EXPERIENTIAL RETAIL, A CATALYST TO ENCOURAGE SUSTAINABLE HABITS

-13 Firwood rd, Hazelwood, Pretoria -

Chanté van der Merwe

Drawing by author(2019)

Thank you

To my mom for the love and care
through this journey, and my dad
for keeping me strong every step
of the way.

Dirk for the long nights and
motivation to keep me going.

The rest of my friends and
family for the time and effort to
listen to my endless questions.

Without all of you I would not
be where I am today.
I love you.

Submitted in partial fulfillment of the requirements for the degree Master of Interior Architecture (Professional) to the faculty of Engineering, Built Environment and Information Technology.

Department of Architecture

University of Pretoria 2019

Study Leader: Nonkululeko Grootboom

Course coordinator: Catherine Karusseit

In accordance with Regulation 4(e) of the General Regulations (G.57) for dissertations and theses, I declare that this dissertation, which I hereby submit for the degree of Masters of Interior Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution. I further state that no part of my dissertation has already been, or is currently being, submitted for any such degree, diploma or other qualification. I further declare that this thesis is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Chanté van der Merwe

Title: Experiential retail,
a catalyst to encourage sustainable habits

Programme: Sustainable retail – Grocer

Site: 13 Firwood road, Hazelwood, Pretoria, Gauteng

Research field: Environmental potential

Client: Developer

Theoretical premise: Green economy/Zero waste

Keywords: Adaptive re-use, consumerism, experiential retail, green economy, interior architecture, sustainable retail design, zero waste

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ABSTRACT

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The current global crisis of unsustainable consumption and waste is driven by the needs and wants of consumers (Goodwin, Harris, Nelson, Rajkarnikar, Roach & Torras 2008), and fed by retailers who supply consumers with products packaged to perfection (Monnot, Parguel & Reniou, 2015). The general consensus is that small steps of change taken by numerous people can change the course of this crisis and lead us to a more sustainable consumption model.

Within the field of sustainable retail, this study looks at retail's role in addressing waste reduction, as retail is one of the largest "suppliers" of waste. In Pretoria, Gauteng, there is a high concentration of retailers; there are three super regional malls within 20 km of each other. In the suburb of Hazelwood, the shift in zoning from residential 1 to business/residential is encouraging rapid economisation of the surrounding area, noted by the Menlyn development plan. This has left the residential community in a state of limbo between their suburban lifestyle and impending commercialisation. This change makes Hazelwood an ideal case study site for a sustainable retailer dealing with all three prongs of sustainability: economic, social and environmental.

In terms of the urban acupuncture theory, Hazelwood stands out as a point on a large acupuncture grid in the Menlyn area. Compressing the concept of acupuncture points into the specific suburb and layering it with sustainable development provides an opportunity to display the possibilities of a zero waste sustainable neighbourhood in Hazelwood, as envisioned in the Tshwane 2055 plan.

A focal zero waste retail intervention at 13 Firwood Road is proposed to inspire clients and educate them on the possibilities of a zero waste (packaging-free) lifestyle. As such, it aims to become a catalyst in Hazelwood.

The overall aim of this study is to investigate how, consumerism can be sustainable, through small changes in the way it functions. This is explored by looking at how retail can facilitate a sustainable lifestyle through being sustainable in built form but also encourage social sustainability in the Hazelwood area.

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INTRODUCTION

Figure 01 Top: Graphic illustration of the global waste problem and its impact, Drawn by author(2019)

The current global crisis of over-consumption is promoted by retail resulting in waste collecting in landfills and the natural environment. The general consensus is that small steps of change taken by numerous people can change the course of this crisis and lead us to a more sustainable consumption model and positive future.

Background

The Tshwane 2055 plan envisions moving towards a green economy – a system that emulates the natural ecological cycle where all discarded materials become resources for further use. As part of the system, zero waste aims to systematically design waste out of our lives (UNEP, 2016).

In the Pretoria suburb of Hazelwood, the shift in zoning from residential 1 to business/residential is encouraging rapid development, which has left the residential community in a state of limbo between their suburban lifestyle and impending commercialisation.

Problem statement

Over the past three years, the development in Hazelwood has grown at a break-neck pace with retail taking the lead. With interventions such as house adaption to restaurants and also total demolitions, the rapid growth is causing a development that is becoming socially and environmentally unsustainable. giving rise to residents disassociating from their neighbourhood and the facilitation of sustainable endeavours being disregarded (Statssa, 2011).

In spite of that, retail can have a positive impact. If approached through a sustainable lens that encourages social change and community growth towards a green economy (UNEP, 2011).

Figure 02 Right: Graphic illustration of daily barriers we face, trying to reach a sustainable lifestyle, Drawn by author(2019)

Figure 03 Below: Graphic illustration of A possible green economy and sustainable retail, Drawn by author(2019)

Research questions

Theory – What role does retail play in the shift towards a green economy (or a zero waste lifestyle)?

Context – How can a green economy impact the lifestyle of a neighbourhood?

Design – How is experiential retail theory applied to design to create a waste-conscious design in built form?

Technical – Investigating the intergration of upcycled/upcycle-able objects into sustainable technologies to encourage opportunities for zero waste education.

Aim

The overall aim of this study is to investigate how, consumerism can be sustainable, through small changes in the way it functions. This is explored by looking at how retail can facilitate a sustainable lifestyle through being sustainable in built form but also encourage social sustainability in the Hazelwood area.

Theoretical premise

Design – The design research circulated around various topics, in the realm of retail, sustainability and lifestyle. However, the overarching argument was grounded in how experiential retail can be used to strengthen the intention of the interior as a catalyst for change

Technical – The technical research, originates from the drive towards a green economy, and within that a design that is sensitive to the environment, and enriches the manner in which materials are used.

Significance for the discipline

The study aims to investigate how a well designed retail space can inspire lifestyle change towards sustainability in the expected user groups. This is approached by using theory on experiential retail, which is engrained into the design process. The expected outcome is a study that wholesomely comprehends how retail can be sustainable and inspire change in lifestyles

In the discipline of interior architecture, design is often limited to decoration and beautification. With this study it is intended to utilise design as a catalyst to inspire change in the users and not just the space.

Delineations and limitations

Interviews were conducted with the people living in the area, but these were limited and informal; thus, census data is the only reliable source of information on the overall demographics. As an interior architect, brand design is not the authors speciality, and therefore the design was only used as a guide and not a main driving factor of the design.

Conclusion

Through iterative design interventions, it is hoped that the project will create an opportunity for retail to encourage residents to adopt a more sustainable lifestyle see Figure 03.

Methodology

The methodology strategy for this project is a multi faceted approach at answering the research question. various forms of research was used throughout to appropriately deal with different stages in the study.

The methodology can be used as a guideline as to the different parts of the document as each part of the document had a unique strategy.

Part 1 - Theory: Literature review & Unobtrustive qualitative research (statistical data).

The project was initiated through research rather than a selected site. In order to fully comprehend the realm of sustainable retail various literature reviews were consulted, to achieve a strong background for the theoretical component.

Part 2 - Context: Site mapping (visual observation) & literature review.

