



Economic Sense
 RainSafe® reduces energy used for household water, provides an energy independent, reliable and lasting water supply and eliminates the need for bottled water. The built-in water storage system provides backup water without needing costly plumbing for additional drinking water.

Environmental Sense
 Harvested rainwater treated in the RainSafe® cisterns is free of harmful water without the need of chlorine or chemical sanitizers. RainSafe® harvests rainwater from the roof of your home, reducing the need for bottled water.

RainSafe® makes economic and environmental sense

- Rain water treated by the RainSafe® provides 100% of household water.
- ✓ Drinking water from harvested rain
 - ✓ Low running cost
 - ✓ Reduces your water bills
 - ✓ Easy to install

RainSafe® Delivers

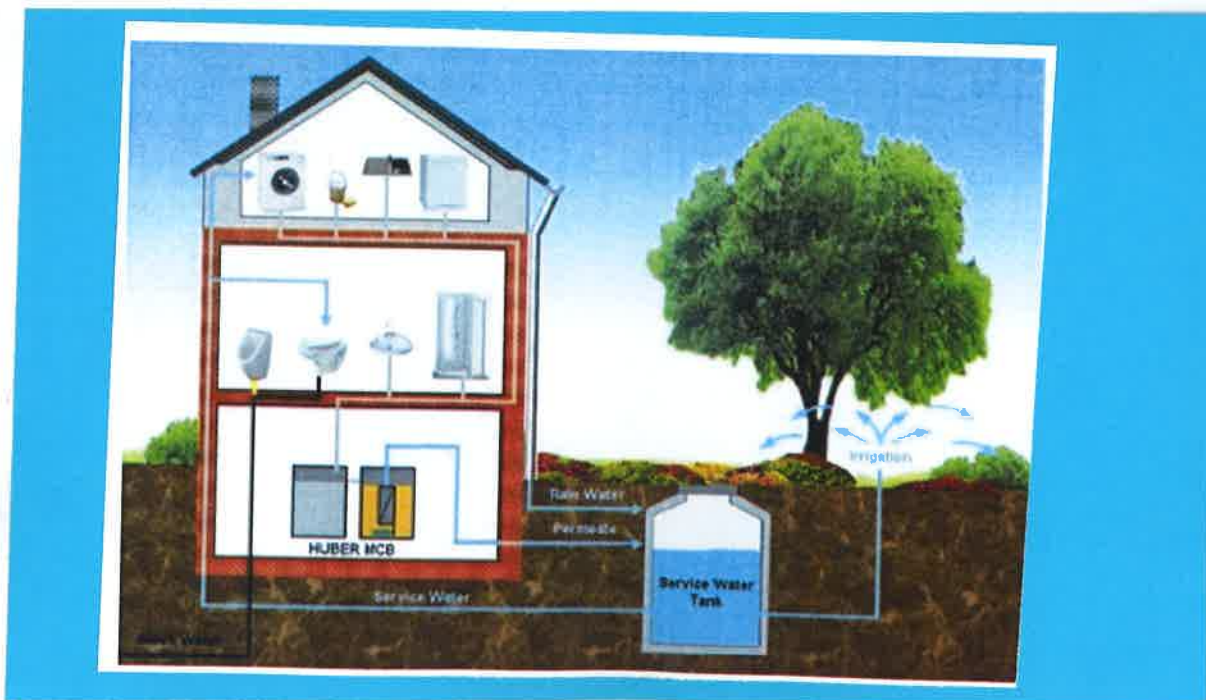
A simple and safe way to convert harvested rainwater to clean, fresh, drinking water for all your needs. RainSafe® uses natural, chemical free forms of water sanitization: UV light, ozone and filtration.

- ✓ All your water needs from harvested rainwater
- ✓ Low energy consumption due to the patented refresh process
- ✓ Potable water for minimal cost
- ✓ Easy to install; both in existing properties and in new builds
- ✓ Reduces the demands on stressed municipal supplies
- ✓ Harvesting rainwater helps manage storm water, to reduce flooding.



Grey water system

Grey water system is the reusing of the waste water that comes from the household's showers, baths, washing machines, sinks and dishwashers. This water can be used for toilets flushing, washing cars and watering plants. It is a very sustainable use of water especially in built up areas as it provides a very economical and sustainable use of the waste water it is especially beneficial due to the increased expense of water. Every time a toilets flush it uses 10 litres of water by using the grey water system recycling the water helps to reuse the water instead of using clean water.



