

# ***Isobel Roope***

AD313

BA (Hons) 3D Design and Craft  
University of Brighton

2019-2020



## *Introduction*

This project investigates East Sussex and the naturally occurring heritage and visual identity from within. It researches the surrounding area in terms of materiality, identity and manufacturing. Highlighting the aesthetic, landscape and architecture of the area which is derived from the close proximity of the material source. To celebrate the underlying elements which make up the richness of this area; to find close parallels between material resources and final objects.



# ***Contents***

<b><i>Introduction</i></b>	<b>2</b>
<b><i>Sussex, historical investigations</i></b>	<b>12</b>
<b><i>Chailey Brick Yard</i></b>	<b>30</b>
<b><i>Understanding the material</i></b>	<b>50</b>
<b><i>Processing the clay; how my methods changed</i></b>	<b>68</b>
<b><i>Alternative firings</i></b>	<b>80</b>
<b><i>Glass and Lighting</i></b>	<b>94</b>
<b><i>Natural glazes</i></b>	<b>108</b>
<b><i>Material qualities to reduce our impact</i></b>	<b>120</b>
<b><i>Modern thinking to traditional methods</i></b>	<b>148</b>
<b><i>Summary Statement</i></b>	<b>158</b>
<b><i>Bibliography</i></b>	<b>160</b>





## Framing the issue

Through the research for my dissertation, titled 'Is it possible, considering the global climate crisis, to make ceramic production in the UK more sustainable', I learnt about different theories around design; looking at circular systems, the emotionally durable design theory and understanding production methods.

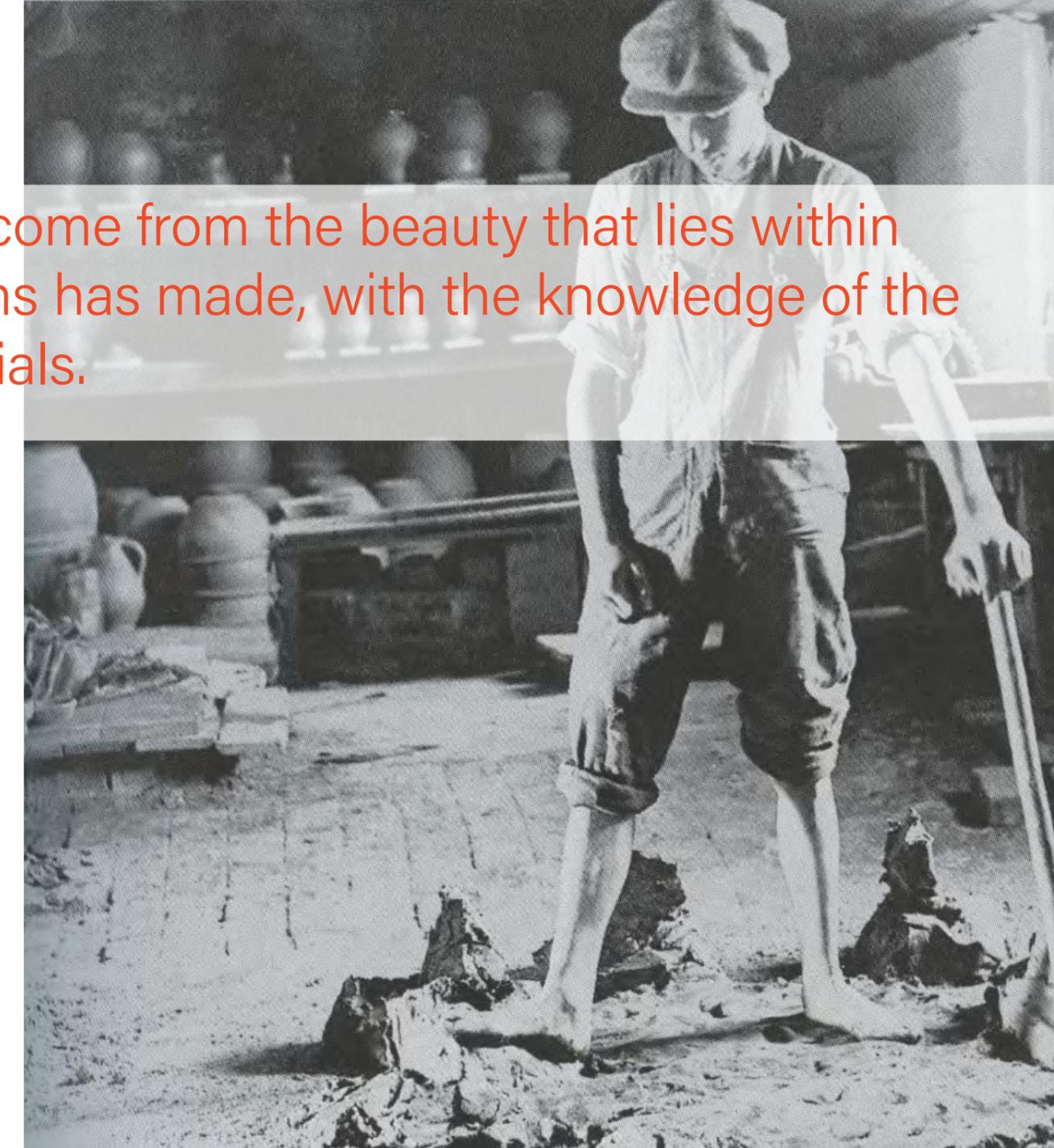
Jonathan Chapman has written on this subject. In his book *Emotionally Durable Design*, he explains that empathy is hugely important in the lifespan of an object.<sup>1</sup>

Learning about the circular economy and the value in materials has helped me understand how we can adjust the way we work and design. 'We need to retain precious resources and fully exploit all the economic value within them'<sup>2</sup>

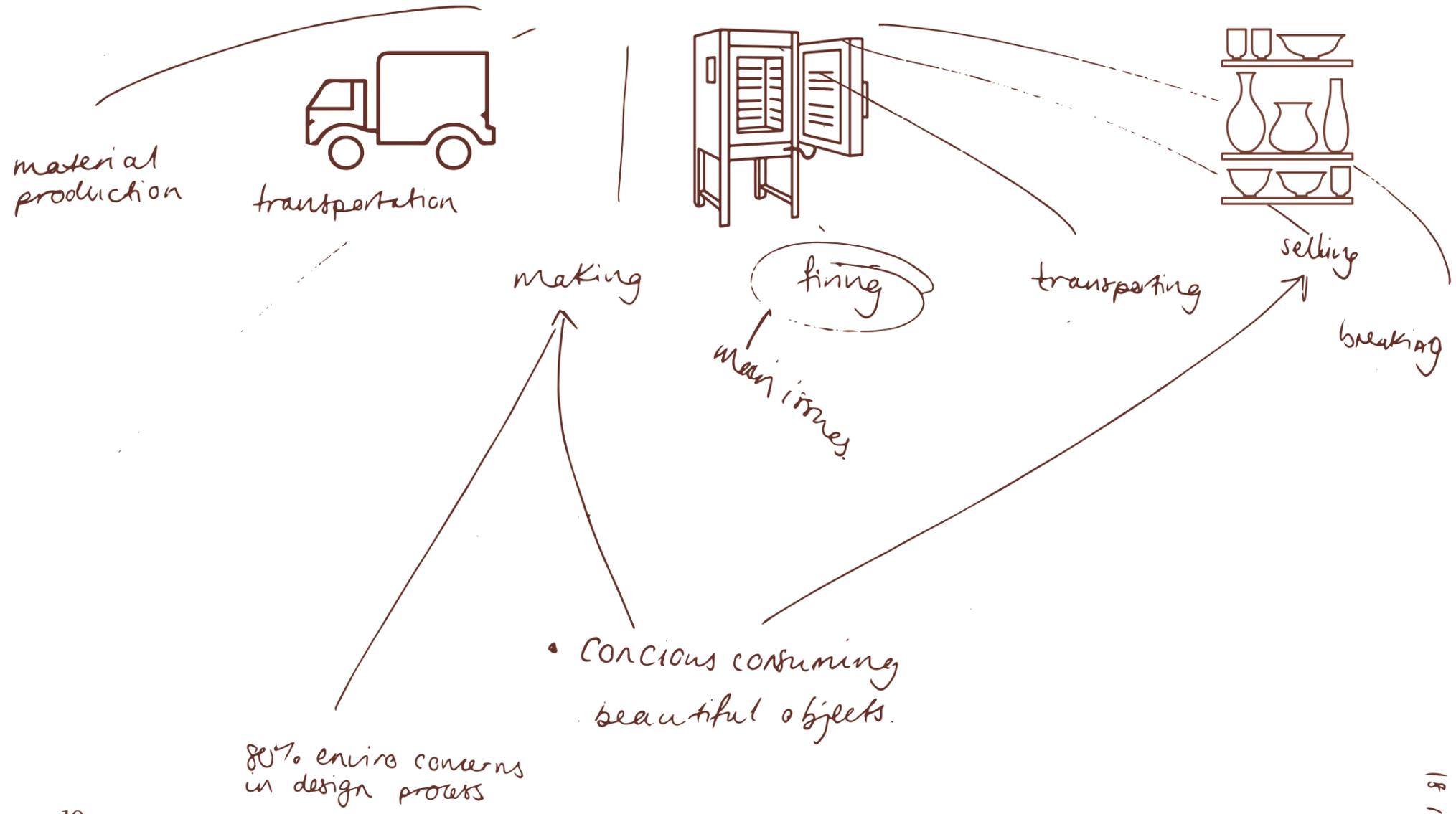
<sup>1</sup> Chapman, Jonathan. *Emotionally Durable Design*. 1st ed., Routledge, 2005, p. 8.

<sup>2</sup> Baker-Brown, Duncan. *The Re-Use Atlas*. RIBA Publishing, 2017.

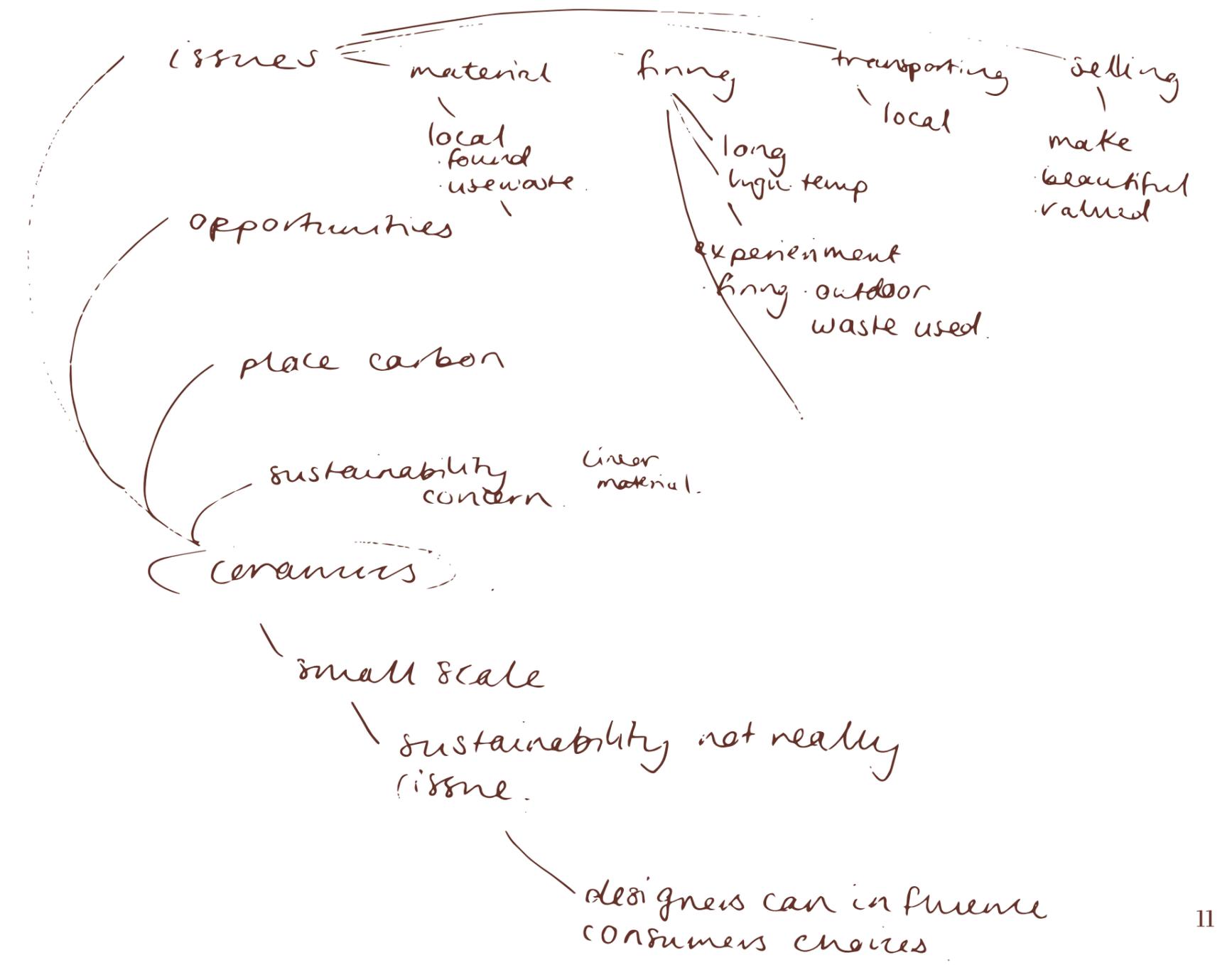
Could this empathy come from the beauty that lies within the object a craftsman has made, with the knowledge of the sources of the materials.



# Ceramic production issues



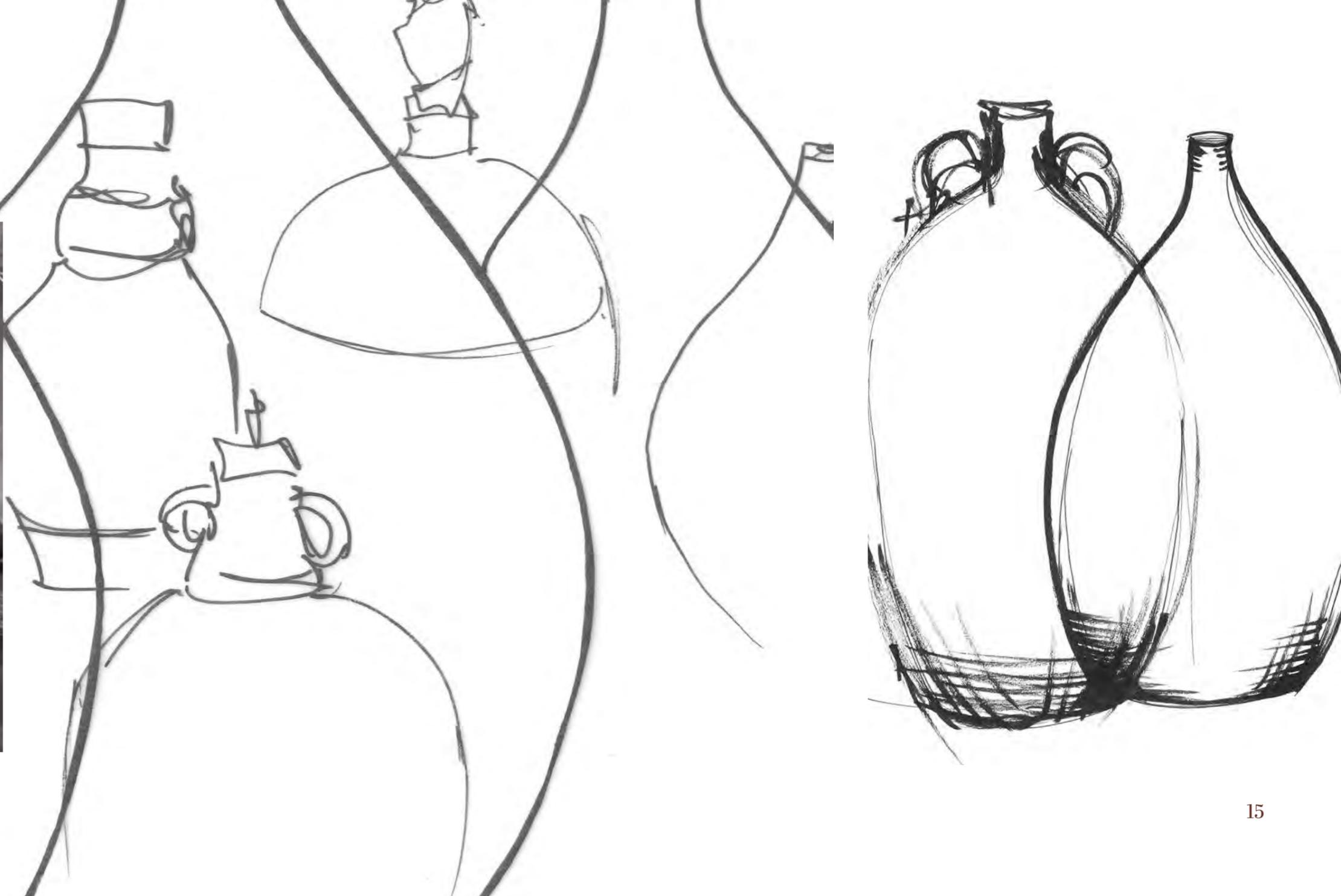
18/11/19





## Mead

An ancient alcohol brewed from honey in Sussex. The form of the brewing bottle inspired one of my early pieces.