The contextual study takes the reader further away from theory, and towards the urban design proposal and site selection. Through visual observation and literature reviews a detailed scheme is set out for the urban design.

Part 3 - Site analysis: Unobtrustive qualitative research (statistical data & visual observation) & statement of significance.

The site analysis illustrates the findings gathered from on site investigations and statistical data. This also included the study of the existing buildings, and structures, on site. The part is concluded with a statement of significance and illustrations of the crucial components.

Part 4 - Precedent: Retail coding, influenced by R, Koningk (2015) & literature review

In order to comprehend the current corpus of sustainable retail design, the author looked towards a coding method as used by Koningk (2015) to investigate and extract relevant information from a selection of case studies. This was adapted to suite the direction of this study. Literature support was also consulted to create a relevant coding system. The part was concluded with a more in-depth case study, that aided in informing a more direct solution toward the research question.

Part 5 - Brand design: Influence from precedent, applied

The brand design takes inspiration from part 5 precedent, it attempts to create a graphical language for the brand. That is inspired by the previous chapters and sets strong identity for a retail intervention.

Part 6 - Programme: Literature review.

The program is derives from information from previous parts in the book, however deeper research was needed therefore more literature was consulted to align the outcomes of the program with the initial project intention.

Part 7a - Informants: a Summary of information.

Before initiating the design process it was required to summarise the various theoretical inputs into the study into a selection of informants to aid decision making. The summary takes influence from all the previous parts of the book.

Part 7b - Design: Material matrix investigation & iterative design.

As background to design one last decision making tool was incorporated, a material matrix to comprehend the possible materials. From that point an iterative process was followed for design. The process was to, do a design , detail it, receive comment, do a SWOT anaysis and rework from that point on.

Part 8 - Technical: Online testing tools & GBCSA Rating tool (Iterative process was also used).

Following on from design various iterations were tested. However the crux of this part was to test and finalize the iterations for a final design.

Part 1

THEORY

According to Gaylord Nelson (1970) – politician, environmentalist and founder of Earth Day, "there is a great need for the introduction of new values in our society, where bigger is not necessarily better, where slower can be faster, and where less can be more." Within the discipline of interior architecture, there is ample opportunity for retail to address the way people consume

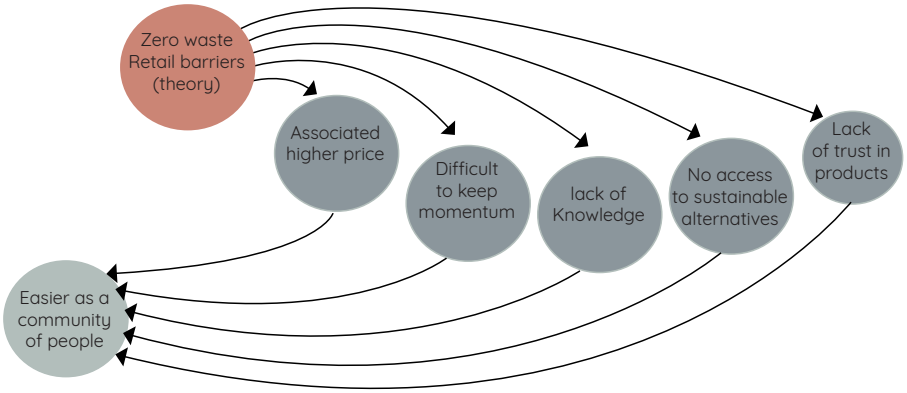
1.1) Background

As a population, we need to move towards a more sustainable lifestyle as unsustainable consumerism is fuelling the degradation of the environment (Partidario, Vicente & Belchior, 2010; Zielke, Wiese & Toporowski, 2015). In their paper, Partidario et al (2010) address the relationships between sustainability, lifestyle and consumption. They conclude that there are two main drivers of unsustainability in our consumerist society, these being the overconsumption of natural resources and the attitude–behaviour gap, which is the disconnect between the intention of consumers that want to be sustainable and their actions (Partidario et al, 2010). Both of these are found to be promoted through the retail industry, and therefore can be controlled and improved through sustainable interventions (Zielke et al 2015).

small changes by multiple people would have a much larger impact

A more sustainable future requires that both of these (over-consumption of our natural resources and the attitude behaviour gap) are addressed throughout all spheres of society. While this is a grand dream, it must be acknowledged that simple changes cannot turn the crisis around, but the adoption of small changes by numerous people would have a much larger impact. The following literature revolves around the problems and possible solutions to the consumption crisis. It must, however, be noted that this study is within the scope of interior architecture and sustainability design, approached through the lens of consumerism. This approach is taken in order to fully understand the motivations of the retailers, and in turn formulate a better understanding of sustainable consumerism in a retail store. The first question addresses the root of the problem: Why do we consume?

Figure 04 Below: Diagram illustrating the barriers we experience.



1.2) [Un]sustain-ability in retail

Goodwin et al (2008) states that the main driver of production is consumption, and we consume to fulfil our needs and wants, and to uphold our lifestyle. The problem, however, lies in the fact that what we need and want differs from person to person. Although we would like to believe that our intentions are pure and simple, that we are sovereign consumers, we are not. Humans are constantly being influenced by numerous inputs. These include our family members and communities, as well as external institutions and corporations, all of which influence what we need and want (Goodwin et al, 2008).

That brings us to lifestyle: one's pattern of consumption is relative to one's circumstances (Goodwin et al, 2008). People tend to compare upwards and strive to achieve what others have. Big corporations use this in their marketing strategies. "Keeping up with the Joneses" is a large driver for consumption. They encourage it because consumption drives the economic market. The economy requires people to buy more and more, to change what they like, their way of life, and to use up products so that they can buy more. This cycle repeats for as long as people buy new things to "improve their lifestyle" (Goodwin et al, 2008).

Much has been written on the barriers to living sustainably and making the change to a sustainable lifestyle. Data suggest that people want to care for the environment and change their consumerist ways for the better (Gleim, Smith, Andrews & Cronin, 2013; Partidario et al, 2010). People recognise that there is a global crisis that needs human intervention, but when push comes to shove, what they say and what their actions are do not seem to align (Gleim et al., 2013; Partidario et al, 2010).

The overall message comes down to five elements that act as barriers to becoming more sustainable:

- Lack of awareness: Users are not made aware that greener, more sustainable products available, and therefore do not buy them.
- Low availability: Even when a shopper is aware of certain green products, they tend to be difficult to find.
- High price: Low production and interest lead to these products being perceived as "luxury" items sold at "elite" prices (Bonini & Oppenheim, 2008).
- Poor perceived quality: Unfortunately, green products have received a bad reputation for performing poorly compared to standard products (Gleim et al., 2013; Bonini & Oppenheim, 2008).
- Distrust in green claims: Shoppers often do not understand enough to know what they are being sold, and whether it truly is green or just a marketing scheme (Gleim et al, 2013; Bonini & Oppenheim, 2008).

These are only some of the most notable points that must be dealt with to improve the likelihood of people buying into a sustainable lifestyle. If these barriers are not removed, the green consumer market is fighting an uphill battle. Consumers are constantly encouraged online and in the news to "take responsibility for their actions", but they cannot be held responsible for "bad" products or the fact that green alternatives are not available or unaffordable (Steg & Vlek, 2009).