Rainwater Harvesting

340 litre cistern
stop valve

Rainwater from gutter

overflow

22mm Cold feed

outside tap

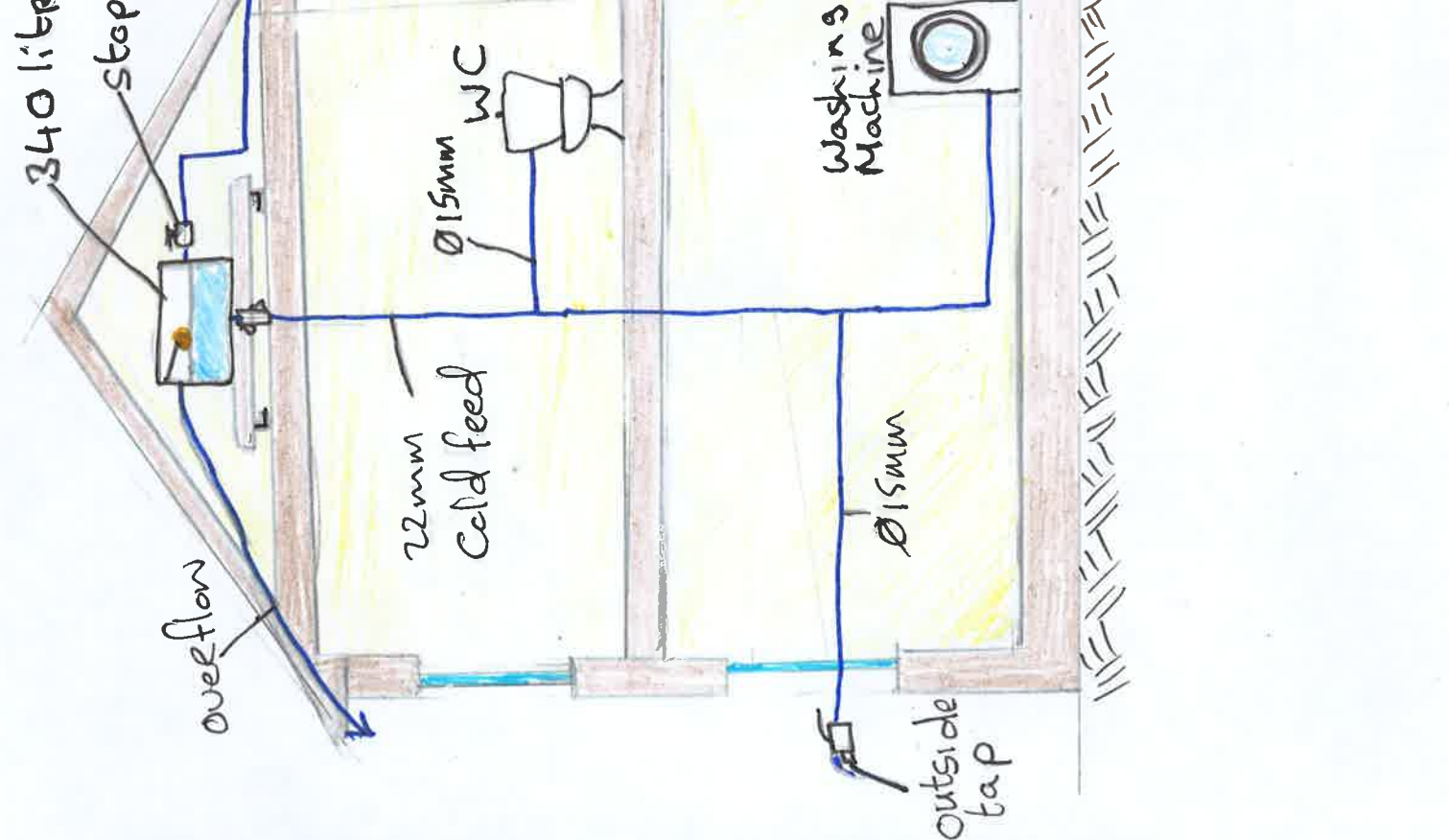
15mm WC

15mm

Filter

overflow

Pump



Realisation

Realisation

While thinking of what to do for my project my biggest question was, how, how did the water get to my tap every time I wanted water every time I need water to cook how it came out of the pipe so quickly and with ease? We hadn't done the chapter on plumbing when I started my project and I had always been curious of how the water system worked so looking up the information really helped my research skill I found that there is lots of different systems available for both cold and hot water and is also different more modern and economical versions of water system like solar power hot water system.

I decided to find out the route the water will take in each house to get to the kitchen sink. I also decided to do the Indirect Water System as it is the most commonly used water system in Ireland it is also a more economical system even though at the start it is more expensive to install as it has more pipework but it is more efficient as the water when needed in a large does not have as much pressure on the system also there is always water if the water meter fails and all the water goes out in even pressure. I choose to do a bungalow as my house is a bungalow and I wanted the project to represent my house. I had many different ideas like solar panels or grey water system the reason I choose to do the indirect cold water system was because I wanted to go into detail on this system as it is in every house and I wanted to show clearly how the water enter the house.