# Flax

Upon discovery of the efficiency of flaxseed as a crop, nutrient dietary supplement and its production into linen fabric I began a series of drawings focusing on its form while growing. The fluid forms and elegant lines informed a couple of my vessels.



Art  
oil paint ingredient

Food.

- nutritious.
  - omega 3, 6, 9. Abre. leg name
  - ground
  - oil
  - whole.
- #1 source  
• antioxidant

Health

- Balanced metabolism
- natural hormone balance and menopause.
- cough medicine + liquefice
- cardiovascular antioxidant anti-inflammatory reduce cancer risk support digestion

Fabric.

linen  
• woven from

waterproof  
• oil & beeswax mixed together to waterproof fabric.

Flax (linseed).

History

- cultivated 3000 BC, in Babylon. ~ 10,000bc.
- King Charlemagne, passed law requiring subject to consume.

• Flax Farm  
HORSHAM RH36 6QR

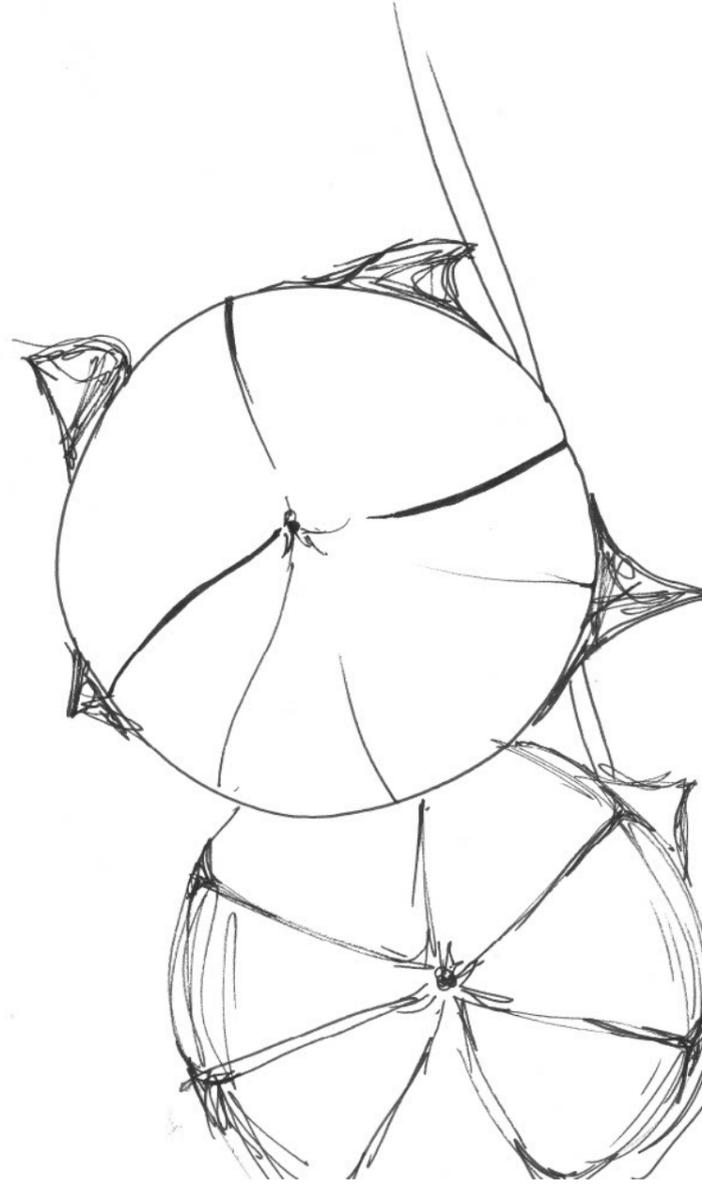
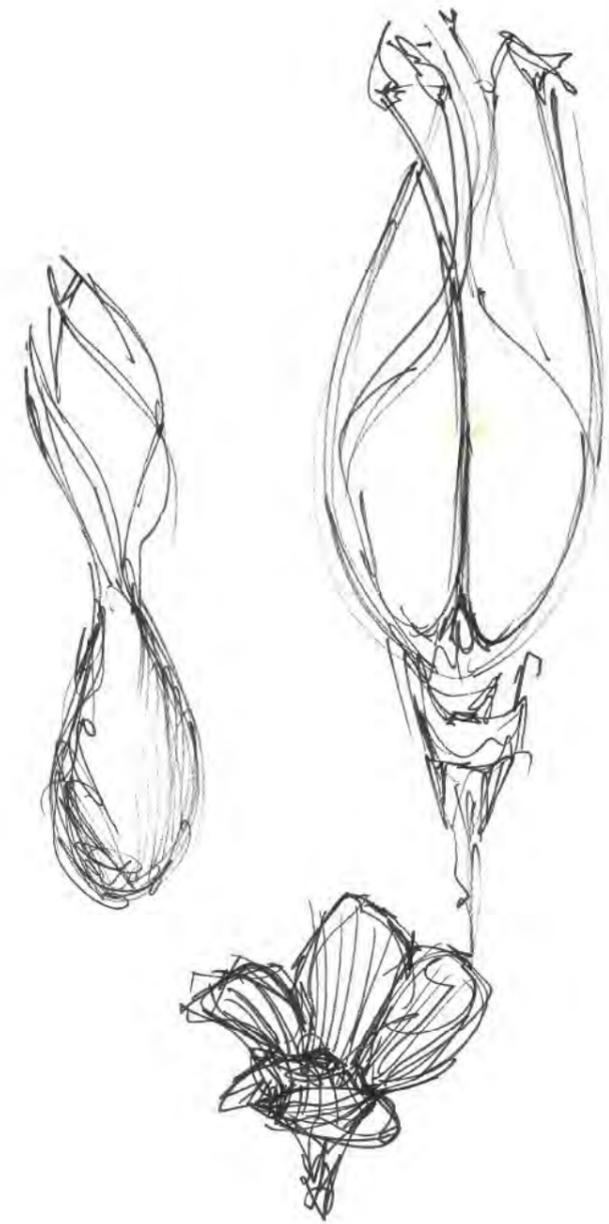
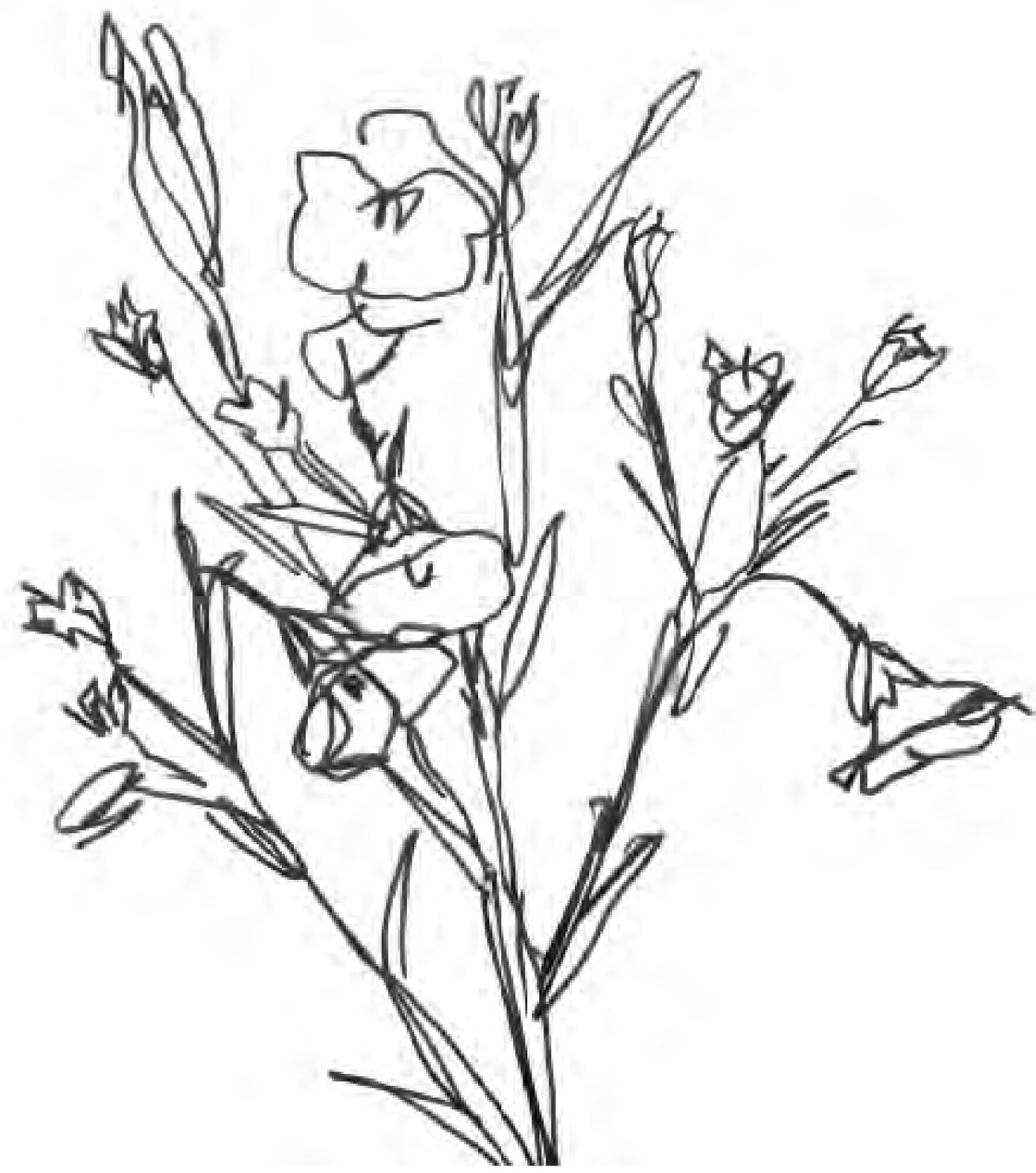
• BRIGHTON.

Flax Farm. est-2004.

- organic
- non-gm

Animals.

- omega 3 source for:
  - chicken
  - dogs
  - birds
- cows, helps birthing
- reduces methane rel



## South Downs Heritage Museum

Visiting the South Down Heritage Museum deepened my visual understanding of the materials and architectural features of Sussex.



