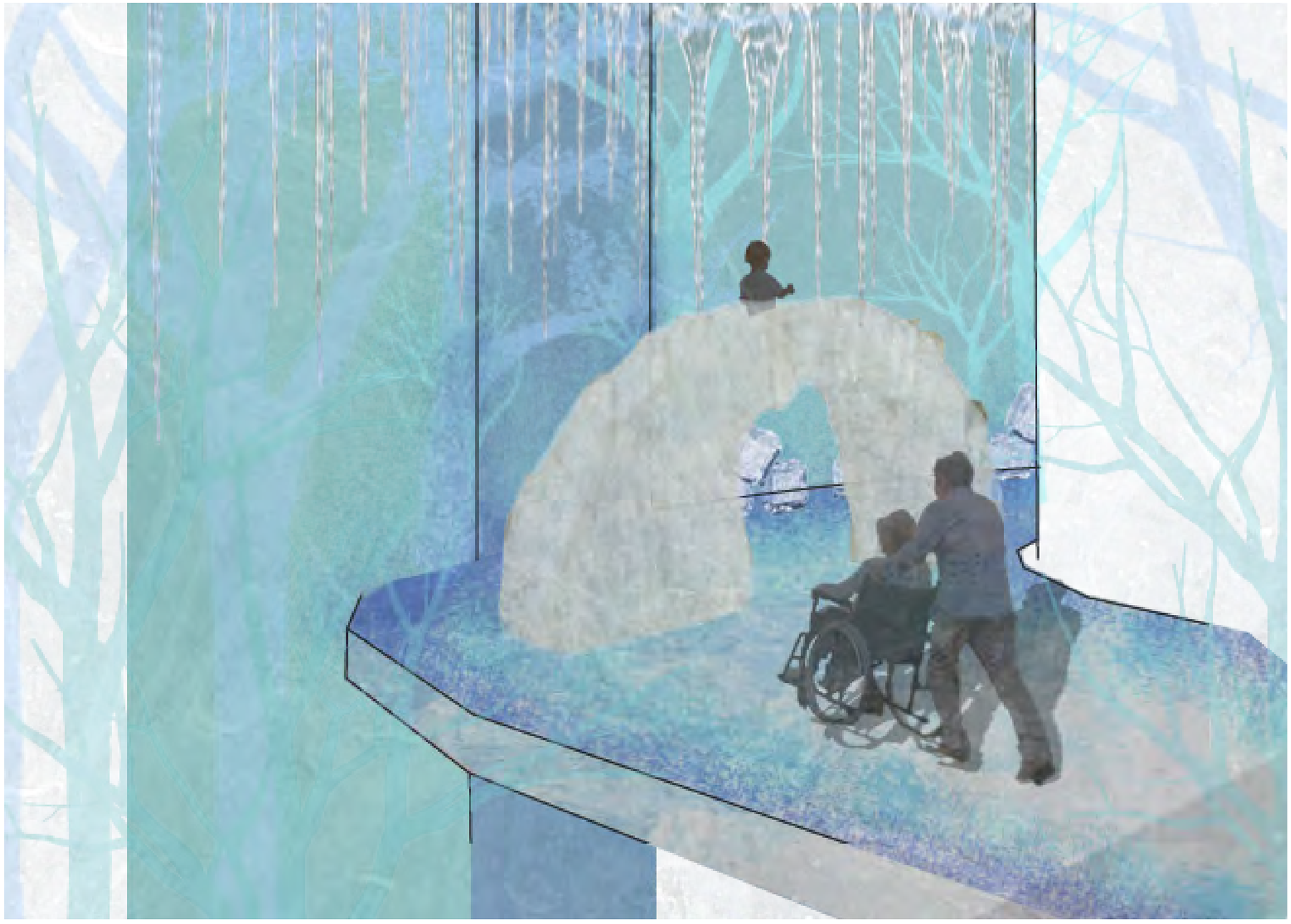
Using one of Danny's dinosaur friends it makes a clear link from the natural history section to the educational process.

This is mean to be one of the more interactive installation. Where the children are allowed to go and touch the dinosaur. As it will be covered in a range of different textures. Also it is going to have multiple sensors and information area to make sure the children learn as much as they can from the installation.