The drivers of a more sustainable lifestyle can start with the manufacturer and retailer providing consumers better access to and knowledge of green alternatives. By changing the ways of the retailer, you can impact dozens of people and help them become more sustainable (Zielke et al, 2015). Small steps a retailer can take to facilitate a greener consumer include introducing and marketing green products better, and hosting informational workshops on how to be more sustainable. It was noted in various studies that one of the steps towards overcoming the sustainability issue is to inform consumers and have them engage with each other as a green community, as overcoming the green barriers is much easier when it is done

with a group of like-minded people , see Figure 04 (Axon, 2017; Bonini & Oppenheim, 2008). Lehner (2015) suggests that retail has a unique opportunity in the drive towards a more sustainable future. In order for consumers to engage in sustainable decisions, the retailer could become the encompassing facilitator.

1.3) Sustainability in retail

It is noted that when people make the change to a sustainable lifestyle, they are often faced with the abovementioned barriers, and although having access to the right products and doing it with a community makes it easier (Axon, 2017; Bonini & Oppenheim, 2008), changing to a lifestyle different from the people around you is difficult. The fact is that people want to fit in, and therefore tend to adopt the habits of those around them – good or bad. Furthermore, it can be very demotivating to see large corporations or businesses not doing their part, as this is perceived as negating your efforts (Axon, 2017). Living a sustainable lifestyle is not easy; it needs facilitation and the right environment. The right environment can foster a trend that drives more people to be better (Lehner, 2015).

The first and possibly the simplest approach to sustainability is merely selling sustainable products. This would help overcome two of the barriers highlighted earlier, viz. accessibility and awareness. The second is promoting green products. The retailer makes a conscious decision to promote, sell and inform clients about green products, focusing on selling products that communicate sustainability and

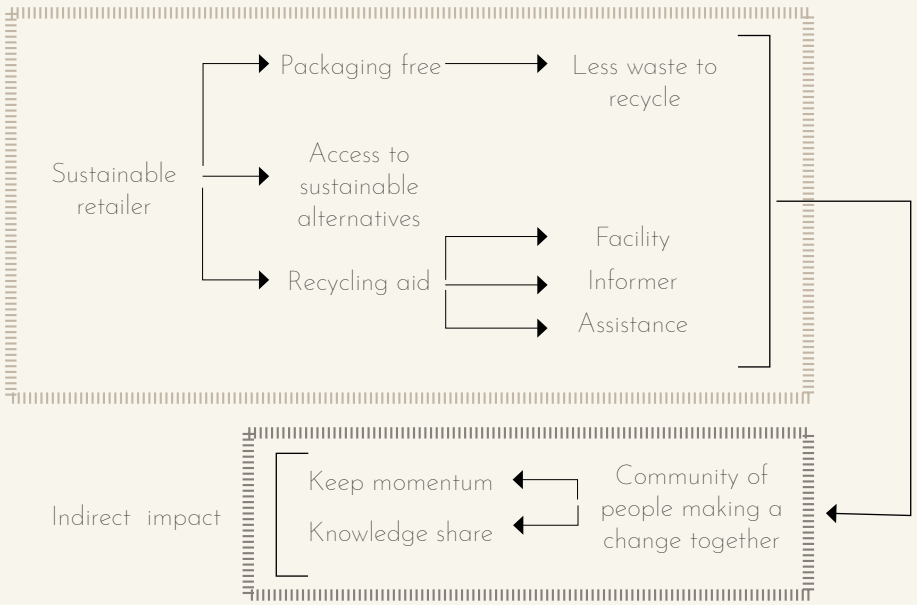
Figure 05 Below: Diagram illustrating The hierarchy of sustainable food retailers (REF)

creating a brand that speaks about something important (Kumar, 2014). The last approach is designing green, which takes a sustainable ethos to the next level, where the retailer takes a stance on sustainability that informs its brand and design. By building a green interior, the retailer is not just selling better products, but showing the clients that it cares about more than just taking their money (Kumar, 2014).

This brings us to the next major point: If the retailer has taken the abovementioned steps towards being more sustainable, why would this change the attitude-behaviour gap? Lehner (2015) suggests that changing to a sustainable lifestyle, which is what is needed in order to close this gap, is not just about having the right products or the right message. The retailer must still work hard to sell the idea. Just as big corporations "convince" people to consume more, sustainable retailers should "persuade" people to consume correctly, i.e. to buy into their ideal lifestyle of sustainable retail that feeds into a green economy and considers the resources of the next generation (Lehner, 2015; Staniškis 2012)

Figure 05 above illustrates the current understanding of sustainable food retailers, The hierarchy is of key importance to the understanding in order to place the type of sustainable retail that this project is dealing with. It must be understood that the project does not aim to recreate a typical green grocer or a supermarket, but as noted in the diagram it aims to work with a lesser known branch of retailer known as bulk food stores.