close up image of a grain storage vessel

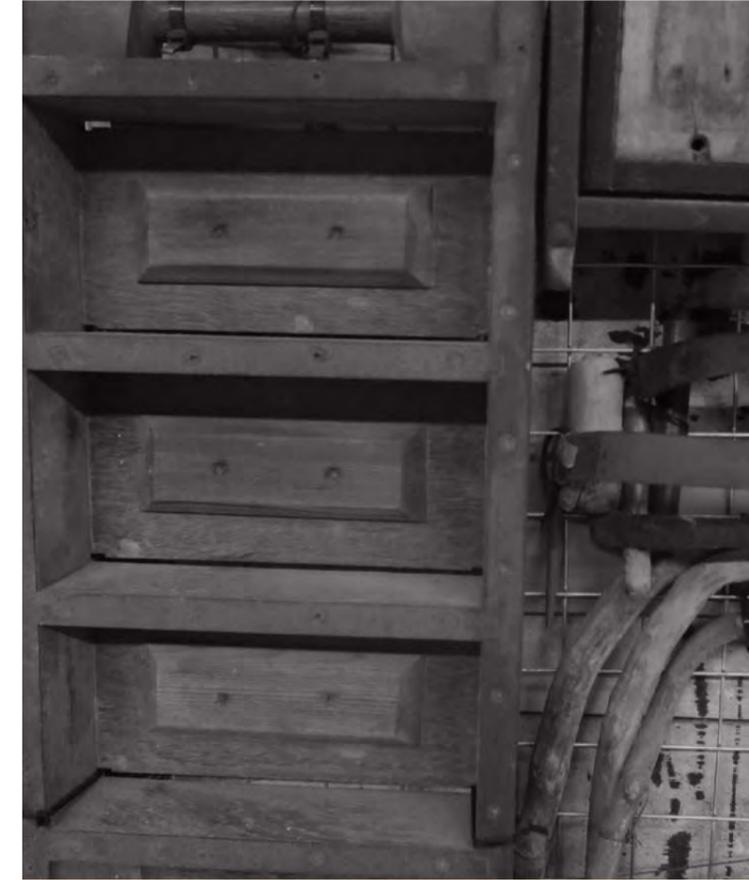


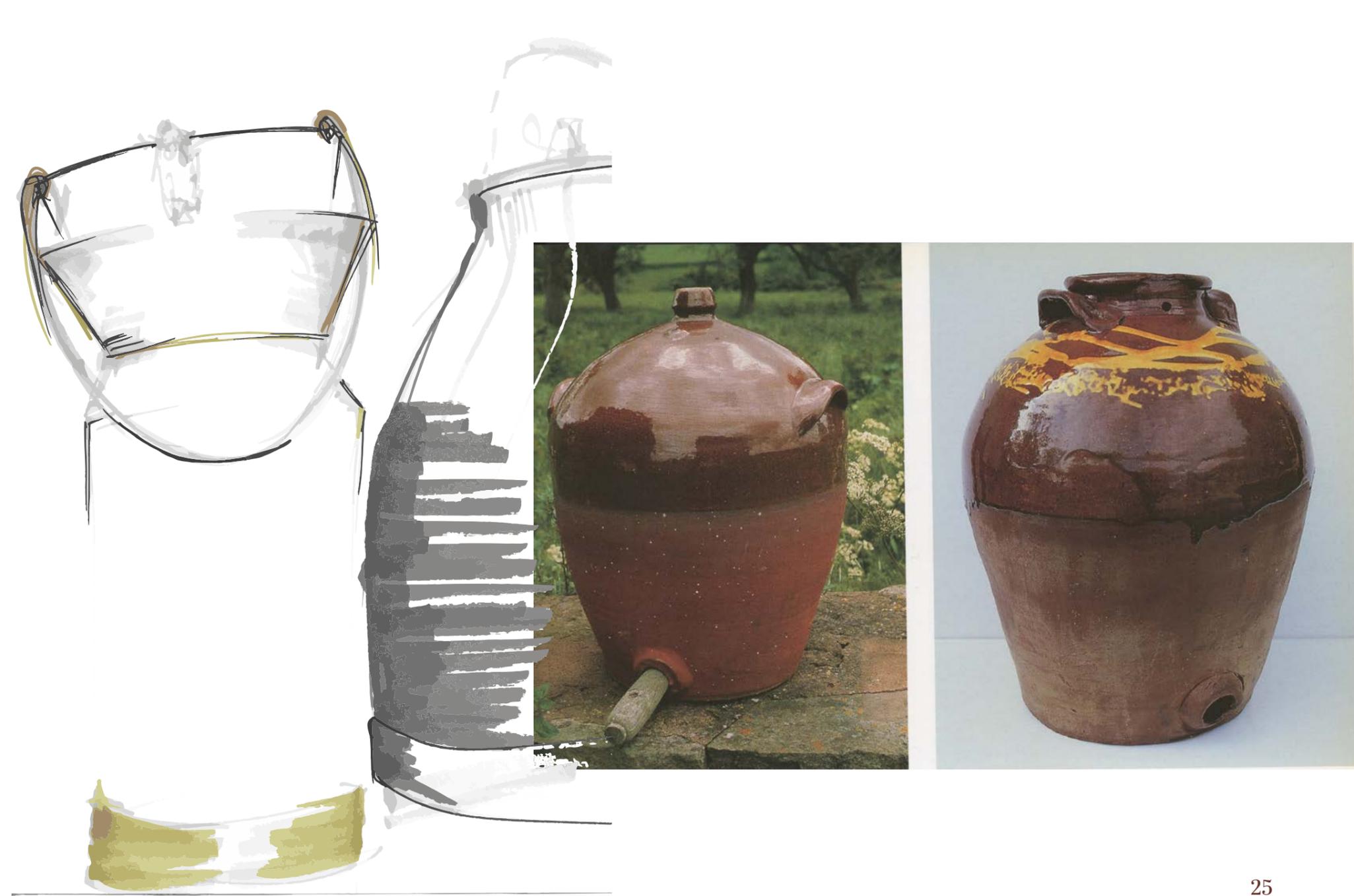
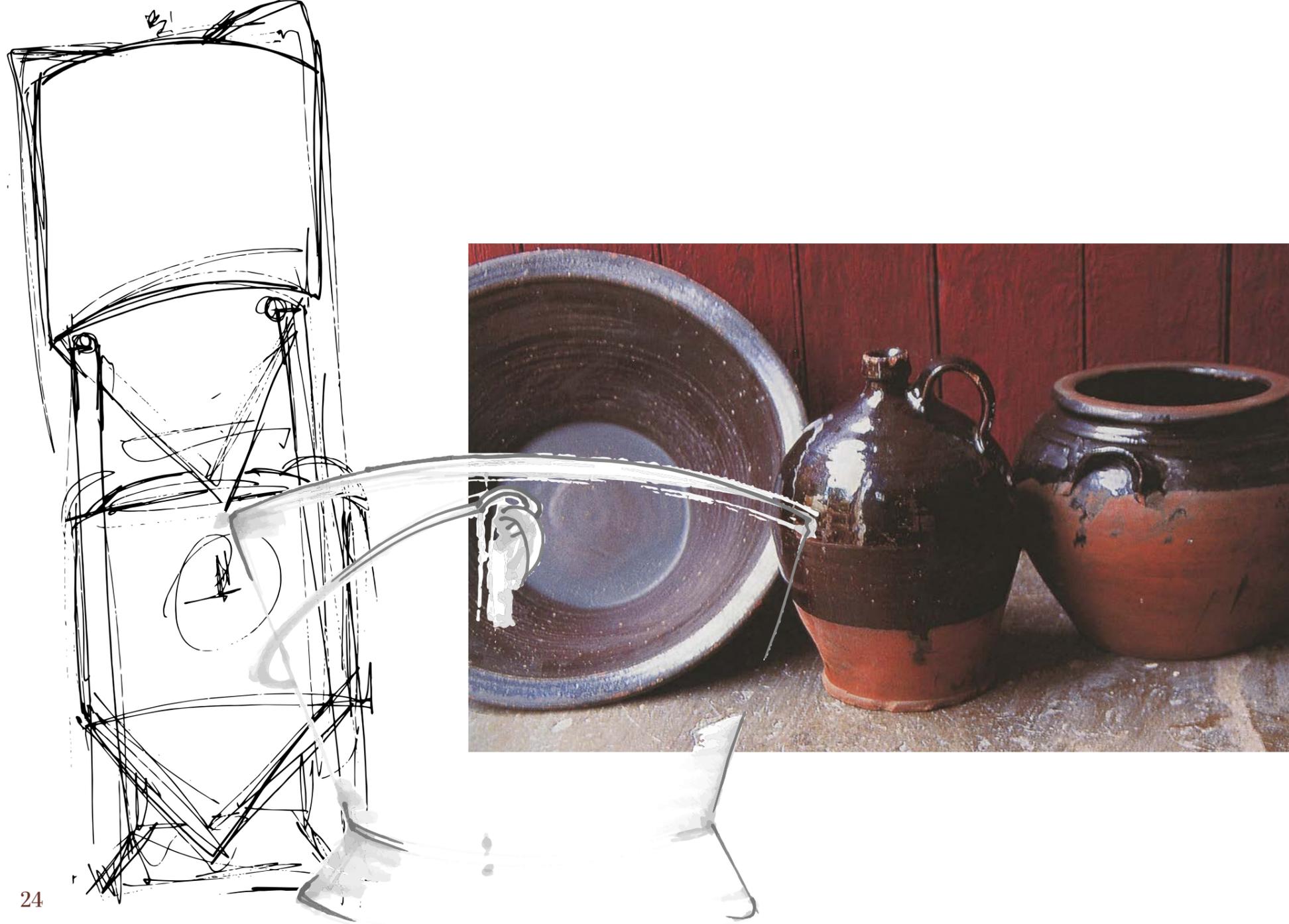
detail from chimney



## Weald and Downland Living Museum

Visiting Weald and Downland Living Museum helped me to delve deeper into understanding the historical features which make up Sussex. The site is set over several acres with actors re-enacting how life would have been in ancient times. There is an large artefact collection with over 15,000 pieces. This area was fascinating to me; there were endless pieces to look at.







## Reflection

Gaining a deeper understanding of Sussex has helped me build a picture of the cultural importance of locality and the strong visual identity intertwined within the landscape. These elements need to be celebrated as they are integral to Sussex. The aesthetic of the pots talks about the place, it is connected to the materials and need of the area, for example; as they grew hop here they made beer and needed beer containers which were made from the clay of this area.



## ***Chailey Brick Yard***



## Historical Issue

There has been a huge reduction in the amount of brick produced in the UK. 18 million tonnes of bricks were produced in 1974<sup>1</sup> compared to 2.03 in 2018.<sup>2</sup> This demise is due to alternative construction materials being used, issues surrounding smog and larger factories being built. On the right a map of the ancient Sussex pottery sites can be seen.

We have become far removed from material production and industry has changed. Keeping these few brick kilns remaining in the UK, especially clamp

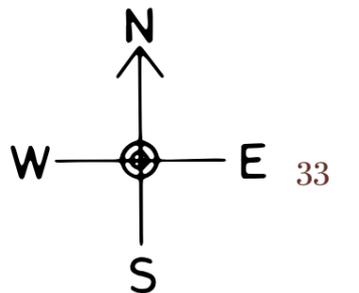
<sup>1</sup> "Brick Clay: Issues For Planning". British Geological Society, 2001, <http://www.bgs.ac.uk>.

<sup>2</sup> "Brick Production In Great Britain 2013-2018 Statistic | Statista". Statista, 2018, <https://www.statista.com/statistics/472894/annual-brick-production-great-Britain/>.

kilns which produce unusual results, is integral to keep our cultural heritage alive. A trend is emerging for locally produced materials; this aids emission reduction, strengthens our visual heritage and helps keep the brick industry in business.



## SUSSEX POTTERY SITES

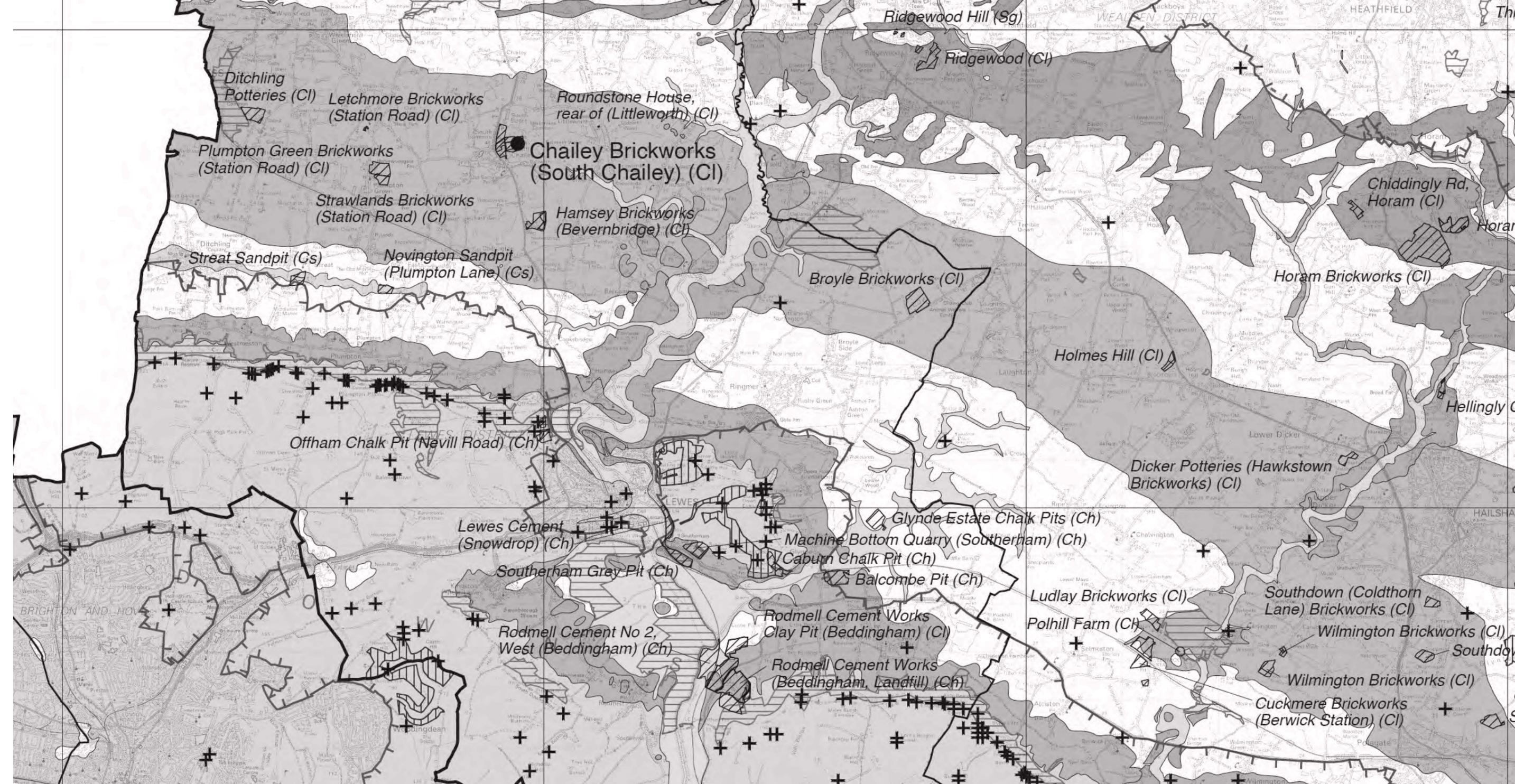


## Discovering the factory

Chailey brick yard was discovered as a site of material sourcing through meeting a local expert, researching clay sourcing guides and investigating material resourcing maps and ancient maps of the area surrounding Sussex.

I have collaborated with the brick factory in order to investigate sharing facilities; developing this has allowed me to gain a deeper perceptive of understanding of clay processing and brick production methods.

I have been shown the brick factory several times, with Nathan the technical manager explaining each part of production; from the on site quarry, process and firing.



Chailey is one of three remaining brick kilns and is one the oldest brick making sites in the UK. The other two are in West Hoathly and Fresh Field Lane, Sussex. Brick making along with tile production and pottery is an integral part of the history and vernacular of the local area; ancient records state the Chailey site has been used for brick making since 1721.<sup>1</sup> The site was owned by the Norman family for 150 years, founding a very successful brick making dynasties, it is now owned by a larger national company; Ibstock.

It employs 37 people, many of home have worked at the factory for 10s of years. They have a close knit working environment within the company.

---

<sup>1</sup> Baines, John Manwaring. Sussex Pottery. Fisher, 1980. 21

A clamp kilns holds 800,000 bricks and take around 8-10 weeks from start to finish to build it takes 2-3 weeks. Firing takes 1.5 weeks, gas is used to heat to 300 °C for 30hrs. It takes 4-5 weeks to fully cool down. When at its peak it fires to between 1000°C - 1100°C. Ibstock produces 72,000 a day, a 3 bed houses uses 11,000.





## Clamp history

Clamp kilns are an ancient and traditional firing method. They differ from other kilns as they do not have a permanent structure. Dried bricks are carefully stacked and surrounded with a layer of high fired bricks and seconds bricks to create an insulating layer. A flammable additive, in the case of Chailey, pol char is added to the brick body during production. The additive, when combined with heat from a gas burner ignites the brick.

This method is advantageous as it does not require a solid built kiln structure. This can be done on site where the brick are to be used. This method was used in Palmeira Square - Hove, the clay was dug and fired on site so there was minimal transportation expenses and logistics. Fascinating colours appear on the surface on the brick, the slight irregularity is why this method is still used.



Clear relationship between brick and place. This helps with individuality

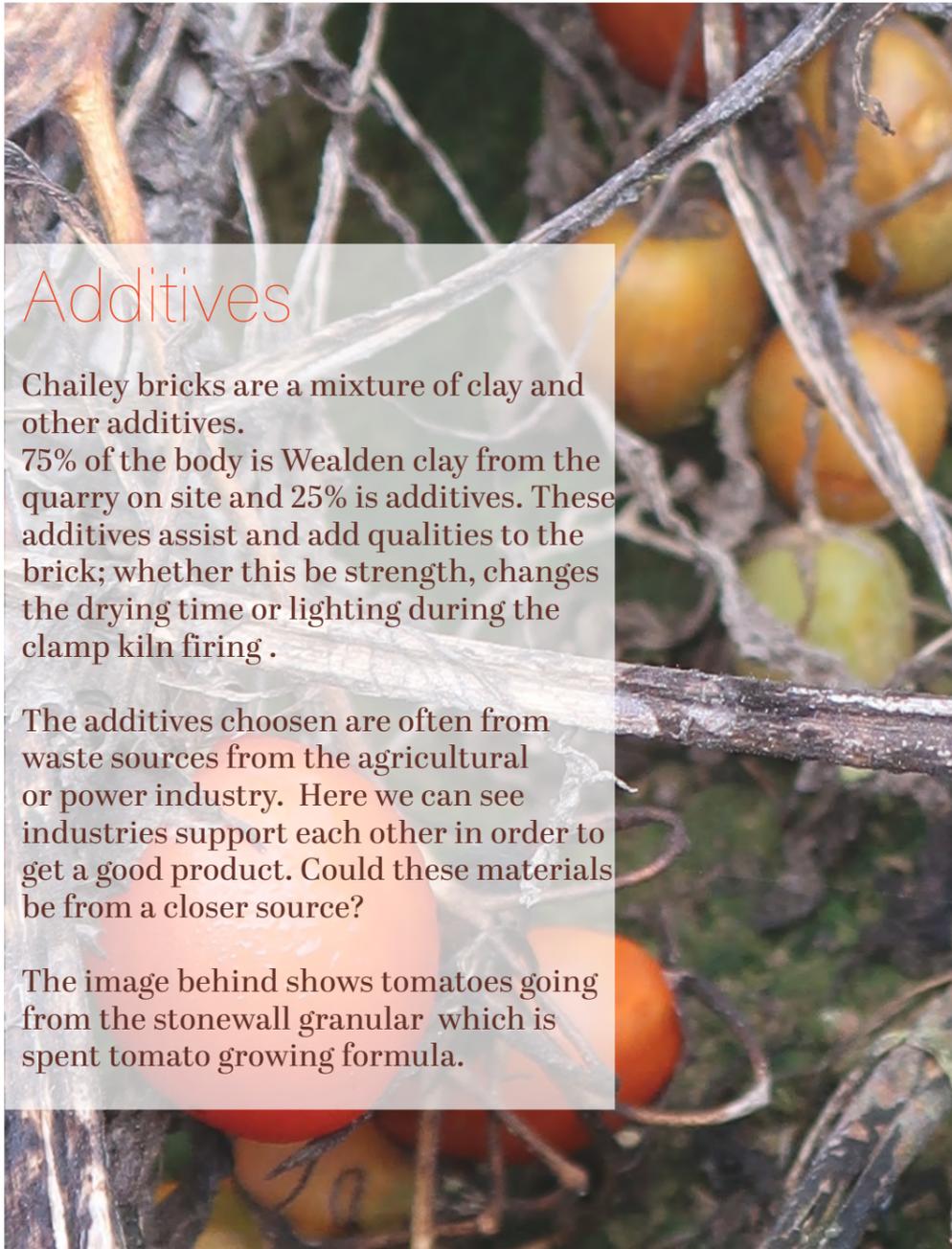


# Circular Systems

Part of my research included investigation of circular systems. In this example this area filters water from a mould washing station and is let to settle then is filtered through reeds. The water is used as much as possible. When it has finished its usable life, a flocculant, to allowed particles to settle, is added to the water to achieve regulation levels before being released back in to the water system.