This exhibit is going to be changed every year they will swap the charters over. Giving them new and exciting textures every time.

Additionally, which ever dinosaur friend isn't n the natural history exhibition will be outside like a climbing frame. Made of treated timber. Allowing the children to climb all over it and ultimately drawing them indoors and around the exhibition.

For this I wanted it to feel warmer but not unconformable warm.



Ice bridge is a representation of the ice bridge that used it be between Plymouth and France back in the ice age.

The bridge is over half way through the exhibition . I acts as 2 separate things the first being a slide that the children are able to use. Due to the position of the installation the children won't be sliding of in to the exhibitions or off into the railings.

Secondly. It acts as a tunnel for people to duck under and walk through. Because of the place it stands in there is plenty of space either side so that people have a range of routes to walk around the exhibition .

Like the other installation this has also go a temperature. Like the ice age the temperature is very cold to give the installation that things around them are cold and icy, But also spreads the kids up so that they don't spend all afternoon watching the children.

Material: Polyethylene, typically used in playground slides. The temperature is so low to make it feel like they're in the ice age but also to make sure to hurry the children up do they don't spend all their time on the installation

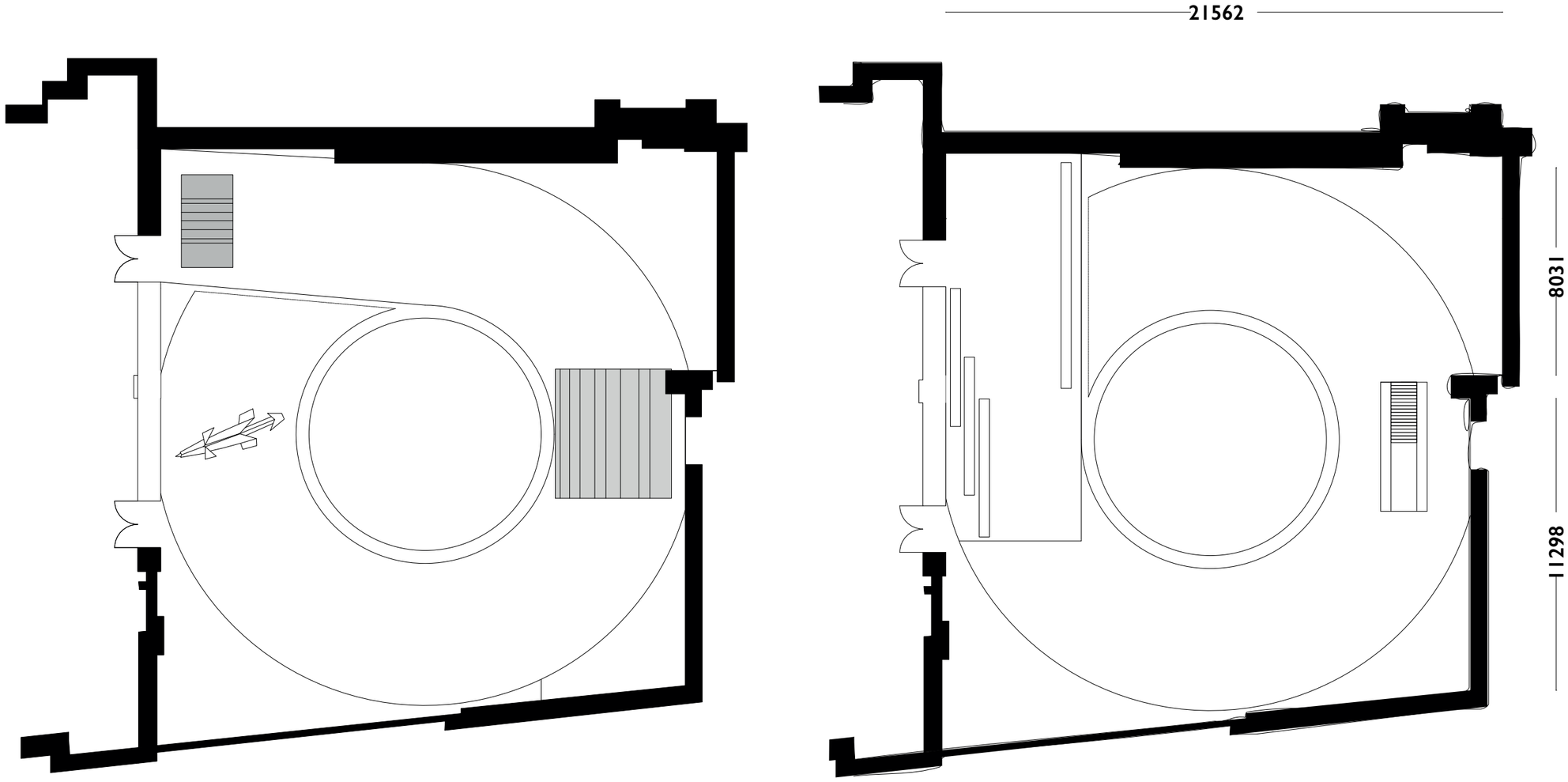
The last section of the natural history exhibit is the fake archaeological dig. This also the children to properly explore and get hands on with the exhibition. This feels there creativity and knowledge as they will be learning as well as playing.