IDEAS

Rain water
Hervesker

340 litre cistern
stop valve

Rain water from gutter

filter

overflow

pump

overflow

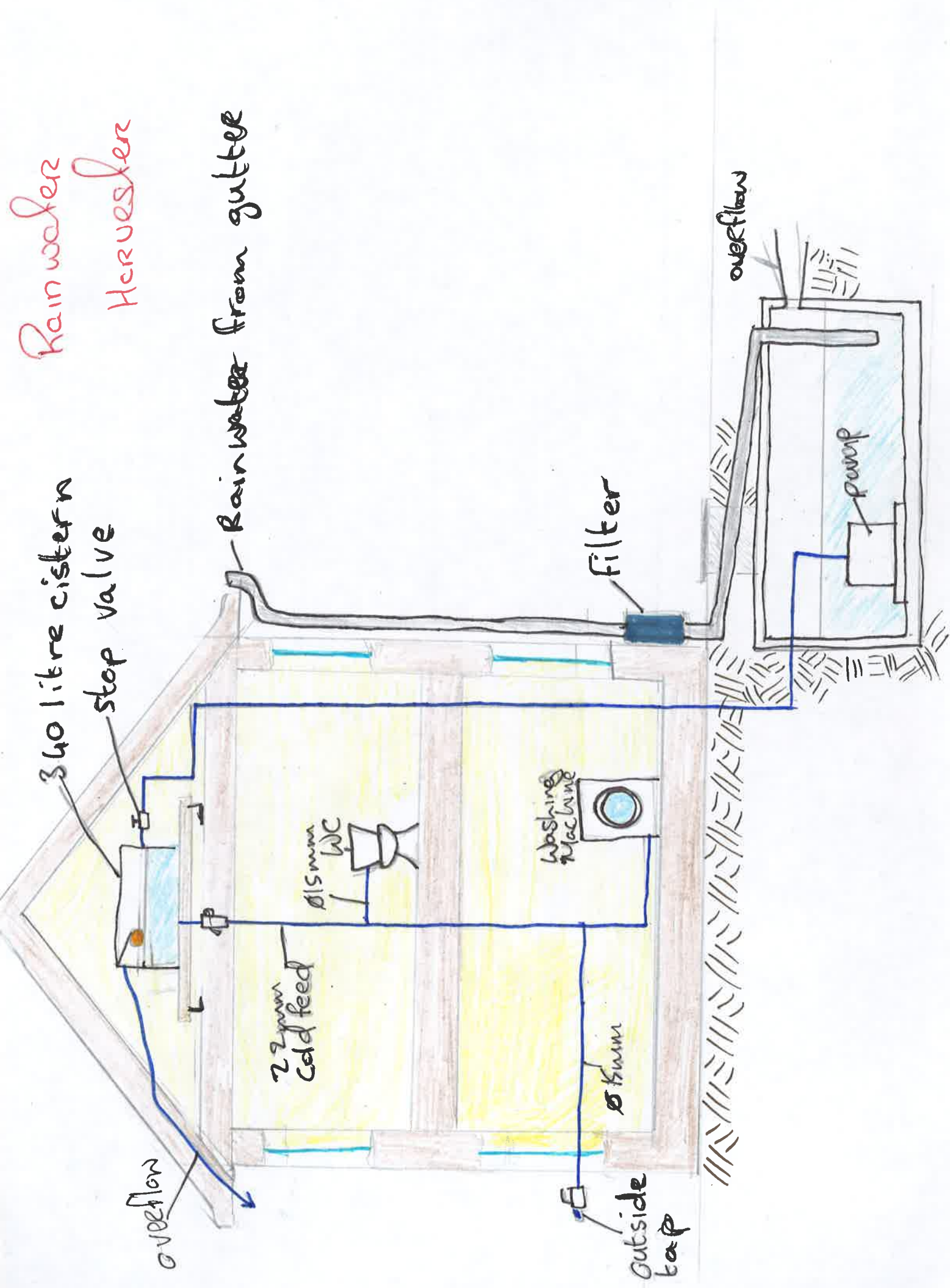
22mm
Cold feed

15mm
WC

Washing
Machine

8mm

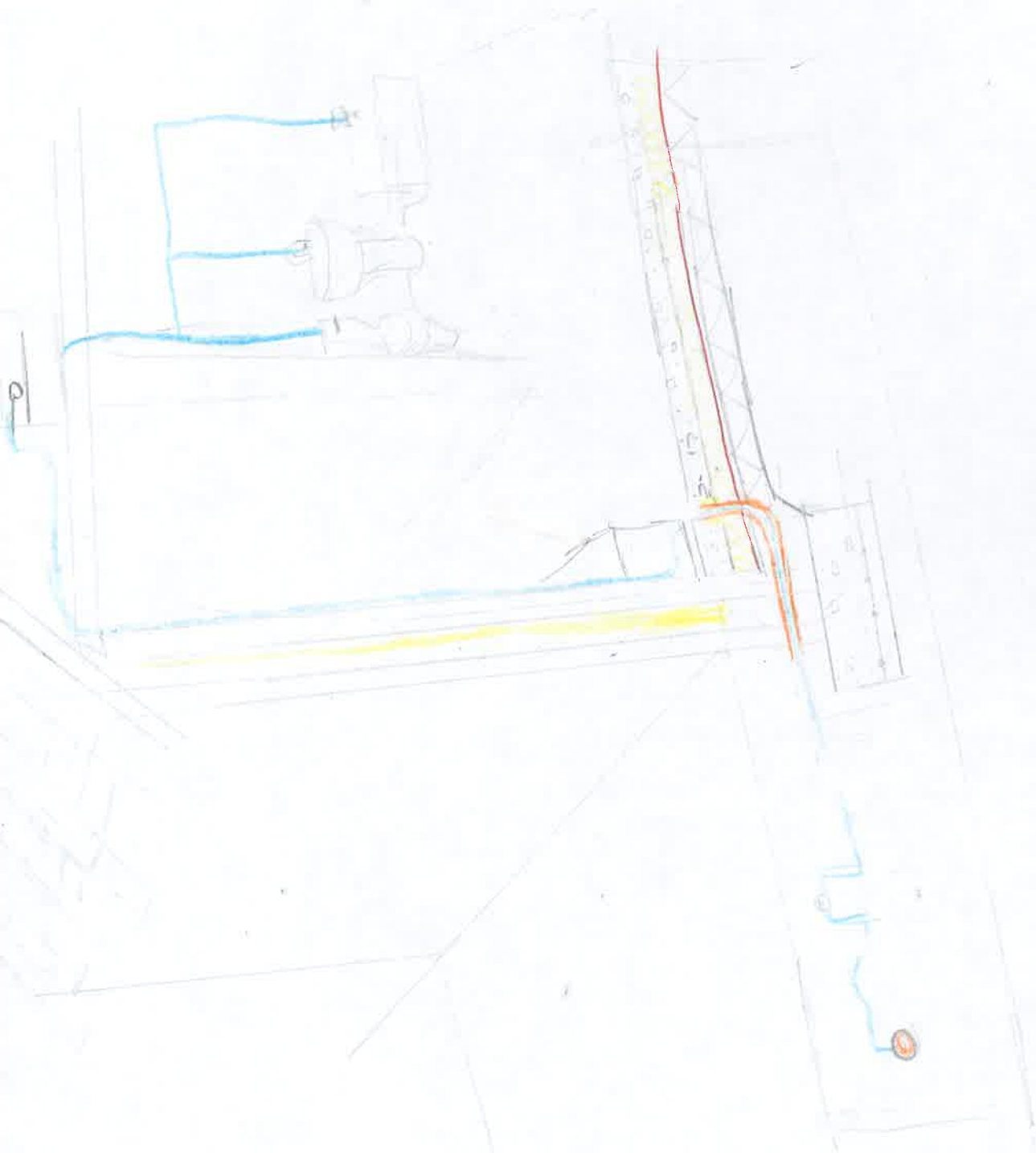
outside
tap

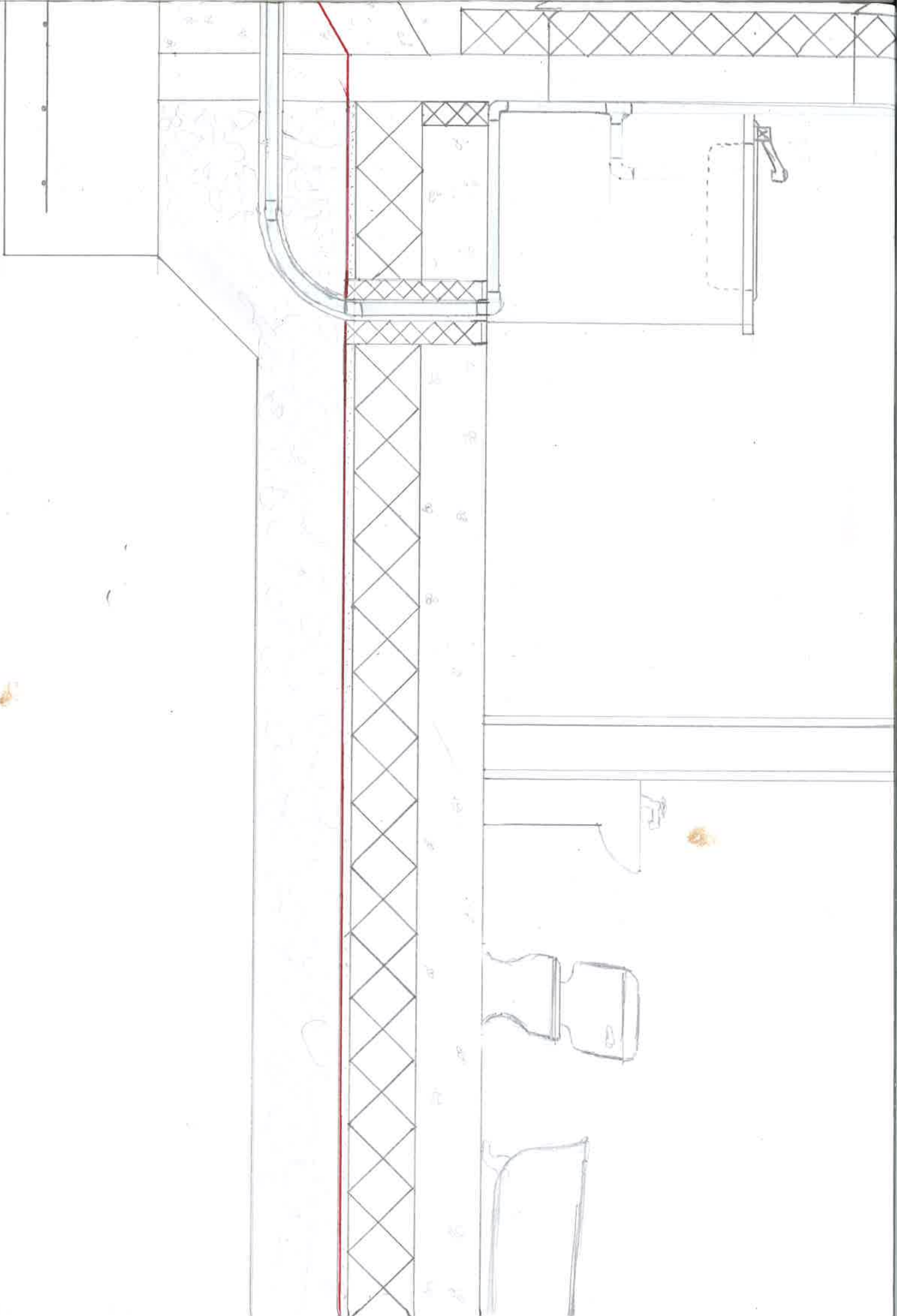


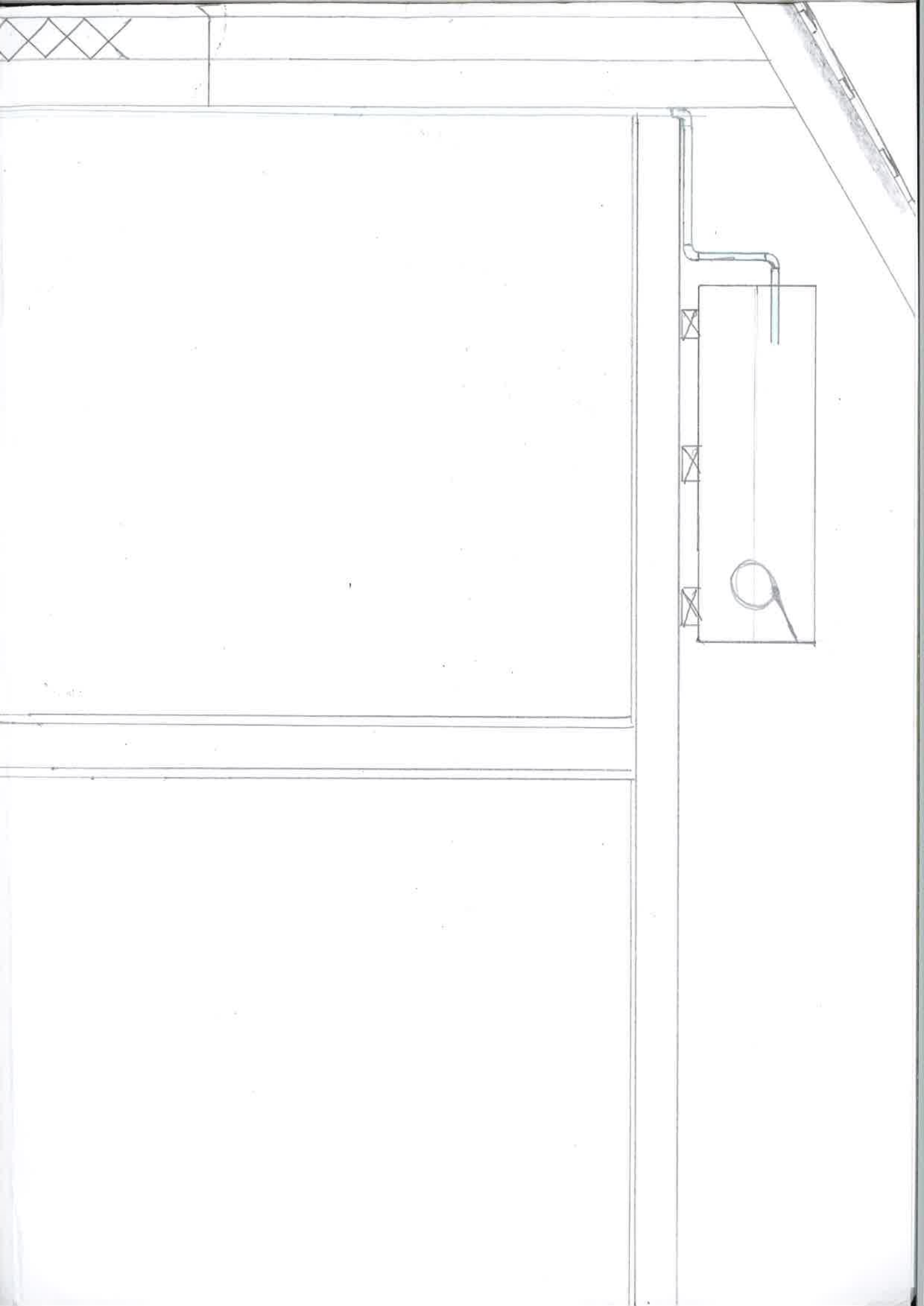
Solar
Powered
System



Indirect
water
System







WORKING DRAWING

BALL COCK

CISTERN 340 L

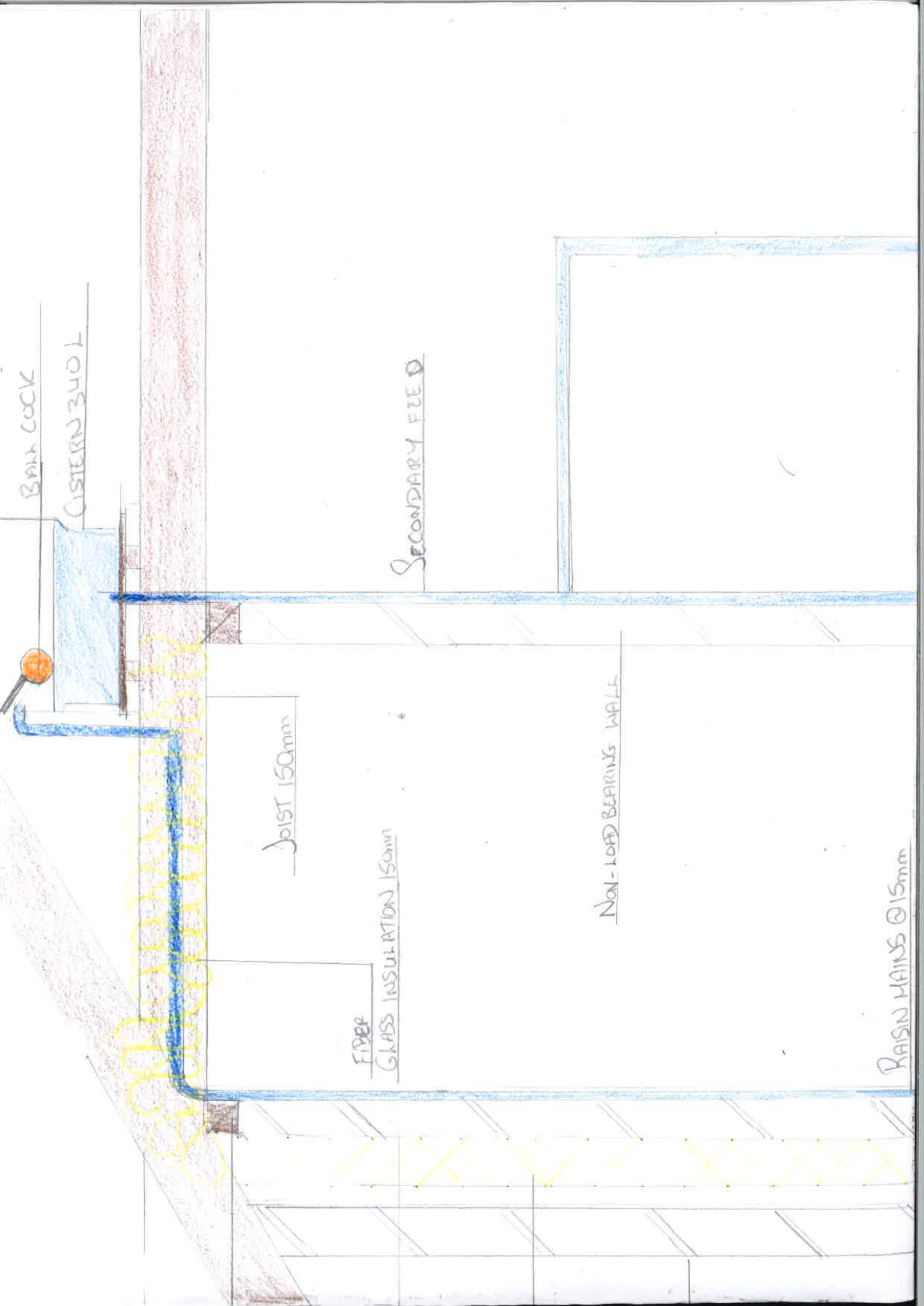
SECONDARY FEED

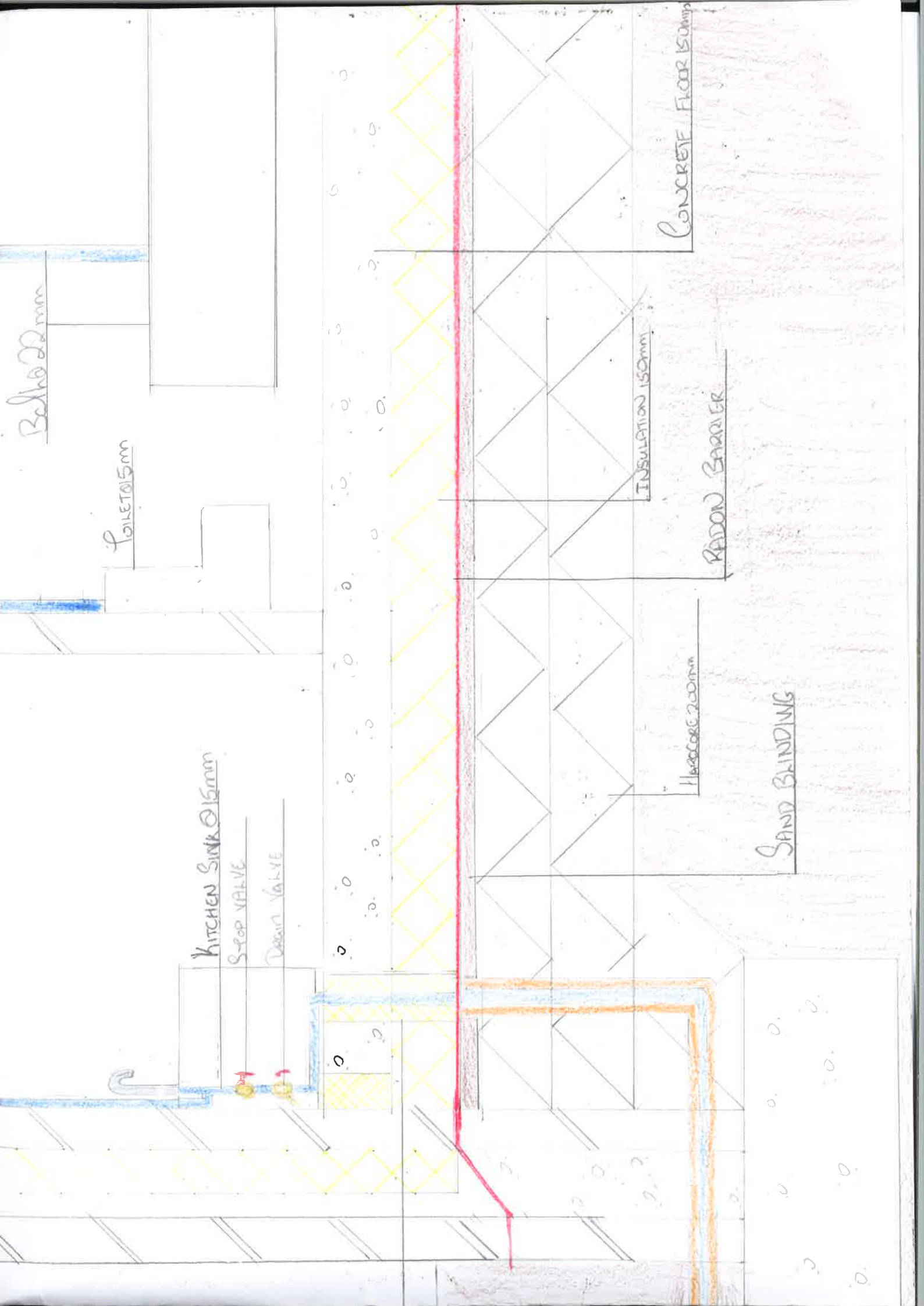
JOIST 150mm

FIBER GLASS INSULATION 150mm

NON-LOAD BEARING WALL

RAISIN MAINS Ø15mm





Bath 22mm

Point 15mm

Kitchen Sink Ø15mm

Stop Valve

Drain Valve

Concrete Floor 150mm

Insulation 150mm

Radon Barrier

Basecore 200mm

Sand Blinding

Cutting list

component	material	length	width	thickness	No. of parts
Base	MDF	700mm	350mm	9mm	1
Front box	MDF	900mm	105mm	9mm	1
foundation	MDF	100mm	35mm	9mm	1
Inside box	MDF	950mm	250mm	9mm	1
Walls	MDF	350mm	250mm	9mm	2
Back wall	MDF	540mm	310mm	9mm	1
Kitchen sink	pine	95mm	35mm	35mm	1