This concept of reusing materials and design out waste has been theorised by the Ellen MacArthur Foundation; the image behind highlights this system.<sup>1</sup>





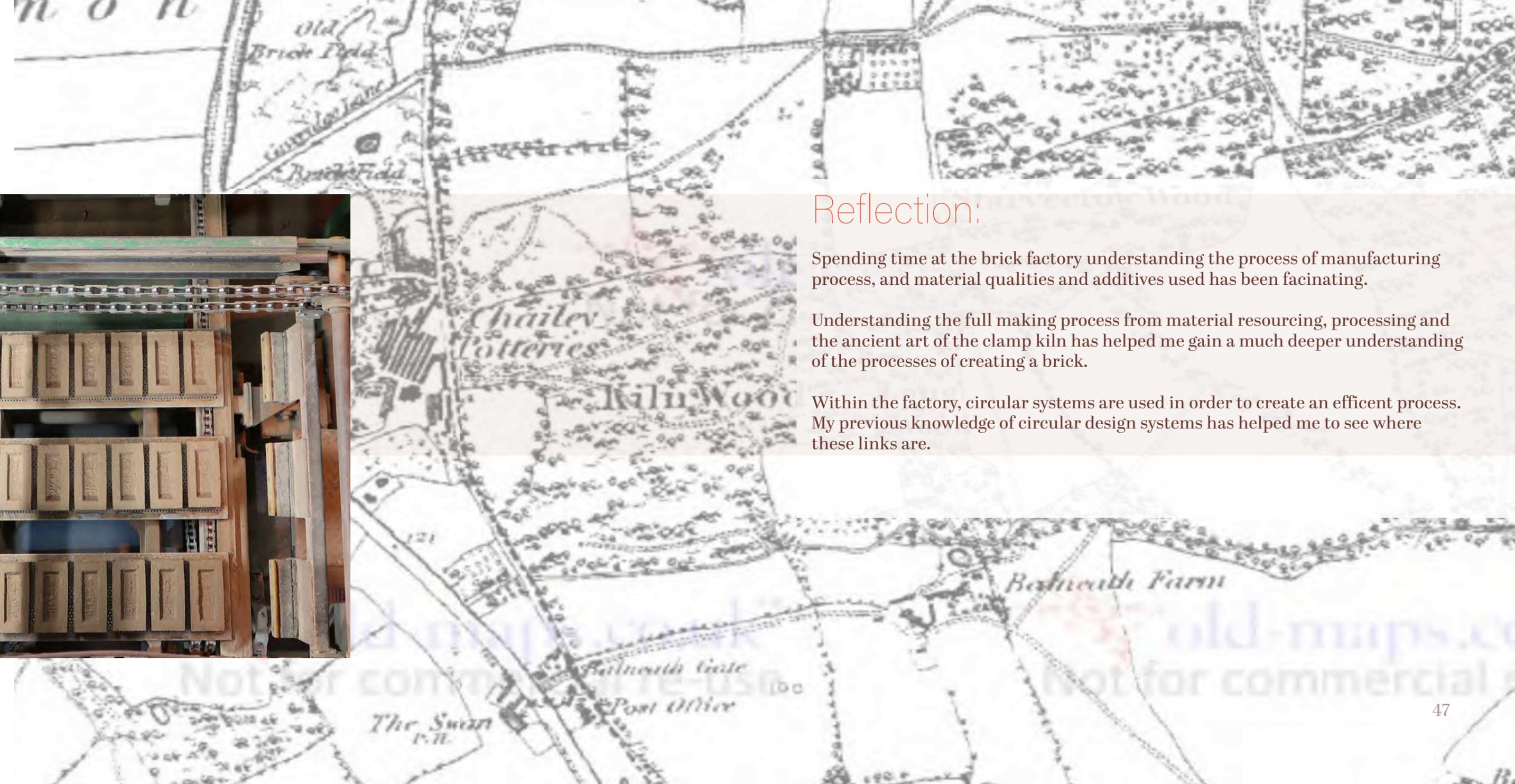
**Additives**

Chailey bricks are a mixture of clay and other additives. 75% of the body is Wealden clay from the quarry on site and 25% is additives. These additives assist and add qualities to the brick; whether this be strength, changes the drying time or lighting during the clamp kiln firing .

The additives chosen are often from waste sources from the agricultural or power industry. Here we can see industries support each other in order to get a good product. Could these materials be from a closer source?

The image behind shows tomatoes going from the stonewall granular which is spent tomato growing formula.

Stonewall Granular	Pulverised Fly Ash	Pol Char	Sand, in body	Clay	Sand, on surface
					
<p>5%</p> <p>Belgium and Holland</p>	<p>4-5%</p> <p>UK Wide</p>	<p>4-5%</p> <p>Poland</p>	<p>10-12%</p> <p>Storington</p>	<p>75%</p> <p>Wealden</p>	<p>Outer surface</p> <p>Lydd, Kent</p>
<p>Good filler to aid with drying times can hold up to 50% moisture contents on delivery Spent tomatoes growing</p>	<p>Good for drying Popular in cement Works as binder Lowers temperature Low carbon content</p>	<p>Element ignites brick carbon content</p>	<p>Opens up body; allowing for efficient drying Reduces shrinkage Melts at 1400</p>	<p>Recipes is altered when clay and quarry changes</p>	<p>Fine sand used on the outer part of brick Aids with de-moulding during the process</p>
<p>agriculture</p>	<p>coal waste, power industries</p>	<p>Steel and computer works Power industry</p>		<p>On site</p>	



## Reflection:

Spending time at the brick factory understanding the process of manufacturing process, and material qualities and additives used has been fascinating.

Understanding the full making process from material resourcing, processing and the ancient art of the clamp kiln has helped me gain a much deeper understanding of the processes of creating a brick.

Within the factory, circular systems are used in order to create an efficient process. My previous knowledge of circular design systems has helped me to see where these links are.





***Understanding the material***



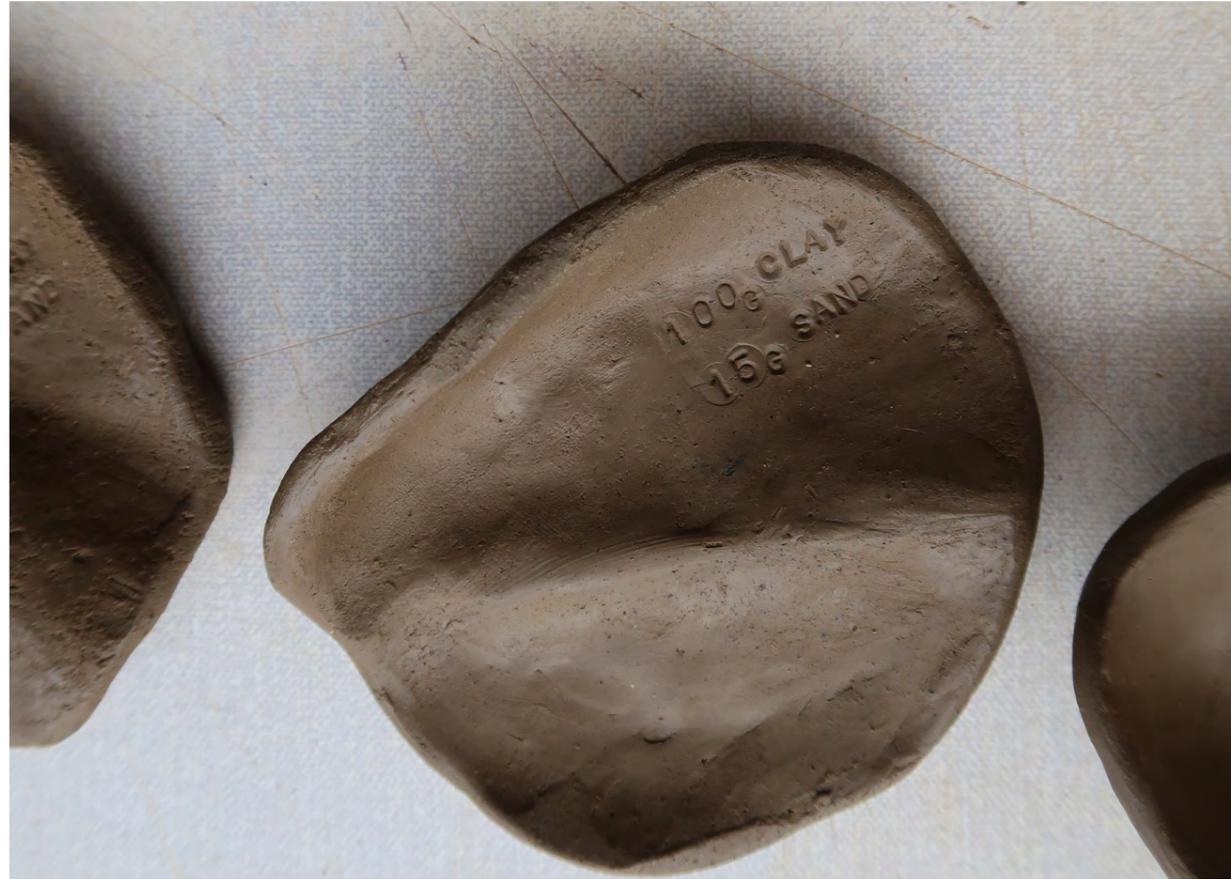
## Full brick mix

Full brick mix with the additives is very difficult to work with. The body is coarse and brittle, it dried quickly and is very sticky, this has caused the pieces to break.



## Adding Sand

Here I have added sand from the brick factory into the clay. The sand was added at 10g increments. This was to experiment how this would effect the clay. It bulks out the body, meaning you can make more clay from what you have. However, as sand melts at 1400°C, it stays within the body rather than fully fusing. This can cause weaknesses within the clay.



## Waste Bricks

‘The construction industry produces 200 million tonnes of waste every year.’<sup>1</sup>

Can we begin to see waste as a nutrient rich material?

<sup>1</sup> Baker-Brown, *The Re-use Atlas: A Designer's Guide Towards a Circular Economy*, 20



Second pile from Chailey Brick Yard. The unusable brick, i crushed and added into thge clay body.

## Waste as grogg

I experimented adding different additives into the clay. I weighed 50g of pure sieved clay and added crushed clay at gradually increasing increments and added crushed and fired brick as grogg in the body and on to surface too. These are fired at 1000°C and 1260°C. I find the surface texture on these very interesting, firing at a range of different temperatures has shown some good results.

This adopts design principles as discussed by Duncan Baker Brown 'we need to retain precious resources and fully exploit all the economic value within them.'<sup>1</sup>

<sup>1</sup> Baker-Brown, The Re-use Atlas: A Designer's Guide Towards a Circular Economy, 21



## Calcium carbonate oyster shell

There is a lot of oyster shell waste from the food industry. The shells, from Brighton beach, were found after a sea swim. I've been collecting them for a few months, for some reason the colour and shape drew to me

## Material discovery

Researching oyster shell lead me to discover they are made of Calcium Carbonate,  $\text{CaCO}_3$ . Through using a technical ceramic book and researching the uses for Calcium Carbonate we can see it is commonly used for glazes, I decided to experiment adding crushed shell into the body.

## Working with the material

Increments of 10-25g of crushed oyster shell into 100g of clay. The smaller amounts were easier to mix in but when they got larger it was harder to a get an even texture. The pieces I made were bisque fired. Over time the calcium carbonate / oyster shell begun to expand causing the pieces to crumble and completely collapse.



## Experimenting with other clay

Local Brighton clay was discovered through contact a local expert. This clay didn't work, it was very aerated. If water was added it began to crack and when fired it was brittle.





## Reflection

Experimenting with these alternative clay recipes, clays and additives has helped me gain a deeper understanding of clay as a material as well as the additives within.

I discovered calcium carbonate and oyster shell are the same thing. However, this does not work as an additive in clay as the oyster shell expands causing the piece to collapse.

Adding crushed waste brick can bulk out clay; this helped to reduce the usage of clay. Adding brick grogg both strengthens and bulks out the clay meaning you need to use less clay, considering it is time consuming to process.



***Processing the clay; how my  
methods changed***



## Initial discoveries

I collected clay from the brick factory and began to processing it in the workshop. It didn't absorb the water in the same way as shop bought clay does. Using a whisk - drill attachment I whisked the clay which helped to smooth it, however, as the clay is very sticky, it got stuck inside the blades of the whisk. I tried a few different methods to achieve a smooth consistency with water before drying the clay out.



No natural flocculation; naturally cast-able clay

These photos are taken a week apart. The minerals in the clay stay suspended in the liquid, this means the clay takes a very long time to process and wedge into a workable body; this means, without added a deflocculant, the Chailey clay can be used as casting slip



These photos were taken a week apart. Typically you would expect this process to take 24hrs.

## Slacking:

Through multiple attempts at methods of efficiently processing the clay, I discovered crushing the clay into a fine consistency. I added this to boiling water to let the clay absorb the water, rather than adding water to the fine clay - which can cause clumping. This process is called slacking. Steam is used in the commercial sector, and if I continue with the method I would like to experiment with this method



## Drying time:

Due to the natural lack of defluccuation (particle and water separation) the clay dries less evenly than shop bought clay so needs regular attention and thorough mixing to allow for even drying. I discovered that adding heat, with the drying cabinet, sped up the process significantly.



These photos are before and after crushing. Using extraction, a face mask, goggles and a mallet, I finely crushed and sieved the clay before adding it to boiling water.



The clay, after slacking and sieving, was put onto plaster and put into the heated cupboard to accelerate drying time. Due to the material properties it needed regular mixing.



## Reflection:

Understanding the material was a long process due to the complexities of how the clay behaves.

The clay is very dense in minerals and difficult to crush. Over the last few months I have developed the most efficient way to process the clay. Using the correct PPE I crushed the clay into a fairly fine powder. Using boiling water to slack the clay accelerated the process

The particles stay suspended within the liquid, rather than settling, this lengthens the processing time significantly.

As the particles stay suspended within the liquid this makes it naturally suitable to use as a casting slip.



## ***Alternative firings***

A range of alternative firing techniques were investigated. All pieces were fired to 1000°C inside an electric kiln.



## Raku firing

is an outdoor firing, where pieces are placed within an insulated outdoor kiln. It is fired, using gas, to 950°C. At this point the pieces are taken out of the kiln and placed in to a surround filled with sawdust. This process thermally shocks the pieces causing crackles; the smoke the sawdust seeps in to the cracks revealing a fascinating results

A range of base slip and resist glaze recipes were experimented with. With some pieces the glaze fully fused, in others the resist worked well. The glaze fully fused preventing removal due to the temperature reaching above 950 °C.