There will be a range of fake animal bones, foot prints and potentially a skull now and a gain. The children have to use the tools supplied to try and discover more dinosaur bones and make a great discovery that they can then discuss once they are back in the class room.

This gives the children a unique insight as to what goes on in an archaeological dig. They could either work together as a team to try and find the missing bones or struggle individually to find them.

The temperature is slightly warmer then they're used too but is meant to replicate the type of environment and actually dig would be in.

Material: Resin, it is durable plastic likely to withstand abuse. As the items can be made out of hollow resin the price will be dramatically lower meaning they can replace the items more often and making the exhibit more exciting with the continues change.



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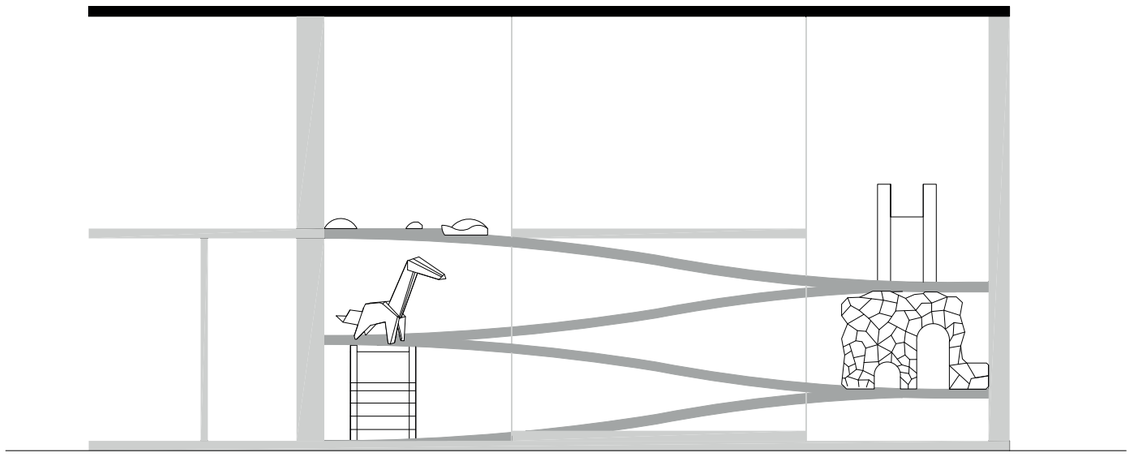