toilet	pine	45mm	35mm	30mm	1
bath	pine	110mm	30mm	40mm	1
sink	Pine	650mm	20mm	25mm	1
rafters	Pine	370mm	20mm	7mm	4
joist	Pine	270m	20mm	7mm	4
Cavity insulation	MDF	285mm	190mm	10mm	1

Scale



Scale: I wanted my piece to look in portion I also wanted it to be moderate in size. So I did 1:10 in scale as it a convenient size and is easily stored, moved and all the relevant element of the water system is very visible to the viewer.

It is easier to work in 1:10 scale as it is not too small and looks in proportion. It also was easier to convert all the elements to this scale.

Possible Materials

Oak: this was the first material that I thought I would use for my project as it is very strong which I needed for my project as I wanted it to be stable and durable. The wood is also very appealing to the eye as well.

But I didn't choose this wood because it is expensive and it is nearly too strong which would make it difficult to cut and work with.




Pine: I then thought I would use pine as it was the wood we used for all our wood work projects. Pine is also plentiful and is easy to work with and is widely available. It is easy to cut and do joints with.

I only used this wood for my rafters and for my model appliances as the wood would not be strong enough and could dent or get scratched.

MDF: I used this wood in my project. I choose MDF as it is environmentally friendly and it is easy to work with as it is easy to paint as it is smooth and it is easy to cut and easy to glue pieces together. It is also cheaper to buy than wood taken directly from a tree like pine or oak and is a lot more durable.

Plan and Procedure

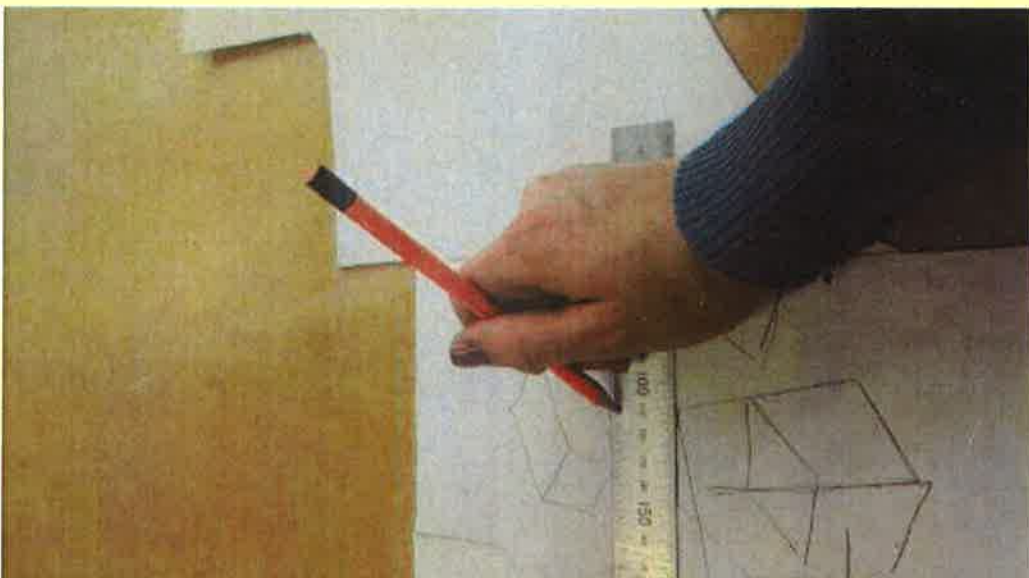
<u>Week 1</u>	<ul style="list-style-type: none"> • First research what I would do for my project • Then researched all the different element of the water system 	✓
<u>Week 2</u>	<ul style="list-style-type: none"> • Cut the two front panels of the piece and sketch and paint the root the water will take to get to the house. 	✓
<u>Week 3</u>	<ul style="list-style-type: none"> • Cut the three walls, the concrete fill and the insulation. Then paint each piece with two coats of paint 	✓
<u>Week 4</u>	<ul style="list-style-type: none"> • Cut three more panels and two top pieces to create the top of the two sections and paint each of these pieces. • Glue the pieces together 	✓
<u>Week 5</u>	<ul style="list-style-type: none"> • Cut the base for the piece and paint it a neutral colour • Then cut out the pieces for the models (toilet, sink, bath, kitchen sink and cistern) and paint them. 	✓
<u>Week 6</u>	<ul style="list-style-type: none"> • Glue the model pieces together • Cut an internal non-load bearing wall to create separate rooms and paint grey. • Spray each wall with concrete spray (to look realistic) 	✓
<u>Week 7</u>	<ul style="list-style-type: none"> • Glue all the pieces to the base • Make the wall plates for the two internal walls • Then make the rafters and joist for the roof measure the distant of the roof 	✓
<u>Week 8</u>	<ul style="list-style-type: none"> • Find the angle of the rafters and glue the rafter and joists to the roof 	✓