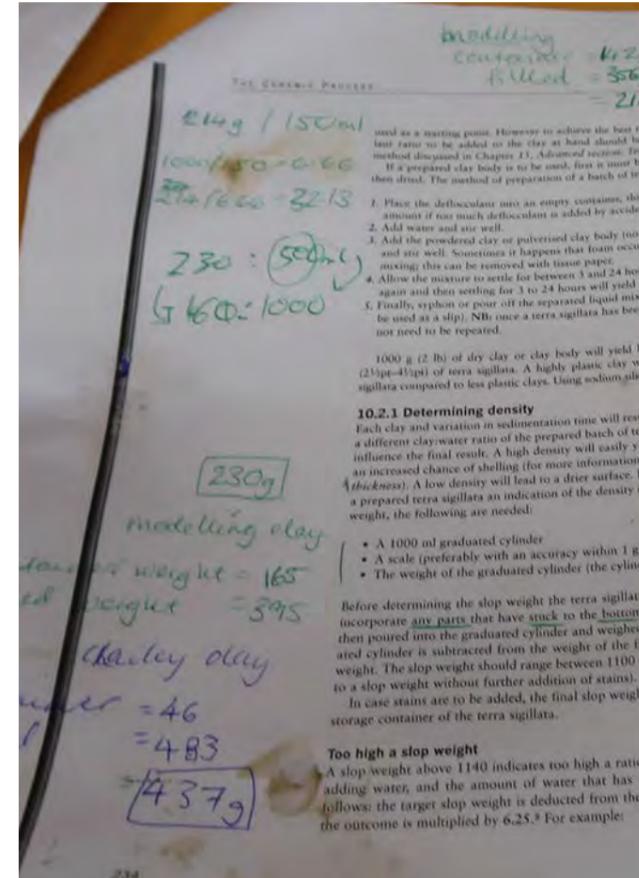
Here varying results from the raku firing can be seen. In some cases the raku resist glaze worked well and in other cases it has fully fused to the surface. I think the tests pieces where the glaze has fused are the most visually effective.

## Terra sigillata

is a finely sieved clay solution which is sprayed on the outside on the vessel to achieve a smooth and polished appearance. Deflocculant is added to the clay, this suspends the clay particles within the clay water solution.

It was left for a couple of days, allowing separation between liquid, suspended particles and heavy unwanted particles to be drained away. The terra sigillata, after separated, is sieved finely and sprayed onto the pot in several layers

Issues; this is a complex process. I did not get the ratios correct this caused the solution to split. As seen in this photo the terra sigillata separated, creating a dusty and uneven layer on the surface.



## Smoke firing

is an outdoor firing method done within a metal dustbin. The materials used for this were found within the Brighton area. The wood shavings came from a timber merchant and the seaweed came from Brighton beach. This method can be quite controlled in terms of how smoked the pieces becomes.

A lay of clear shoe polish was put on top, this works both as a sealant and gives a light sheen to the surface of the vessel



## Sagger firing

is a clay container created using a strong clay. A range of locally sourced combustibles are placed in the container along with the bisque fired ceramic vessel; these were sawdust from hard and soft wood, seaweed collected from Brighton beach and waste copper from the metal workshops. The container is placed inside the electric kiln and fired to 1000°C.



These colours on the were created from the copper I placed on the piece.



## Reflection

Experimenting and gaining knowledge with these alternative methods of firing has been informative in developing my ideas and exploring different avenues and aesthetic values . Through using materials sourced locally both for the firing and for the compostable materials added; sawdust and seaweed, I have begun to see the effects these can bring to the work.

However, due to the carbon emitted during these firings and the firing done purely for aesthetic results, I have decided to explore alternative means to producing ceramics ware in a more economical and environmental friendly way.

‘Wood is 100% carbon neutral if the trees are replaced, because burned or decomposing, wood releases the same amount of carbon it consumed during its lifetime back into the atmosphere’. Another source says that wood is 75% carbon neutral and still better than burning fossil fuel but will never compare to wind or solar since these resources are infinite.”<sup>1</sup> This is an extract from an article written by Denise Joyal analysing the impacts of burning wood, which has helped me gain further insight in the technical elements of this.

<sup>1</sup> Joyal, Denise. “Aesthetics And Environment, Kilns And Carbon.” Ceramicartsnetwork.org. 2011 [https://ceramicartsnetwork.org/wpcontent/uploads/sites/6/2017/02/048\\_053\\_Feb11\\_CM-1.pdf](https://ceramicartsnetwork.org/wpcontent/uploads/sites/6/2017/02/048_053_Feb11_CM-1.pdf)



## ***Glass and Lighting***



## London Glassblowing studio

I spent a day at the London Glassblowing studio in Berbonsey. This was to understand the process that goes into shaping glass and to gain a deeper understanding into the material qualities.

After a kind and generous discussion they offered to help with potential bonding or separating the pieces using glass.



## Potters Thumb

I visited Potters Thumb in Brighton after noticing this bowl in their window. It was created entirely from waste glass. I sought to understanding the process that went into creating this. The developer had been working on this project for a number of years so was, understandably, guarded about the production methods.



## Emulating the kiln

Bringing light into the piece, emulating the glowing light from within the clamp kiln. It as though the piece is alive.



## Experimentations

I experimented with a range of different materials to test out how to best separate the sections of the vessels. I tried out creating acrylic spacers and experimenting with glue gun to emulate how adding glass could look.

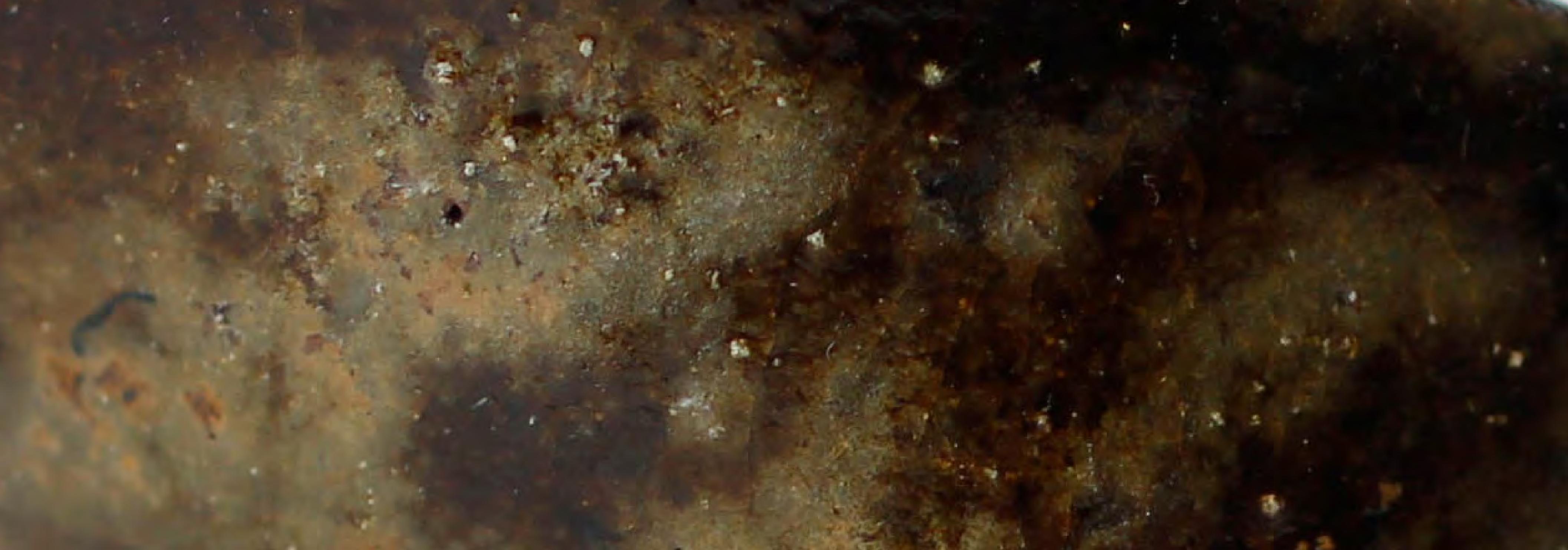




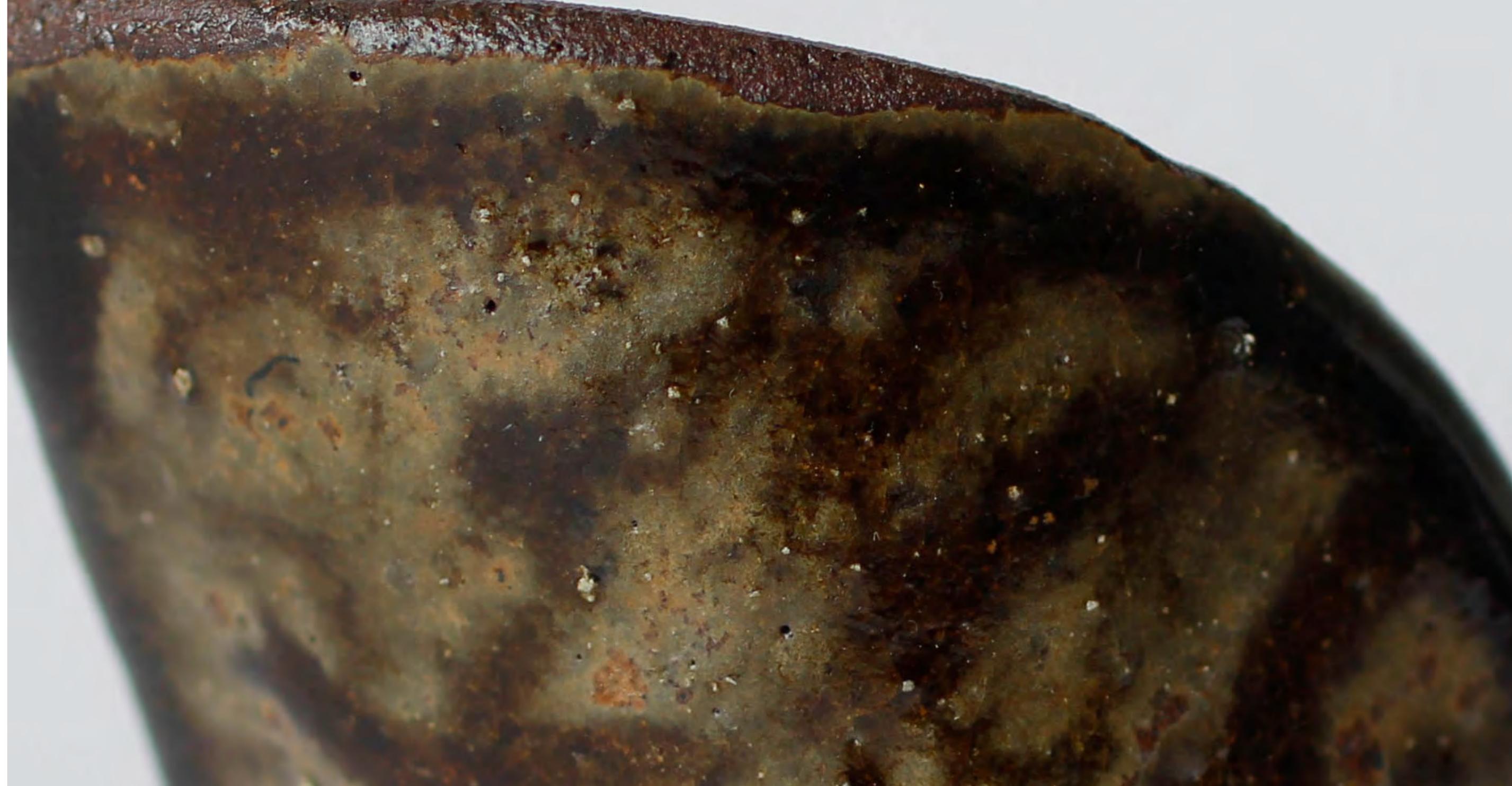
## Reflection:

Learning about glass production and lighting has been fascinating. I was drawn to this idea as I have an interesting in lighting and have focused on this area in previous projects. Glass is a similar material in some respects to ceramic. Glaze is made from silica or soda which is one of the key ingredients in clay. I was also drawn to the idea of working with lighting as some of my work is low fired which makes it less strong (as it is not fully vitrified), lighting pieces are often fragile so I felt it was an avenue worth researching.

Having spent a week working through ideas around glass I decided not to pursue this element to my work. I choose to do this as, through speaking with Rothchild & Bicker (a glass lighting company) and a couple of other technical experts, I discovered the difficulties of bonding glass to ceramic. Another reason I decided not to pursue this was because it did not feel like it was inline with my other research and themes I have been focusing on during the project.



*Natural glazes*



## Material comparisons

These glazes have been produced using natural materials; some shop bought and chemically similar to the found materials.

I have tried to create a circular system with in my glazes; the sawdust and seaweed ash from the saggar firing were added into the glazes .

The recipes are as follows; (left to right top to bottom).

1. Wood ash – not sieved  
China clay
2. Wood ash - not sieved  
Red art clay
3. Wood ash – not sieved  
Chailey clay powder
4. Wood ash  
CaCO<sub>3</sub> – Calcium Carbonate (shop bought)
5. Wood ash  
Oyster shell, Sieved
6. Wood ash  
Oyster shell, unsieved
7. Wood ash  
Oyster shell, unsieved
8. Saggar ash  
Chailey clay powder
9. Seaweed ash  
Chailey clay powder



## Texture experimentations

Locally sourced materials:

Wood ash - Lewes  
Oyster shell - Brighton Beach

These tests are the most interesting. The materials are waste and locally sourced.

The texture on the left hand piece was created using flaxseeds, a local Sussex crop.



Wood ash  
 $\text{CaCO}_3$  – calcium carbonate, oyster shell, unsieved



Wood ash  
 $\text{CaCO}_3$  – calcium carbonate, oyster shell, unsieved

## Form projection

Projecting the image of the sample test tile onto a drawing of a design idea allowed me to get a good idea of how it could look. This was done using Adobe Illustrator.



Wood ash – not sieved  
Chailey clay powder



## Single Firing Ash glaze

In the research and development about how to reduce the impact the production of ceramics I began to research single firing. This halves the emissions from the production. Over 70% of the emissions from the ceramic manufacturing industry are created in the firing process (Ceram data in BREF Ceramics, 2007)<sup>1</sup>

I applied locally sourced ash to the surface of the piece when the piece was at different stages of drying.

<sup>1</sup> "Sector Report For The Ceramics Industry". Ec.Europa.Eu, 2012, [https://ec.europa.eu/clima/sites/clima/files/ets/allowances/docs/bm\\_study-ceramics\\_en.pdf](https://ec.europa.eu/clima/sites/clima/files/ets/allowances/docs/bm_study-ceramics_en.pdf).



single fired ash, soft clay, washed dried unsieved ash



single fire ash, soft clay, washed unsieved ash, applied wet thick



single fire ash, leather hard, washed unsieved ash, applied wet thick. all fired to 1260°C.



## Reflection

Using locally sourced and waste materials to create glazes has made some very interesting results.

Discovering oyster shell is chemically the same as calcium carbonate ( $\text{CaCO}_3$ ) or whiting, a commonly used ingredient in glaze, has allowed me to create fascinating glaze recipes from natural sourced waste materials.

Learning about single firing and the benefits of this has been integral in pushing my project further. As firing accounts for 70% of total emissions for ceramic production<sup>1</sup>, cutting this in half is very beneficial.

Learning and working with Photoshop and Adobe Illustrator has been very instrumental in helping to visualise how these glazes would look on a larger piece.

<sup>1</sup> Hasegawa, Yoshikazu. "Ceramic Tableware Recycling By Green Life 21 Project Efforts For Sustainable Manufacturing In A Traditional Local Production Area." Pdfs.semanticscholar.org. 2012. <https://www.semanticscholar.org/paper/Ceramic-Tableware-Recycling-by-Green-Life-21-for-in-Hasegawa/6a4a9b124db0578813d3ed670ed339e1b9d69415>

Working with the materials qualities to produce a range of products which could reduce our impact on the environment. The pieces are designed with a function in mind; the decoration was informed and linked to a historical reference point.