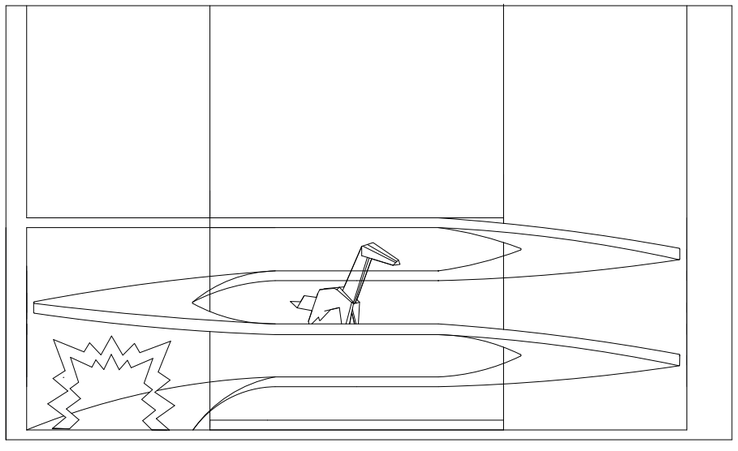

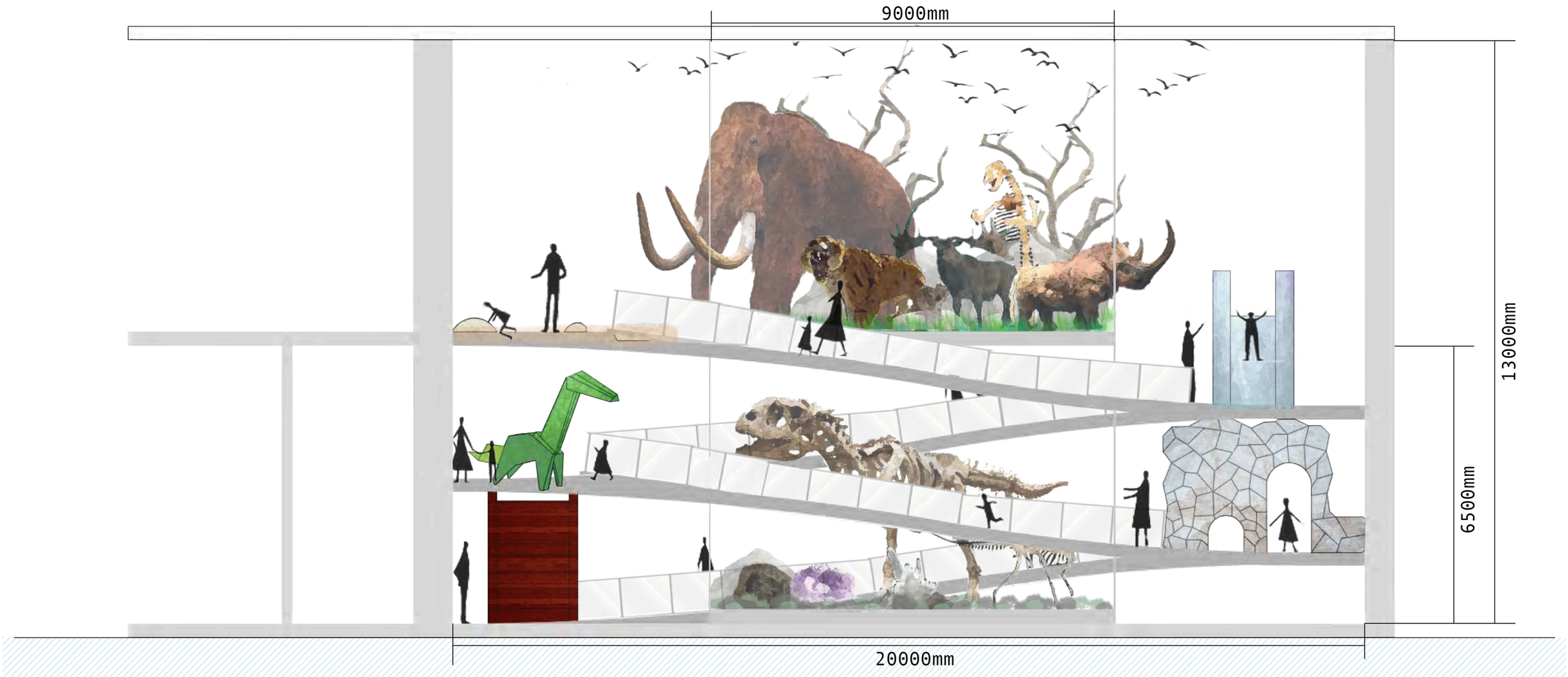
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