<u>Week 9</u>	<ul style="list-style-type: none">• Wire up the piece with blue wire to indicate the flow of water in the house	
<u>Week 10</u>	<ul style="list-style-type: none">• Add the insulation to the roof and finish the roof• Add the finishing touches and ensure that all of the looks neat.	
<u>Week 11</u>	<ul style="list-style-type: none">• Do out the experiments.	

Execution

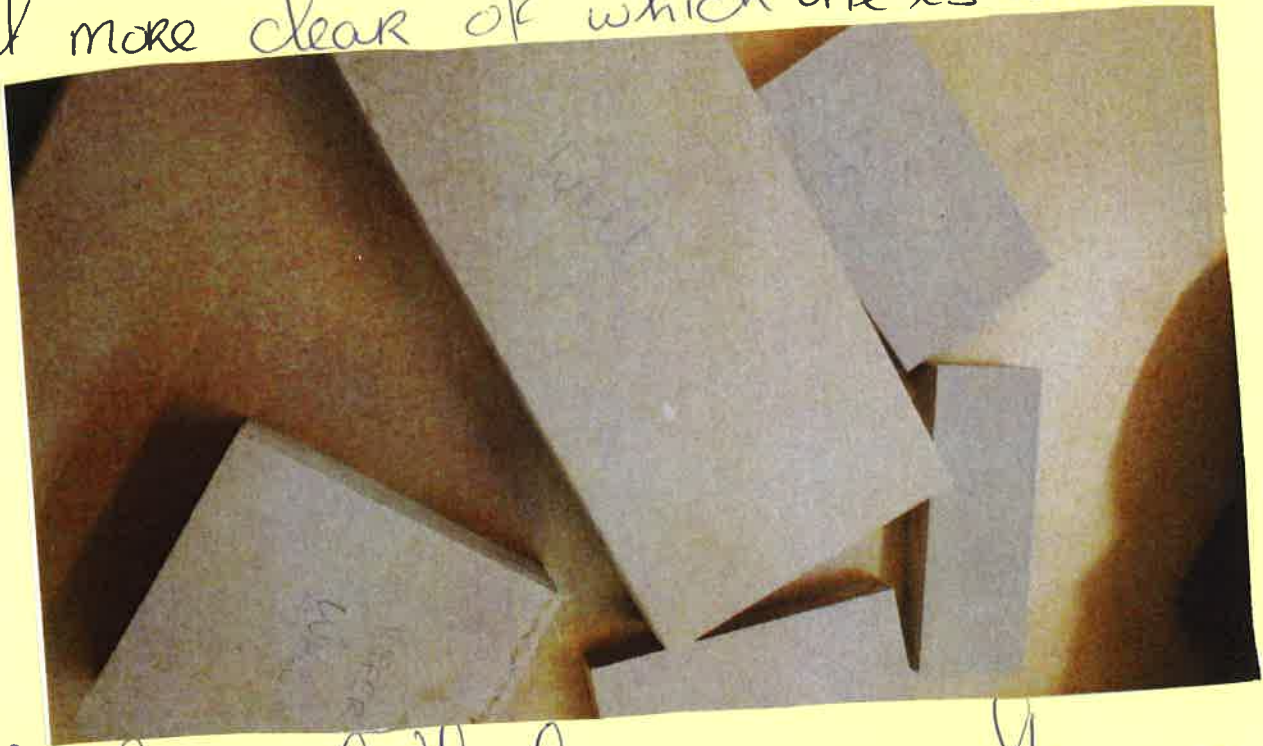
Modal

* When constructing my project I started off with my model as I felt it would give me a rough idea on how my project should look like and how I should go about constructing it. I used PVC glue when putting it together and making the roof as it is quick, easy and is not messy. I marked it using a pencil, ruler and tri-square. I used blue thread to represent the cold water piping.



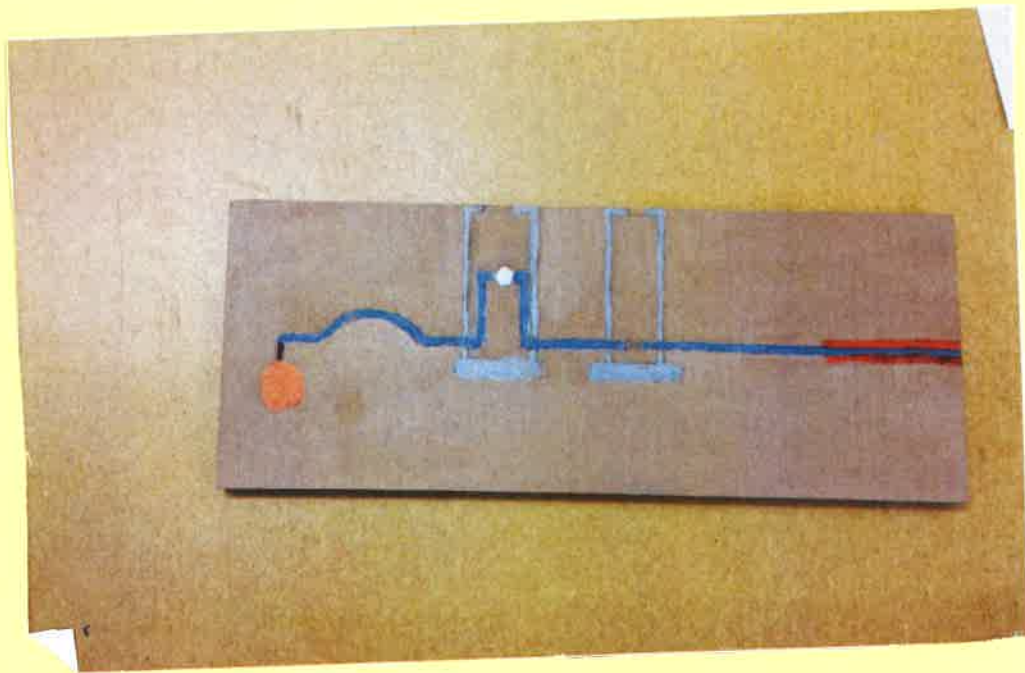
Execution

- First after making my model and making a working drawing I made a rough cutting list for the front to panel and the three walls and labelled each piece to save me getting confused and make it more clear of which one is which