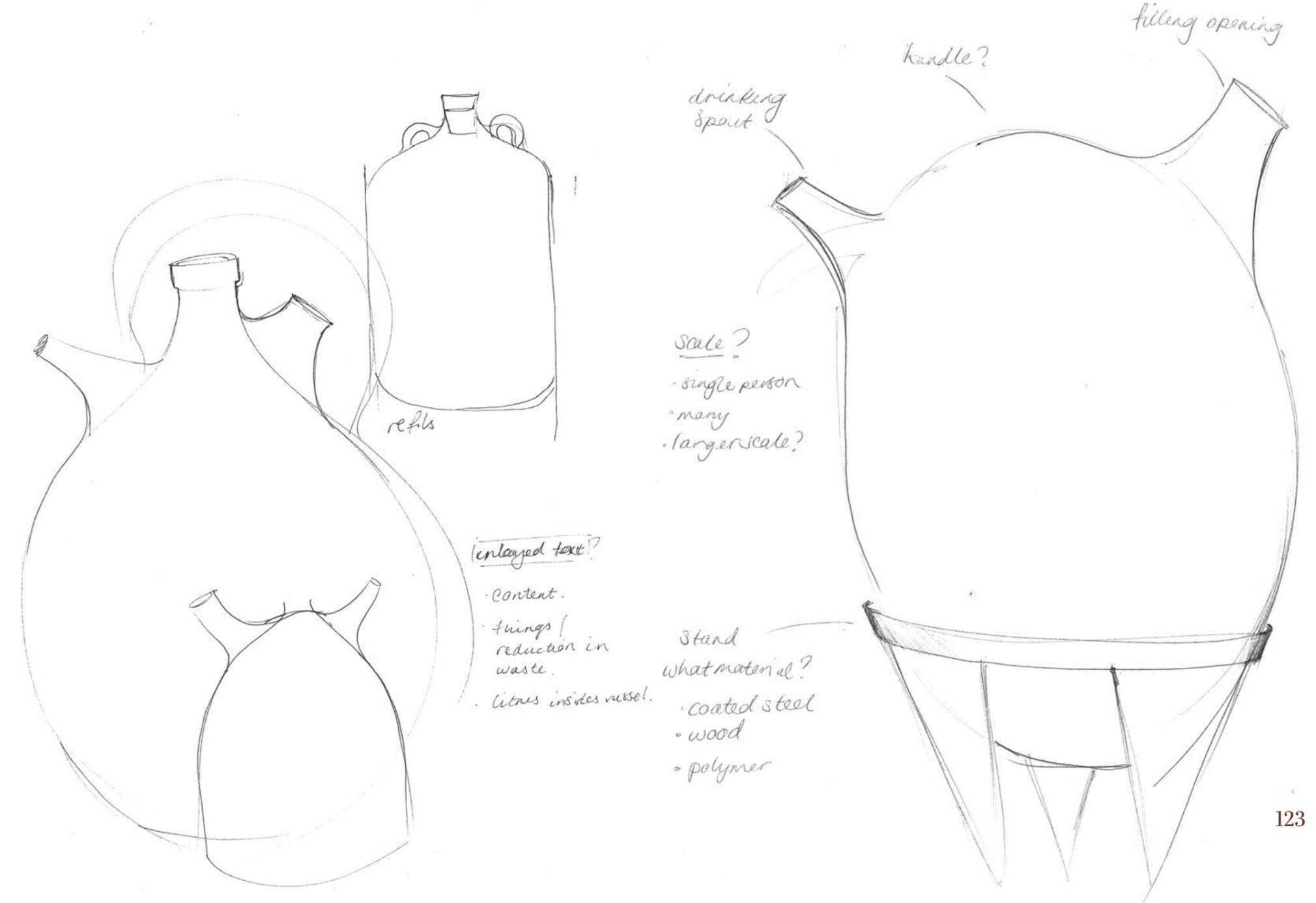
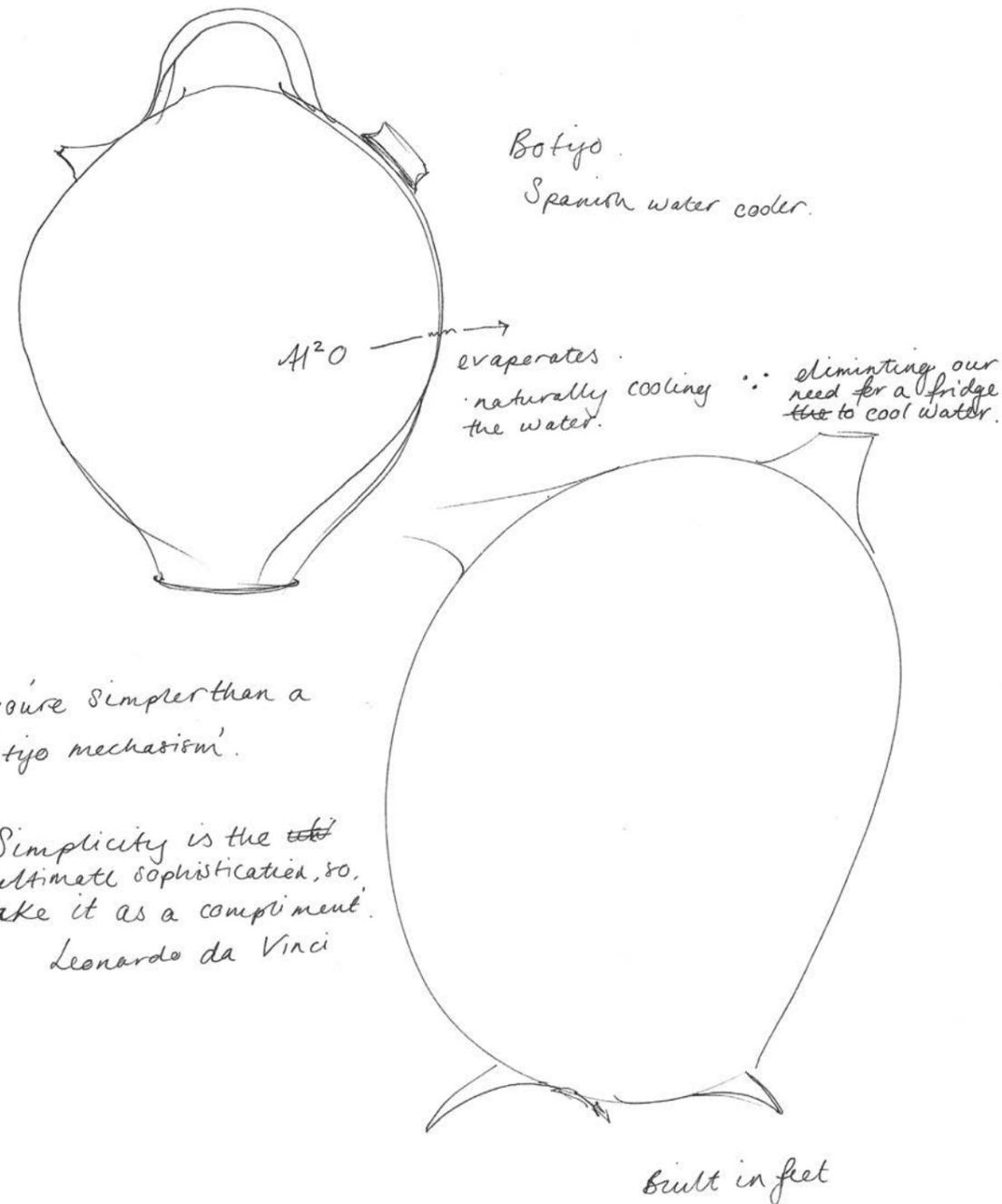
## ***Material qualities to reduce our impact***



# Botijo

A Spanish water cooler is bisque fired to a 1000°C, the piece is still porous as it is not fully vitrified. The clay is still porous so the water evaporates, extracting thermal energy from the water, leaving the water inside cool - the hotter the sun, the cooler the water.

This reduces the firing emissions and labour and has a built in basic technological function coming from fundamental Physics. The less something is engineered, the better it function.



## Water porosity test

Here, I weighed 50g of finely sieved Chailey brick clay and added increasing increments of sand. I was doing this to test if the water cooling method works, if it leaks and if, by adding sand, I could bulk out the body and reduce the amount of clay needed to create the vessel.

This did not work as it opened up the clay body too much which made the piece leak water.





## Lewes

Exploring Lewes helped me gain a deeper understanding of historical reference points, letter press stamps from a bygone era and helped me to understanding the physical mechanism used to attach a tap to a ceramic vessel.



Physically seeing and being able to take apart a ceramic vessel with a tap attached helped me to understand the mechanism. Here they have used a cork to secure the tap.

## Inlay

A distinctive style of ware emerged that could be instantly identified as Sussex Pottery emerged by 18th and 19th century.<sup>1</sup>

These highly decorative pieces, made by inlaying a letter and filling with a lighter clay to contrast against rich iron clay, were often made as a celebration; for birthdays, anniversaries or weddings. The decorative style would often include a 'verse, the name of the person for whom the piece was made, a place name, the date, and more rarely, the name of the potter who made the pot'. In Chailey, this inscription style was especially popular.

Learning about these techniques was fascinating and incorporating it within my work helped to bring back to life a skill from a bygone age.



<sup>1</sup> Baines, John Manwaring. Sussex Pottery. Fisher, 1980. p9-21



Shaped like a pocket watch, these vessels were designed to be carried like one; often to hold fine spirits.

## Writing style

As can be seen in these images, the writing style was often jovial and fun using simple rhymes and rhythms. They also encompassed sayings and proverbs.

THOUGH WE AT CHAILEY ARE BUT MEAN  
WE DO THE THING THATS NEAT & CLEAN.



ORCANS  
OF BRANDY  
RIVERS OF WINE  
FOUNTAINS OF  
TEA & A GIRL  
TO MY MIND

GIVEN TO  
EMMA GOLDSMITH  
BATTLE  
SUSSEX  
1835

THIS LITTLE BOTTLE HOLDS A DROP  
THAT WILL OUR DROOPING SPIRITS PROP  
IT IS GINEVA CHOICE AND GOOD  
T WILL CHEER THE HEART AND WARM THE BLOOD.

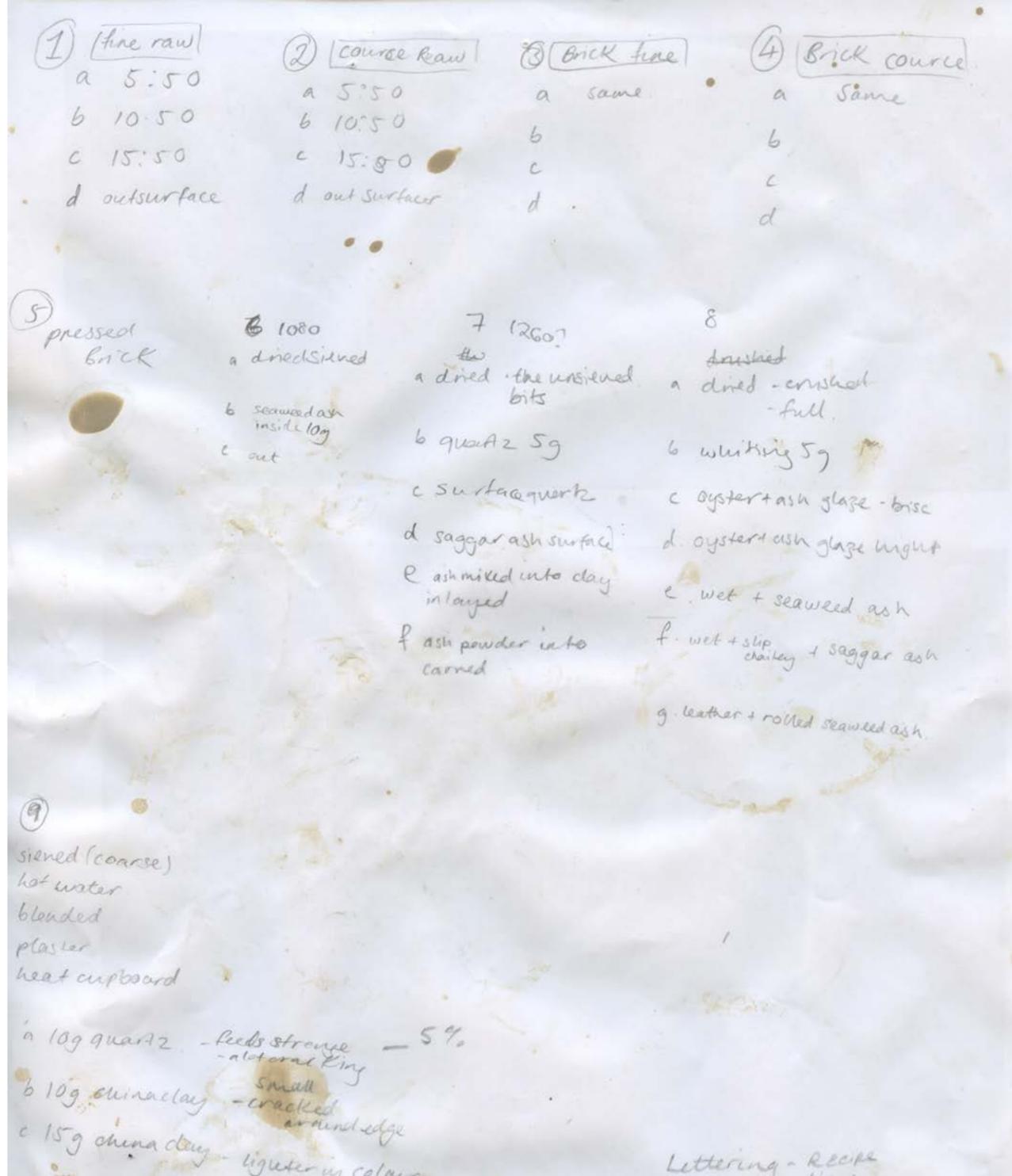
Tobacco jars, also, often carried verses of conviviality. Good things were evidently made to be shared:

MY TOBACCO I DO PUT  
WITHIN THIS LITTLE POT  
AND MY FRIEND MAY HAVE A PIPE  
IF ANY I HAVE GOT

or, expressed more simply in another example, from Chailey  
'YOU THAT ARE MY FRIEND ARE WELCOME TO MY  
INDIA WEED'.

## Inlay tests

I did a vast array of inlay and material testing to develop to inform my final piece. I analysed the results to see which method and material gave the best results.