Figure 06 Right: Sustainable retails possible impact



1.4) Sustainable lifestyle

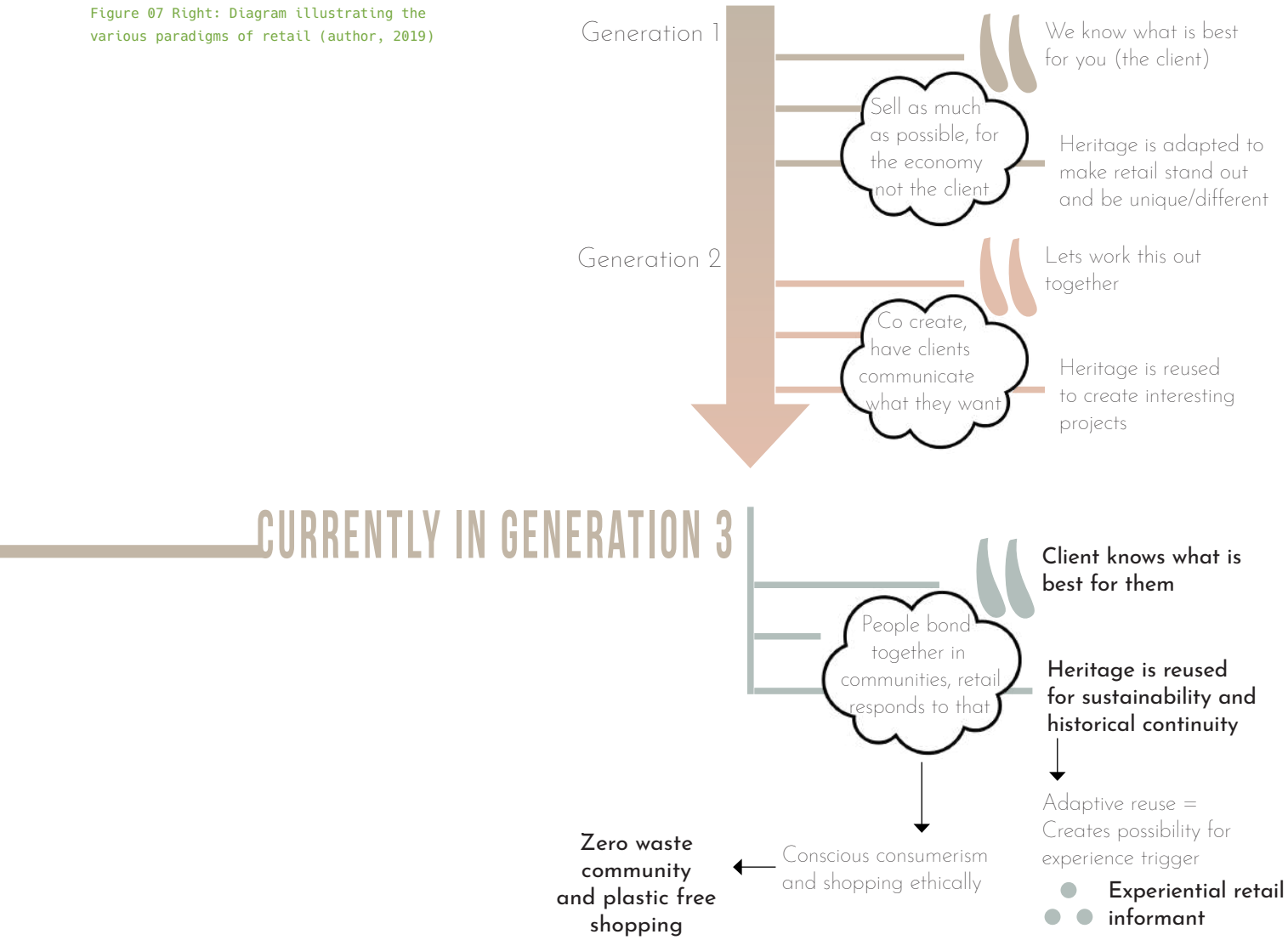
Buying into a sustainable lifestyle is not for the faint of heart, especially in the current retail market (Strumpman, 2016). In the bigger picture of sustainable retail, retailers are not the only problem, and they do not have all the control. In order to be successful, they need to satisfy the needs of consumers (Lehner, 2015). This is why, as Strumpman (2016) notes, looking into the lifestyle of sustainable consumerism is important. Clients do not buy into sustainability, they buy into the product and the brand vision. Retail brands are gatekeepers between producers and consumers (Zielke et al, 2015); therefore, selling sustainability is not just a small change in the way goods are packaged, it is part of the intrinsic structure of the brand ethos, as discussed earlier. Referring back to part 1.2, one of the barriers to sustainability is that consumers are unwilling to pay higher prices for sustainable products. Therefore, the approach of a green economy becomes more prominent, as driving the need for sustainability up would cause the prices to go down. Sustainable retail can also impact other spheres of the economy, such as the social and political spheres. A green economy aims to produce food and resources for everyone. This can be done if we use our resources more effectively, as suggested by the United Nations Environment Programme (2016).

It should be clarified that sustainable living is affordable and attainable, and a retail typology that is transparent and clear about its intentions is able to educate and inform users of this (Lehner 2015). The retail brand does not only influence how the retailer carries and promotes itself, but it also has a major psychological impact on the consumers who buy there (Steg & Vlek 2009). The retail brand and product create trust between the retailer and the consumers, which increases their willingness to have an ongoing relationship with the brand see Figure 06 (Kumar, 2014).

In order for us to move towards a green economy we must make the lifestyle changes necessary. A buy in into sustainable retail is required. For that to happen retail has the opportunity to enable people to make the change.

"It should be made clear that sustainable living is affordable... a well-designed brand/space is able to educate and inform users of this"

Figure 07 Right: Diagram illustrating the various paradigms of retail (author, 2019)



1.5) The third generation of retail

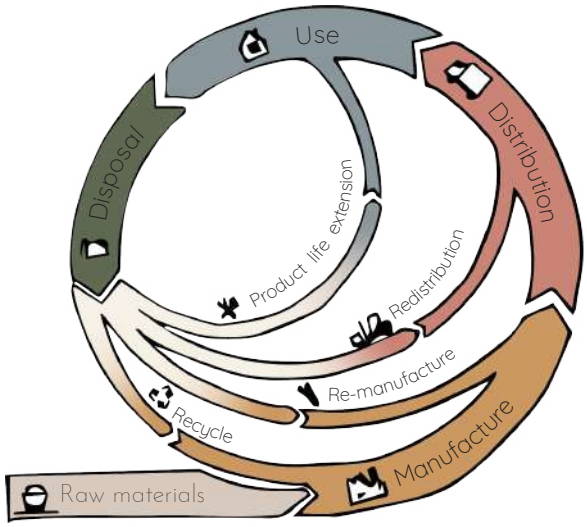
A study by Petermans, Plevoets and Van Cleempoel (2015) discusses the changes that have happened in the retail design paradigm. Retail is considered a changing and adaptive topic that can be widely argued in various ways. An interesting argument that the authors put forward concerns the connection between retail design and the retail intention, and the impact of adaptive re-use on this. They highlight three distinct paradigms, the first and second of which concern consumerism. The first focuses on the product and what the retailer can offer; the second looks into what the client might be interested in. Both of these also use heritage buildings and sites for their own gain to create quirky, interesting spaces (Petermans et al., 2015). As summarised in Figure 07.

However, in the third and current generation of retail, the focus has completely shifted. Retail is no longer about the products; it is more for the people. In light of this, retail is no longer formed because there is a new and exciting product, but because there is a large community that is in need of a certain product. The use of existing buildings is also encouraged from the argument of sustainability and using what we have rather than the drive to be unique. The adaptive re-use of buildings is also encouraged for historical continuity and as an experiential device (Petermans et al., 2015). Experiential retail will be discussed later, in part 6.2.

Petermans et al., (2015) writing is included in the argument for a sustainable retailer as there is a need for retailers in sustainable/zero waste communities to face the role they play in waste creation and to mitigate their impact in this regard.

Figure 08 Right: Diagram illustrating How a zero waste cycle works, Drawing by author(2019) adapted from circular economy diagrams

Figure 09 Below: Diagram illustrating The waste flow of SA in 2011 (Statistics South Africa, 2018)



1.6) What is zero waste?

The concept of zero waste originates from the drive towards a green economy, a circular system that aims to emulate the ecological cycle, where all discarded materials become resources for other use. It is a process that systematically designs waste out of our lives, in order to improve the environmental quality for all living things and systems (CSIR, 2014). Figure 08 illustrates how such a system functions.

The main goal is to divert as much waste away from landfill as possible. It should be seen as a journey towards a more sustainable future rather than a target, and at this point any system that is diverting 90% of its waste is seen as a success. It should be noted that there are six concepts that embody zero waste (CSIR, 2014):

Rethink> Refuse> Reduce> Re-use> Recover/Repair> Recycle> Landfill.

South Africa is affected by the global problem of waste, and it needs to be dealt with at various levels. Figure 09 illustrates the recyclable waste in South Africa compared to the eventual recycled content (Statistics South Africa, 2018). In 2008 a national regulation was proposed urging that waste sorting be done at the household level, but it was never implemented (South Africa, 2008).

The majority of the waste in our homes and surrounds is from product packaging. This could be solved at a design level within a retail brand by reducing packaging. This could reduce the need to recycle and improve the circularity of our system.