- * I then start to draw on the piping i.e. I started at the mains using a compass to get a perfect circle and I also used a compass to get the gouse neck. I then made vent and drew in my water meter and stop valve which are located outside

the premises. Finishing the Front pannel using paint. I learnt, while finding it very hard to paint in a straight line that using masking tape made it far easier and gave ^{to} a better finish.



* I then followed on with the route the water takes in my second pannel. I drew on the ducting that brings ~~the~~ ^{water into} the house and it also shows that the pipe needs to be insulated. I found it so hard to get a straight line so I used masking tape.



* then I made the rest of the box getting the top for each piece and the other sides two for my first panel and painted them brown to represent the ground and one side piece for the second panel carrying it on with the hardcore, sandblinding, radon barrier, insulation and concrete floor

* I then painted the top of each piece on my second (inside box) I painted it grey to represent the concrete floor. I then painted around the edge with yellow to represent the insulation as if there is no insulation a cold bridge could form



* I then painted all three of my walls and my concrete foundation grey

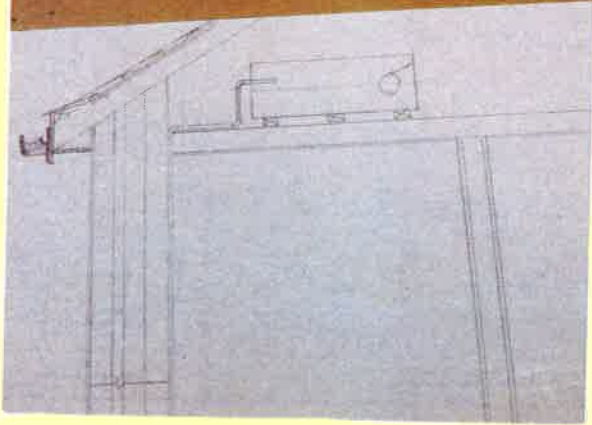




* I then wanted to get a better finish on all my pieces as I felt that the finish that I was getting using the paint wasn't good as all the greys walls seemed to be a different colour or sticky paint. So I decided that I would get concrete spray as I seen it on a different project and thought it looked well and gave a nice even finish. I used this on all my walls and on the top of my seconded box and the foundation in my project.



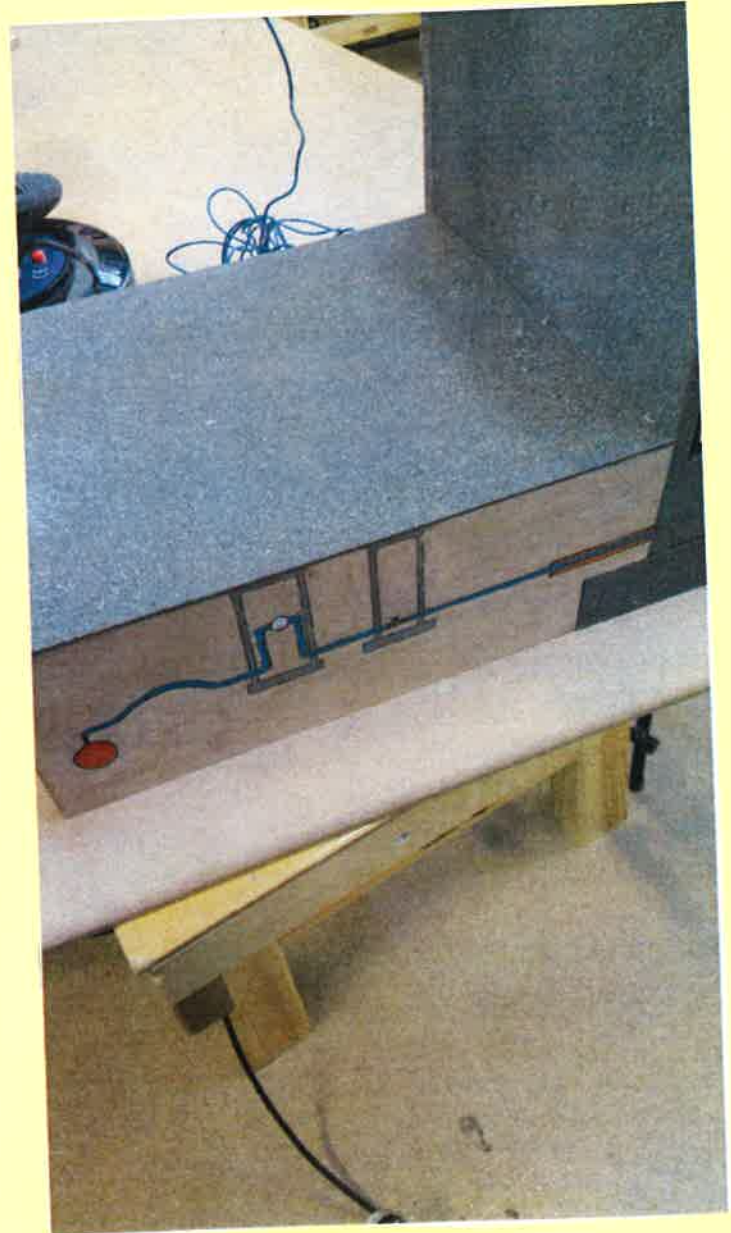
* Then I used black pen to outline and make all the elements very clear in my front two pannels. I felt this gave it a good finish and made both the pieces look better.



* I then cut my base piece and routed it to give it a nice finish. I then painted it brown to give it a neutral finish



* I then started to glue down all of my wall and my two boxes to the base of my project.



* I then started to make my
models of all my appliances
such as my kitchen sink,
toilet, bath and sink and tank/
cistern in the attic