Plaster test samples



I covered the surface in talcum powder. This was to let the letters come out easily, which worked well. When I came to inlay the slip, the talc prevented the slip from fully absorbing into the surface and therefore bonding to the clay. When fired some of the lettering came out.



inlaid with crushed flint



inlaid with modelling clay



inlaid with ash



Sieved ash inlaid into a sieved body - this didn't work



10g of quartz added to finely sieved clay - lighten the body



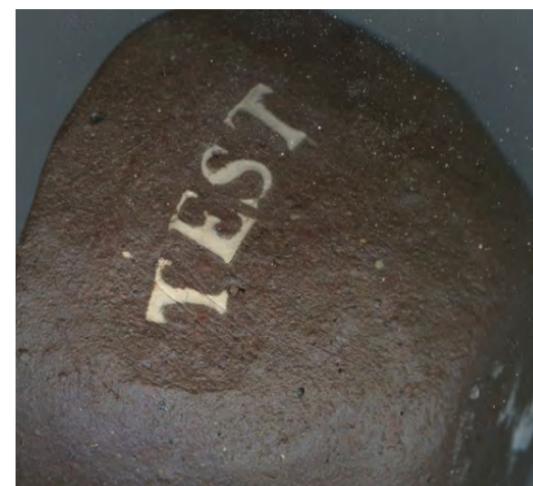
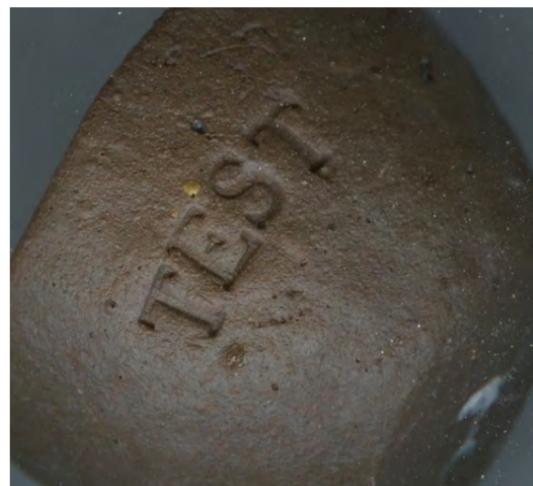
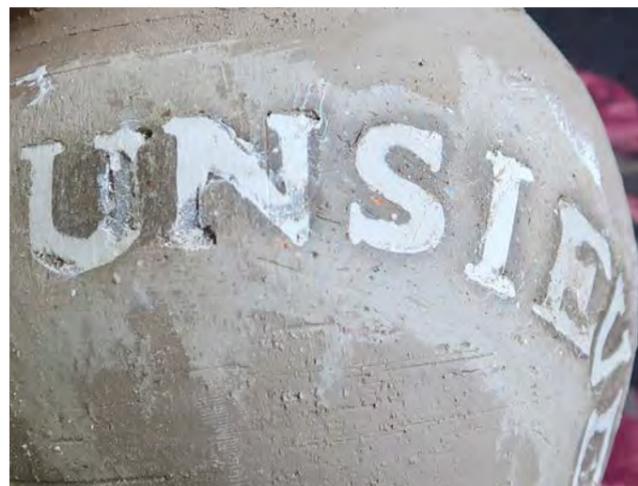
Modelling clay inlaid with chailey slip

## Method:

Here, I inlaid the letter when the vessel was soft, waiting until it was fully dry before inlay the slip

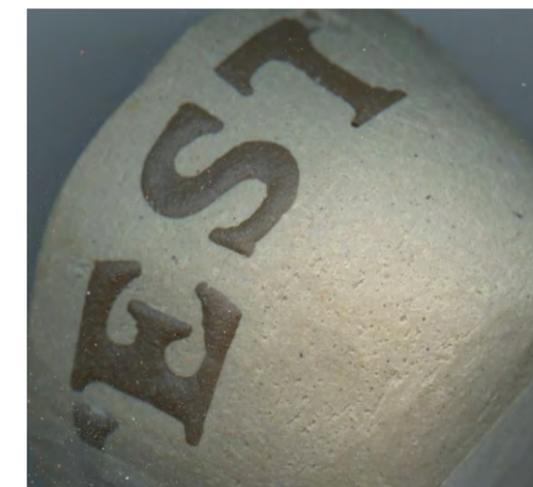
## Discovery:

The slip cracked as it dried as the clay body was fully dry. It absorbed the moisture at a different rate causing this to happen. When scraping back the slip to reveal a crisp line, some of the slip fell out.



## Font size

Experimenting with a range of different sized letters; pt 25 and pt 15. This is allowed me to see what sizing would work best.



## Method:

Small wooden letters were used on to spell out the poem on the surface of the piece. I began to fill the letters with slip using a squeezey bottle. This was time consuming so, using a rubber kidney I put a layer of slip over the impressed letters. As the water was absorbed by the pot the letters needed filling. This was done so that when the slip was scraped back the imprinted letter were flush with the surface of the pot.

## Went well:

Spacing between each layer, while pressing the lettering in they stayed in line; this was as I made light lines on the clay as a guideline

## Issues:

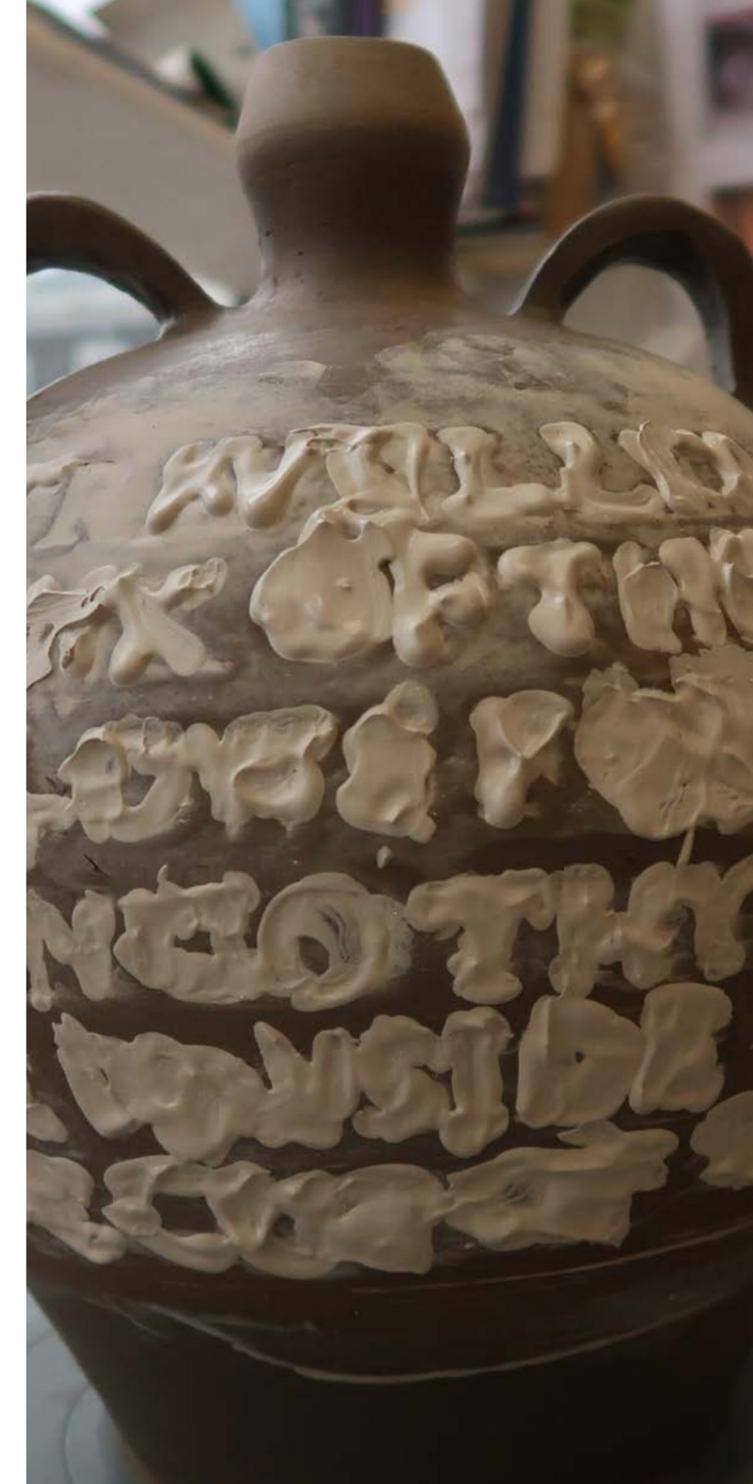
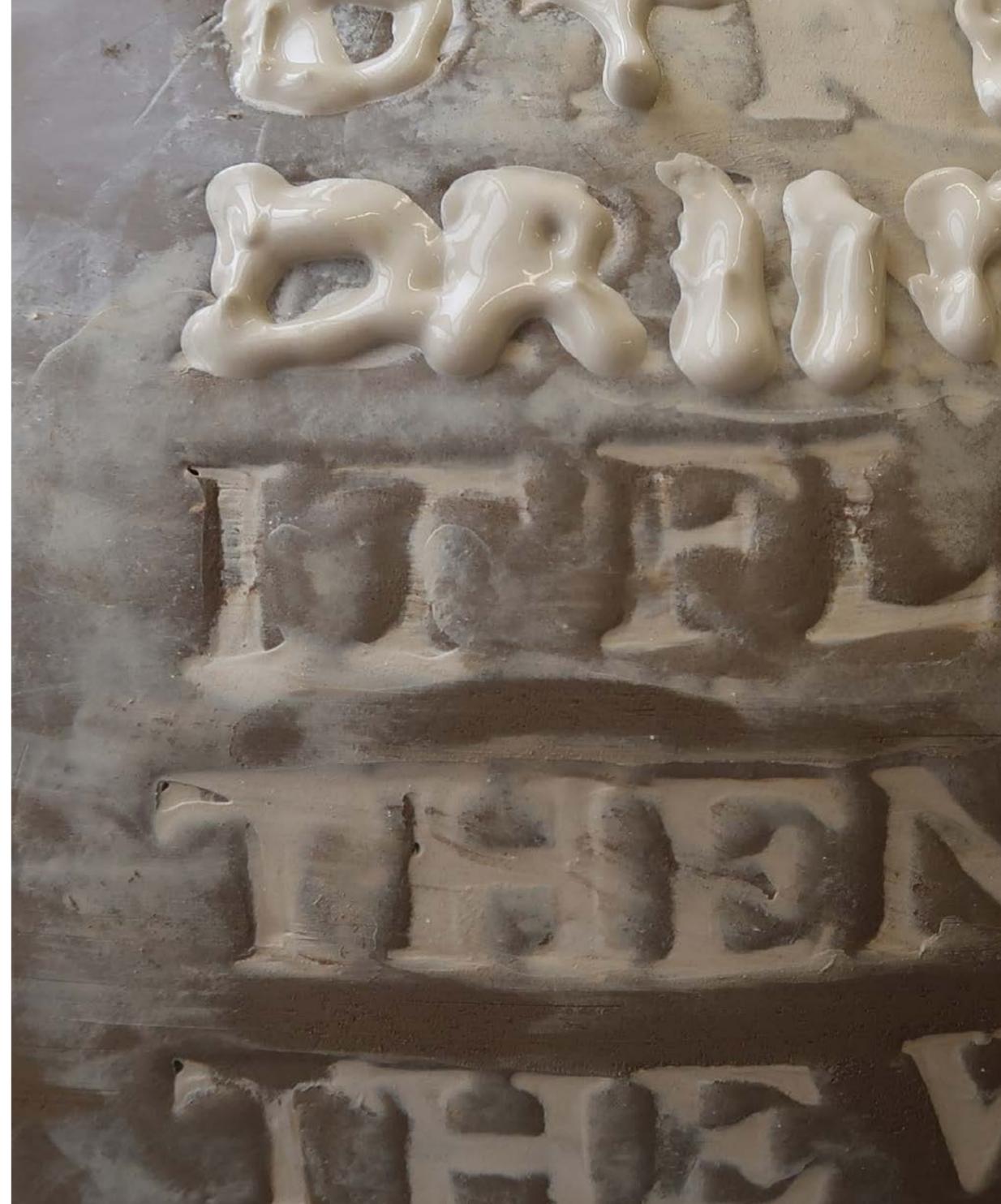
The surface of the vessel was quite dry so the letters didn't impress too deep in the pot. I ran the rubber kidney over the area too soon. The moisture from the slip had absorbed into the clay meaning as I pulled the kidney over the surface, the crispness of the line was lost.

## Solution:

Using a sponge, I wet the surface. This added moisturise into the clay meaning the letters could be pushed in deeper. The follow morning I pushed each letter in again making a deeper inlay.

## Next time:

The letters will be inlaid sooner after making or wet the surface of the piece, left for some time so the water soaks into the surface then inlay the letters. Leave to dry then fill with slip. Leave until the slip is fully dry for a crisper finish. Use a sponge to get the surface of the piece flat. Here it can be seen where the letters have been impressed deeper into the clay



O Traveller, stay thy weary feet;  
Drink of this fountain, pure and  
sweet;  
It flows for rich and poor the same.  
Then go thy way remembering still,  
The wayside well beneath the hill,  
The cup of water in His name

Henry Wadsworth Longfellow.<sup>1</sup>

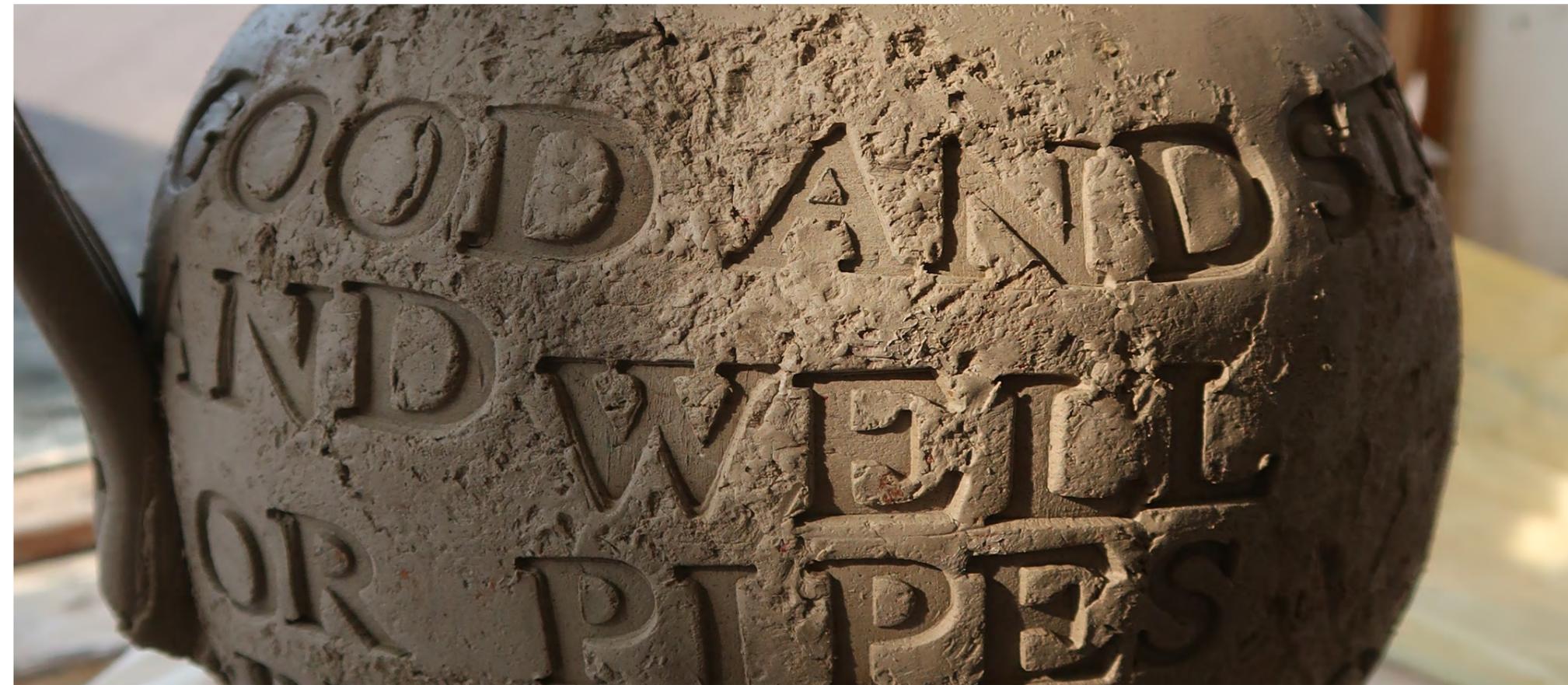
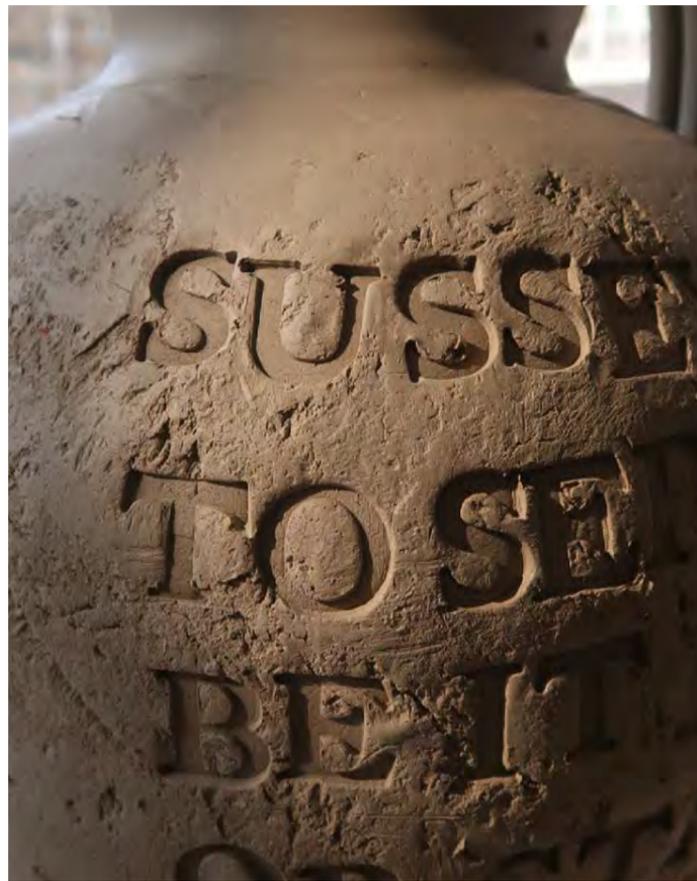
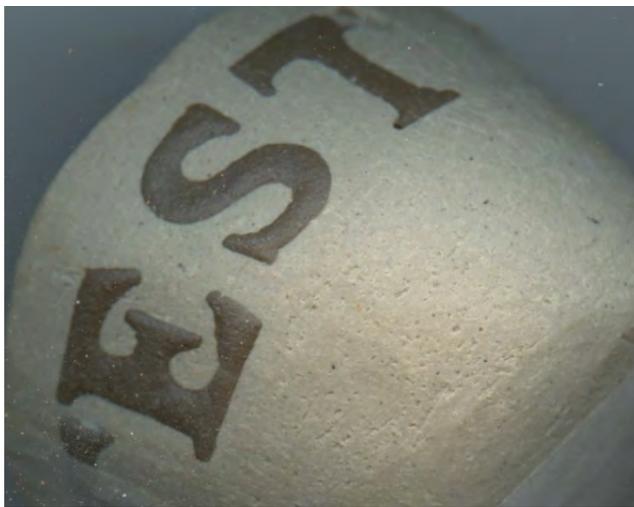
---