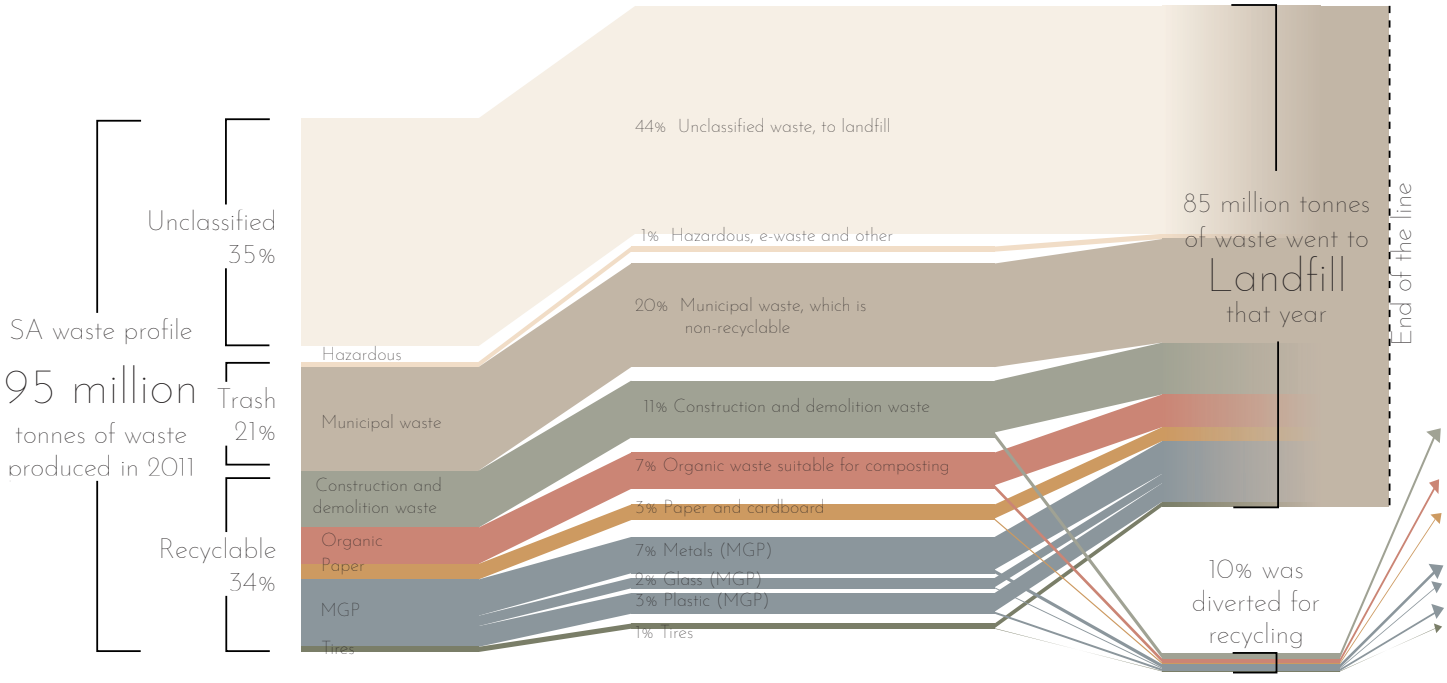
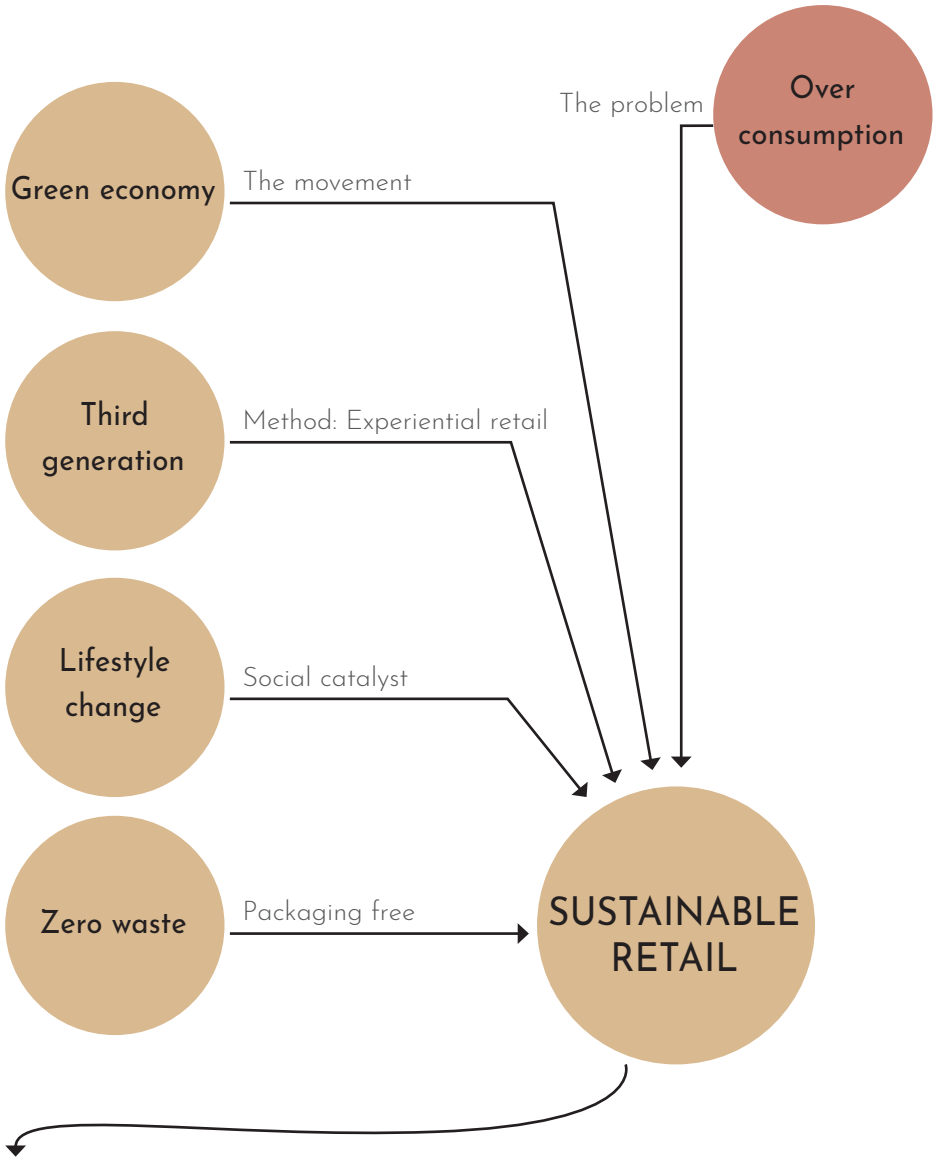


Figure 10 Below: Sustainable retail summative diagram(Author, 2019)



1.7) Retail strategy

As a conclusion to this part a stance is taken to ground the theory. As each topic has thus far dealt with very specific elements of sustainability Figure 10 graphically brings the information together as a summative diagram.