<sup>1</sup> Longfellow, Henry Wadsworth. *The Complete Poetical Works Of Henry Wadsworth Longfellow*. Houghton, Mifflin And Co., 1902.



## Altering the method

After the piece was coiled letters were impressed in the surface of the vessel, then slip was applied all over the surface. I waiting until the slip was fully dry before scraping back leaving a crisp finish,



## Water Bottle

This piece was created using the lathe. Plaster is not a sustainable material as it does not decompose. However, slip casting is efficient way of creating form as it uses minimal material. The Chailey brick clay lends itself well towards slip casting as it naturally doesn't settle and it doesn't require a deflocculant. The particles stay suspended in the liquid.





***Modern thinking to traditional methods***



## Sharing resources

I created a series of vessels, inlaid with the date they were created. These were fired within the clamp kiln at Chailey brick yard.

I had concerns early on that this could negativity impact the rest of the firing and mean the surround bricks may under or over fire. This was not the case and the firing worked perfectly. I am thrilled with the results.

The concept of sharing resources is ever growing in our society. From bikes to places to stay on holiday; the concept of sharing the resources is both economically and environmentally beneficial.<sup>1</sup>

<sup>1</sup> As defined by the Cambridge dictionary the sharing economy is 'an economic system that is based on people sharing

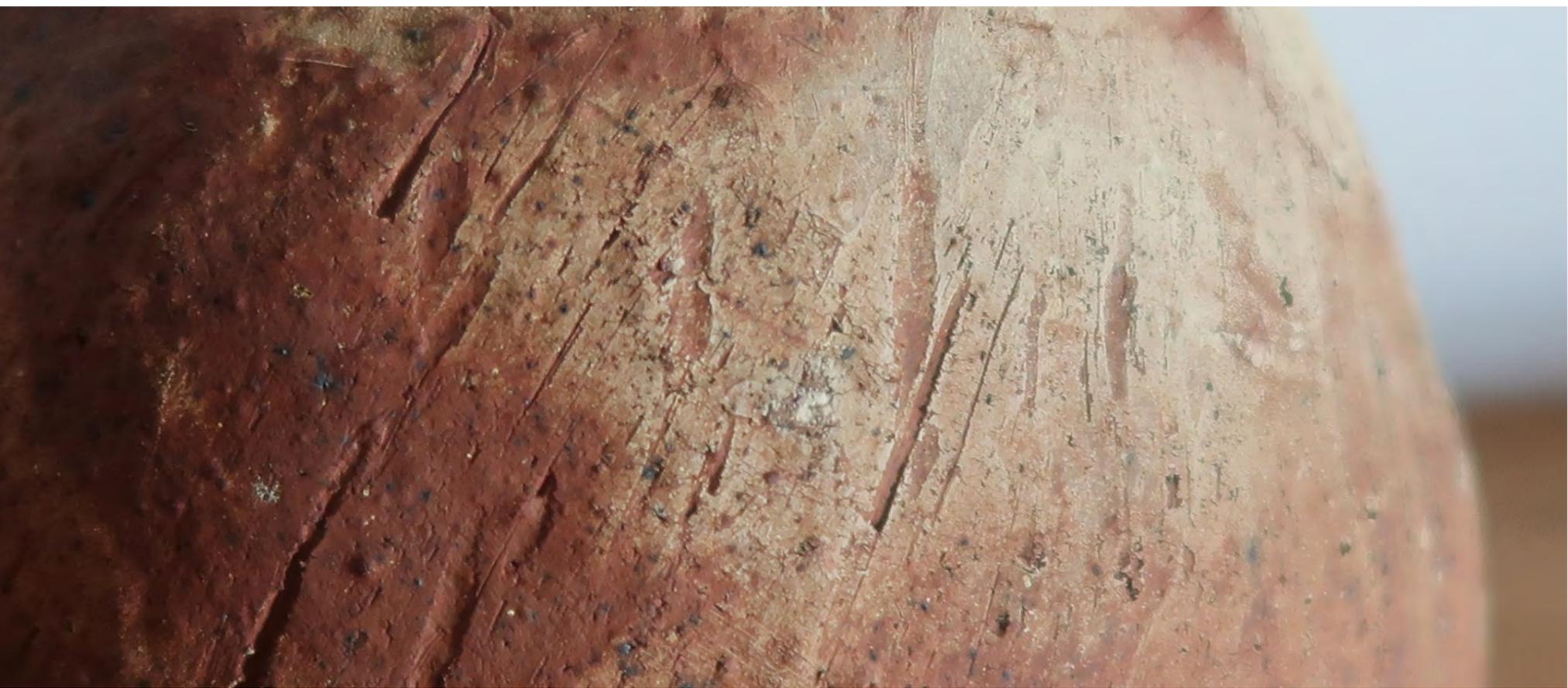
I am piggy backing an existing energy source and one that is already producing emissions.

This discovery is fundamental to the development of this project. I have sourced the material on site, processed it myself, then fired it back at the material source.

---

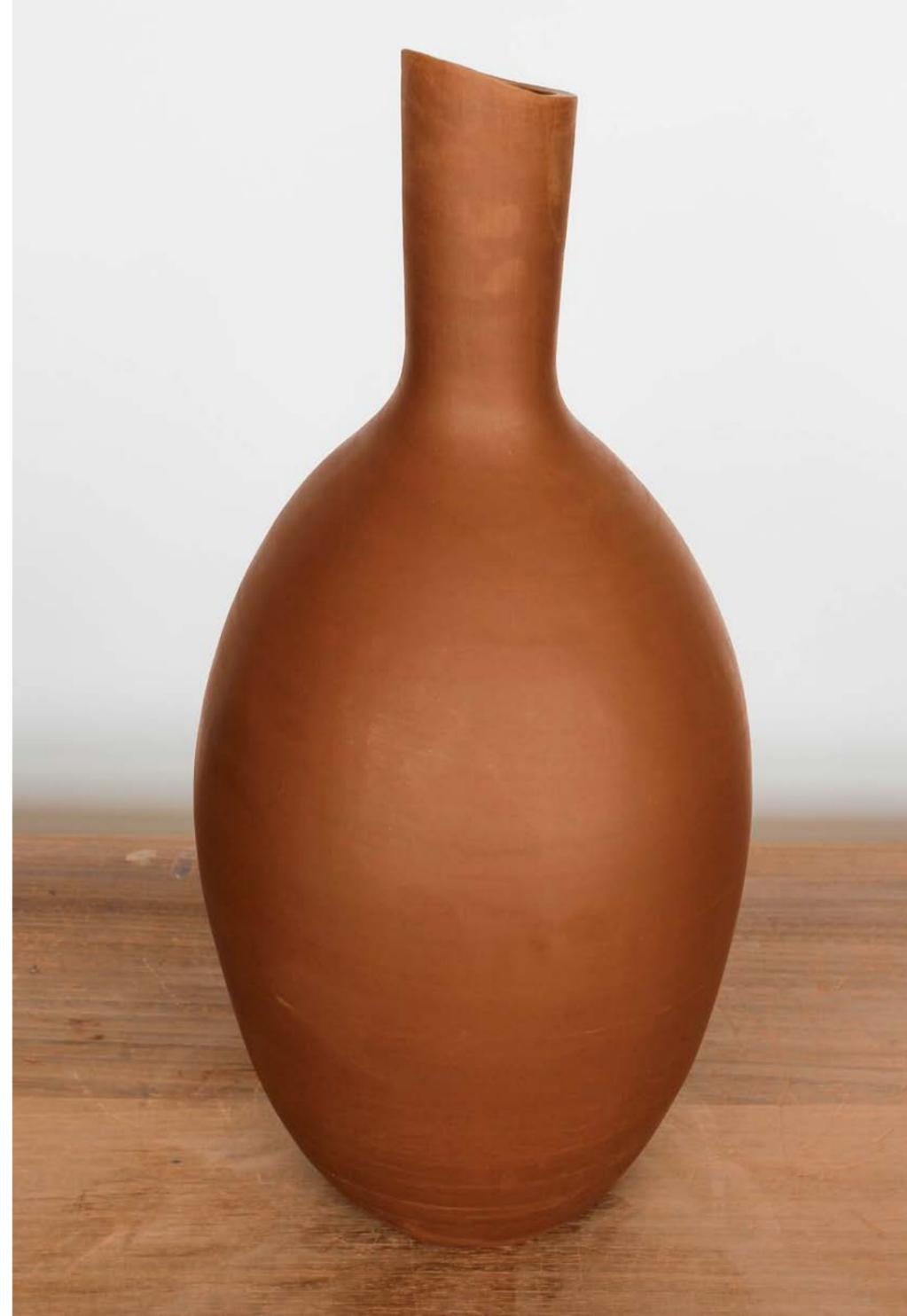
possessions and services, either for free or for payment, usually using the internet to organize this:' "SHARING ECONOMY | Meaning In The Cambridge English Dictionary." Dictionary.cambridge.org. 2020.





## Large scale form

This piece was created to explore the shape and form of a water bottles focusing on the aesthetics of the curves and pouring spouts. It was to be fired in at Chailey brick yard.





## Reflection:

These pieces were made using brick and firing within the clamp kiln in Chailey. The results are beautiful, the flashes of colour reminiscent of the bricks themselves. These achieved so many aspirations I had for this project 70% of the total emissions from ceramics production is in the firing process. Using an existing energy source to single fire the vessels eliminates the need for a kiln

A totally different outcome from a the same material and energy source. For the workers at the factory, it is an interesting end for there day to unpack something different and unusuall had concerns that gaps made within the clamp would impact the firing of the bricks, there was no impact on the bricks surrounding

I have applied a modern way of thinking and apply this to a traditional method. Chailey is one of only three clamp kilns left it the country. I am championing their ancient firing methods. This method echo that of the Milan furniture movement, where carpenters were ask to build designer furniture. This is a practice I would like to continue developing. Making larger scales work to fire within the clamp.

## *Summary Statement*



I have developed my practice hugely over this year, mainly in terms of a deepened understanding of how rich research and investigation can lead to fascinating results and insights. Through thorough research and investigation of identity, material and manufacturing I have pin pointed and highlighted these key findings and drawn attention to them. The unique aesthetic qualities of Sussex are derived from the close proximity to the source of the materials naturally occurring from within.

During this project I have discovered the inherent material characteristics within Chailey brick clay. The particles stay suspended - a natural deflocculation due to the high mineral count. I have used this to my advantage by creating a slip cast mould. I have developed the most efficient way of processing the way due to this quality. I have discovered that naturally sourced materials can make incredible glaze results. Understanding design principles and circular systems has helped me to understand production method better. I have discovered ancient and forgotten method of decoration.

I have developed my digital skills learning InDesign and the very basics of Illustrator and Photoshop which has been instrumental in visualising my ideas. I have learnt a vast amount of other skills over the last few year within the metal, wood and polymers workshops which has been invaluable. Within the ceramic workshop I have developed my plaster mould making skills and glazing skills.

I had an intention to discover a more sustainable way of creating ceramics. This is been achieved by using an existing energy source of the clamp kiln at Chailey brick yard. Using qualities natural occurring with the clay I have began to create a series of pieces which encouraging sustainable living.

Over the past four years studying 3D Design and Craft I have developed hugely. Having the buzz of such a talented group of people ( students, tutor, technicians, learning support tutors, student services, catering team and cleaners), around me has been so inspiring and exciting. I feel very grateful to have been emerged in such an alive environment for four years.

## ***Bibliography***

Baker-Brown, Duncan. *The Re-use Atlas: A Designer's Guide Towards a Circular*. London: RIBA Publishing, 2017. Print

Baines, John Manwaring. *Sussex Pottery*. Fisher, 1980. page 21  
“Brick Production In Great Britain 2013-2018 Statistic | Statista”. Statista, 2018, <https://www.statista.com/statistics/472894/annual-brick-production-great-britain/>.

Brick Clay: Issues For Planning”. British Geological Society, 2001, <http://www.bgs.ac.uk>.

Chapman, Jonathan. *Emotionally Durable Design*. London: Earthscan, 2011. Print.

Ezio Manzini On Design. 2015, <https://www.youtube.com/watch?v=o6WQNZWAYVc>.

Hasegawa, Yoshikazu. “Ceramic Tableware Recycling By Green Life 21 Project Efforts For Sustainable Manufacturing In A Traditional Local Production Area.” Pdfs.semanticscholar.org. 2012. <https://www.semanticscholar.org/paper/Ceramic-Tableware-Recycling-by-Green-Life-21-for-in-Hasegawa/6a4a9b124db0578813d3ed670ed339e1b9d69415>

Joyal, Denise. “Aesthetics And Environment, Kilns And Carbon.” Ceramicartsnetwork.org. 2011. Web. 9 Jan. 2020.

Longfellow, Henry Wadsworth. *The Complete Poetical Works Of Henry Wadsworth Longfellow*. Houghton, Mifflin And Co., 1902.

MANZINI, EZIO. *Design, When Everybody Designs*. MIT Press, 2015.

Mark Hatch & The Makerspace Movement. 2017, <https://www.youtube.com/watch?v=N34QILCaWR0>

“What Is The Circular Economy?”. Ellenmacarthurfoundation.Org, 2020, <https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy>.

“Sector Report For The Ceramics Industry”. Ec.Europa.Eu, 2012, [https://ec.europa.eu/clima/sites/clima/files/ets/allowances/docs/bm\\_study-ceramics\\_en.pdf](https://ec.europa.eu/clima/sites/clima/files/ets/allowances/docs/bm_study-ceramics_en.pdf).

“SHARING ECONOMY | Meaning In The Cambridge English Dictionary.” Dictionary.cambridge.org. 2020.