This project intends to further investigate the delicate balance between consumption, retail and lifestyle, and attempt to create a wholesome space that caters for all three. The overall intent is to design a retail space that becomes a social catalyst, that allowes for a green movement to spread through the assistance of a sustainable retailer.

The project is not about zero waste in its totality, as the identified problem does not just lie with building methods and design but rather as identified in part 1.1, a social problem. At this point in the study it was decided that the project will focus on the social aspect as a driver for sustainable habits. As noted in part 1.2, it suggests change is not just brought about by one single solution such as supplying a recycling hub.

The problem is much larger than that. Therefore a different approach was taken to solve it.

Providing for a lifestyle in which a consumer chooses to reduce (prevent) waste from their personal lives.

The crux of this part comes down to, what does a retailer entail that enables it to become a catalyst to change habits towards sustainable habits.

- A retailer that acknowledges that retail is a driver of overconsumption, and does not encourage it (1.2).
- A retailer that takes responsibility in its design and product to reduce their impact (waste, environmental, overconsumption)(1.3)
- A retailer that uses their power for good and persuades clients to become better. Through providing them with access to sustainable alternatives and educating them (1.4).

It is also important that awareness is created on the topic around a zero waste lifestyle, as it is an achievable target with the correct means. And a retailer has the ability to supply these means.

Part 2

CONTEXT

The site was selected using a step-by-step approach, seeing as the theoretical argument for this project was the first step in this dissertation. The selected suburb is a case study site. It serves as an example of the type of area where a store that facilitates zero waste could succeed.

Figure 11 Top: Map of Pretoria(east), (Google earth, 2019)

2.1) Where is the case study site located?

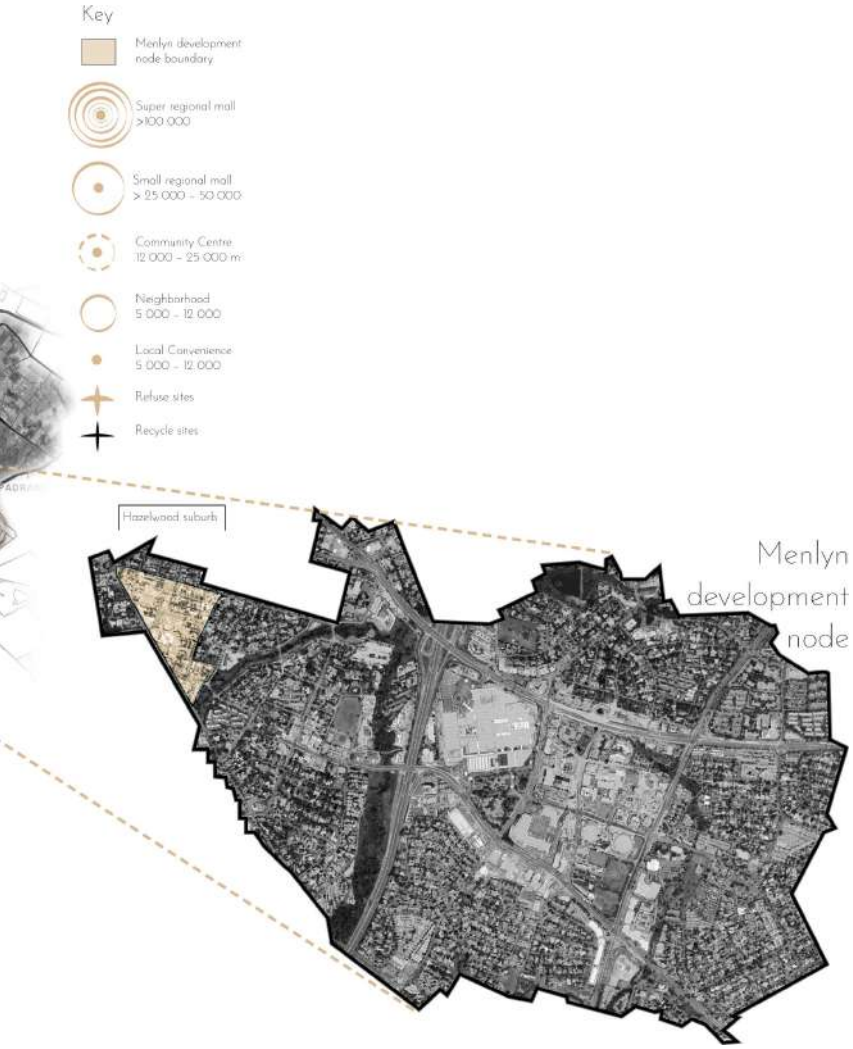
In the broader Pretoria east area, there is a prominent retail strip that spreads from east to west. At the centre of this is the Menlyn retail node, one of the largest retail developments in Pretoria. Initially Menlyn was a super-regional mall surrounded by residential neighbourhoods, but in 2010 the development of South Africa's first green city, Menlyn Maine, was initiated after demolition of the existing neighbourhood (Grootboom, 2019). Development has continued towards the edges of Menlyn, with Hazelwood being the next neighbourhood to be re-imagined by the Atterbury Development Group, without regard for the neighbourhood identity of the area, see Figure 11 (Atterbury Property Holdings, 2018).

2.2) Why Hazelwood?

The specific reasoning for selecting Hazelwood is listed below, Hazelwood was selected as a case study site due to its current condition. As mentioned in problem statement of this study, Hazelwood is undergoing changes from a residential community towards a more business driven area, which is causing the residents to disassociate from their suburb. This type of scheme could be implemented in other neighbourhoods undergoing similar stresses. Note that these considerations only apply to the neighbourhood selection and that the site was selected following a different investigation method set out in part 2.4.

- Active economy: Retail cannot survive in an area where there is no economic activity. In order for the lifestyle to grow and flourish, a sustainable retailer must be in an area known for economic activity.

- Well-defined neighbourhood (strong boundaries): An existing community



is a strong starting point from which a movement can gain momentum. The large roads surrounding Hazelwood create a boundary within which people often walk around and interact with each other (site observation and mapping exercises).

- Middle-to-upper-class residents/ users: This consideration is taken owing to the current barriers to a sustainable lifestyle. Currently this class of users is the largest generator of waste (Roberts 2017); therefore, this retailer will have the largest impact by catering to them. Sustainable living is also seen as a commodity; only after the newness of it fades do consumers notice that it is in fact more affordable than a general lifestyle (Gleim et al, 2013; Axon, 2017). Therefore, the consideration is taken that in order to start a movement like this one must start with the people who believe they can afford it.

- Trendy area (hip and happening): In SA sustainable retail is currently seen as a trend and not a necessity. A trendy area would be ideal to drive this sort of intervention as it builds on the newness of this form of retail, rather than its reliability. The newness and trendiness gives it a "cool" effect, which entices people to explore further, rather than just passing by. A sustainable retailer needs a trendy atmosphere to make waves in a neighbourhood (Strumpman, 2016).

- Destination (attracts people): A sustainable retailer needs a popular area with high traffic (the destination effect). If there is no reason for people to go there, the reach of a sustainable retailer is reduced to only the surrounding community. A trendy retailer needs a trendy area, which is only the case if there is already some reason to go there. It is a symbiotic relationship between neighbourhood and retailer that would aid a retailer of this nature (Strumpman, 2016; Petermans et al., 2015).

- Possible community: As stated before, community is key to the growth of a lifestyle movement. In this context, two types of community are needed. The first is a nearby community of people, those living around the selected retail location who will keep it alive from day to day (Axon, 2017). The second is a larger community, such as those currently forming online, which is what is expected for the third generation of retail, explained in part 1.5 (Petermans et al., 2015).

2.3) Conclusion

After these considerations were taken into account Hazelwood was confirmed to be the ideal location for this intervention as it meets all of the above considerations. The next step was to find a site in this neighbourhood that would be suitable.

2.4) The project site

The search for a site began with a drive through the neighbourhood to identify the different types of area, looking at the economic activity and footfall. The intention was also to find abandoned/dilapidated buildings that would be suitable for a retail intervention. There are two reasons why the search for an unused building was initiated:

1. As this is an interior architecture project, it would be ideal to have a real site to work on rather than having to conjure up an imaginary intervention.
2. It is known that the most sustainable projects are often those that make use of existing buildings; adaptive re-use is sustainable (Petermans et al., 2015).

On this drive, multiple open sites were discovered throughout the neighbourhood, often with the bones of houses still scattered around; however, only two possible retail locations were identified see Figure 12. **The first was at 13 Firwood Road. It lies hidden behind two successful restaurants and is fronted by stacked containers, which act as a beacon of interest. Through deeper investigation, it was brought to light that the small building is a heritage building (undocumented) see Figure 13.** This strengthened the argument for this to be the site of the intervention. Petermans et al (2015) states that heritage sites are often chosen for their interest factor. The added heritage aspect gives the retailer a unique opportunity to respond to the building in a special way, which adds to the retail experience as expected by the third generation of shoppers.

The second site for consideration was at 31 Dely Road. a constellation of six shipping containers are scattered around the site in a (failed) attempt to connect various small retailers see Figure 14. This site lies on the edge of the main road and allows for very little interaction with the inner community or the trendy retail areas created by the club or the village. Another disadvantage was that the shipping container structure is limited in terms of architectural form and mass. Therefore, this site was not selected.

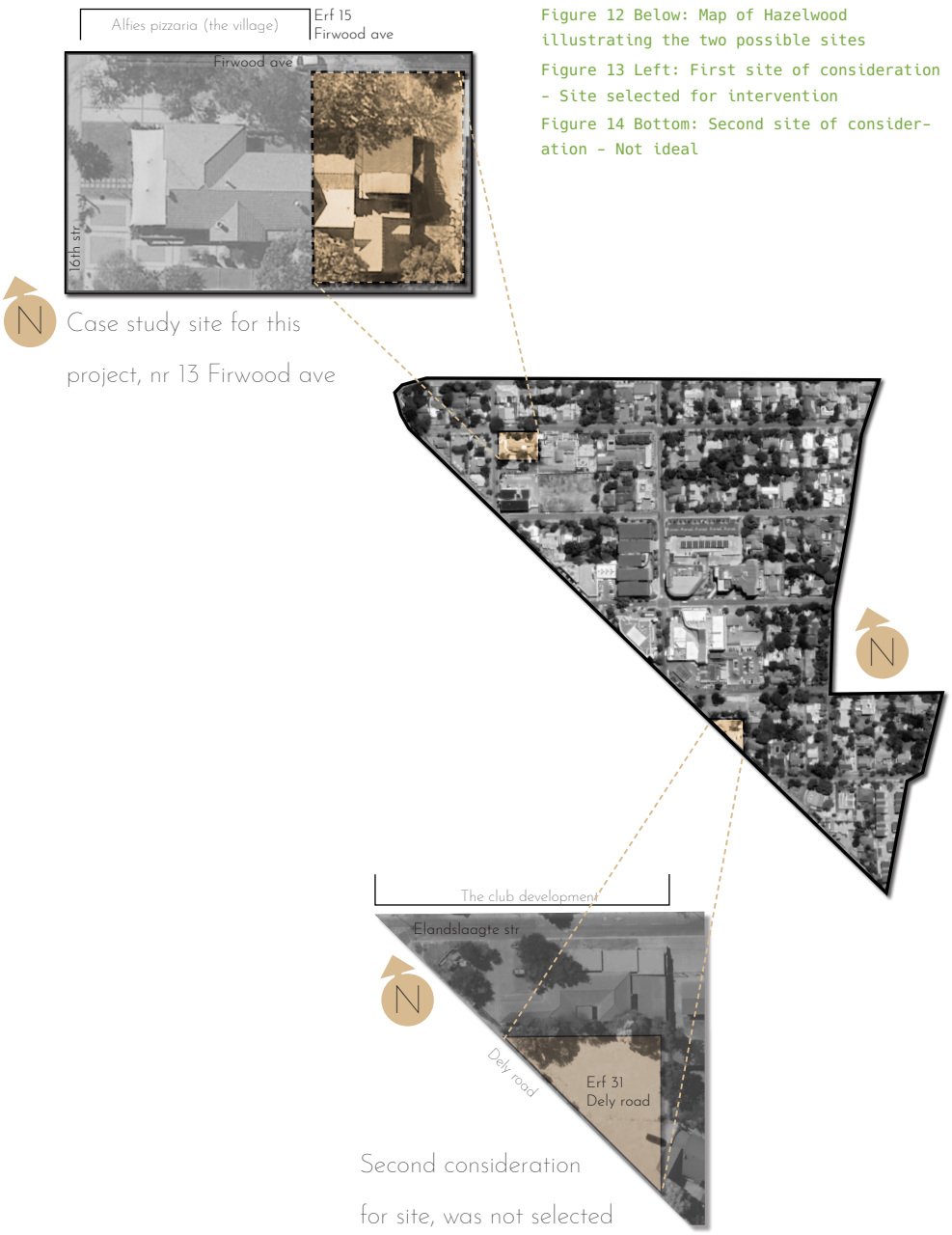


Figure 12 Below: Map of Hazelwood illustrating the two possible sites

Figure 13 Left: First site of consideration - Site selected for intervention

Figure 14 Bottom: Second site of consideration - Not ideal

Figure 16 Above: Graphic illustrating Suburban acupuncture plan and its rippling effect (Author, 2019)

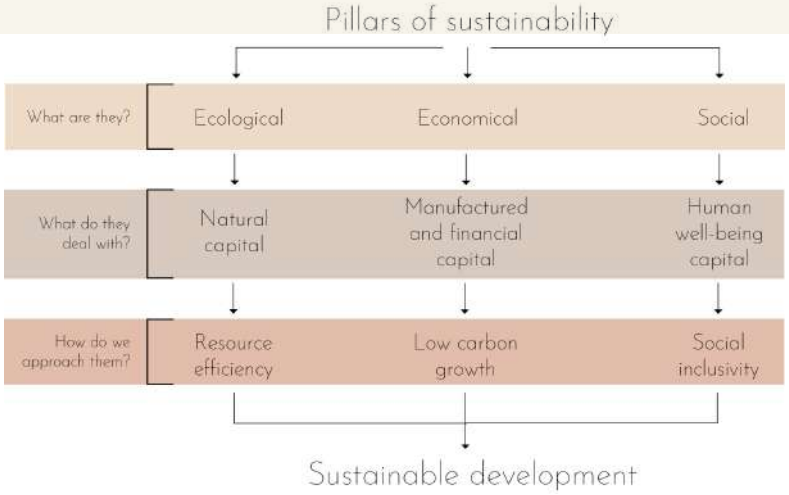


Figure 15 Right: Graphic visualizing the pillars of sustainability (UNEP 2016)

2.5) [Sub]urban acupuncture

In line with the United Nations Environmental Plan (UNEP, 2016) to move towards a green economy, the concept of urban acupuncture is used to transform the neighbourhood of Hazelwood in a sustainable manner. The premise of urban acupuncture is to create small points of interest throughout a large area, with the intention that their activity ripple outwards see Figure 16. Where multiple acupuncture points overlap, it creates a new point ready for acupuncture. This process can be used to re-awaken a whole area, bit by bit (Lerner, 2016). A change from the well-known economic model that promotes the use of scarce resources, waste and inequality, a green economic model aims to improve well-being and build social equality, while having a much smaller impact on our natural environment. A green economy builds on the three pillars of sustainability, which act as a process by which it can be achieved in our contemporary society see Figure 15 (UNEP, 2016). As noted earlier, development of the Menlyn node is creeping into the Hazelwood neighbourhood. Urbanization puts a strain on the natural environment, if not done in a controlled manner. Therefore, the adoption of a green economic model would be a large step towards a better future, as noted in this quote from UNEP's green economy report (2016):

"Resource efficient cities combine greater productivity and innovation with lower costs and reduced environmental impacts, while providing increased opportunities for consumer choices and sustainable lifestyles" (UNEP, 2016).

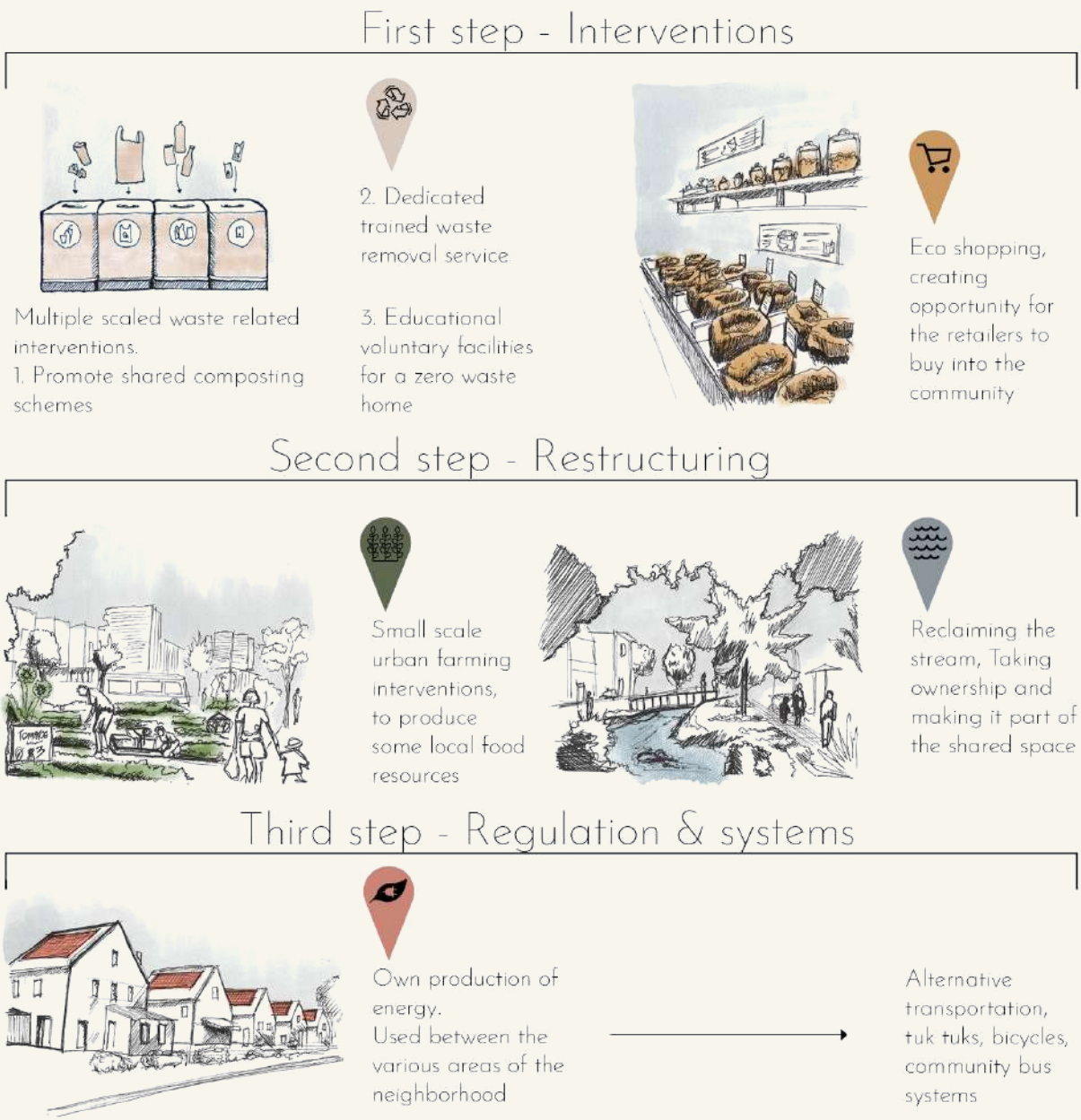


Figure 17 Above: Graphic illustrating the acupuncture steps to be taken towards a green suburb (Author, 2019)

Figure 18 Right: Graphic illustrating graphical summary of the authors design thinking at this point in the study (Author, 2019)

2.6) Urban design principles

The intention of urban design principles is for the actions to be phased, from small interventions by a neighbourhood to larger regulatory changes. It is foreseen that in order to adopt a green economy, steps must be taken slowly. The Tshwane 2055 development plan identified that the city is moving towards a green economy model, which includes plans for a zero waste neighbourhood.

The concept of urban acupuncture is used as it would aid the growth of a lifestyle. The reference to [sub]urban acupuncture relates to the smaller scale of intervention into the Hazelwood suburb alone. The concept of acupuncture means that small-scale interventions in prime locations throughout an area will grow and spread towards each other, and sites where the ripples of the interventions interact become additional points of intervention (Casagrande, 2016). That is the plan for sustainable development throughout Hazelwood, as illustrated in figure 16

Therefore, the urban development plan in which the project is situated is laid out in the steps set out in the graphic above, Figure 17.

A FOCUS ON SOCIAL GATHERING

From the urban analyses it is concluded that social gathering is required in order to strengthen the community, a place for the community to get together, and grow together

Community zero waste hub

Retail as a community gathering space, a place for the children and informational workshops. A retail space that can adapt and change to allow the community to use it for their needs. A space focused on the sustainability of the community

Pre-graphic conceptual sketch

Part 3

SITE ANALYSIS

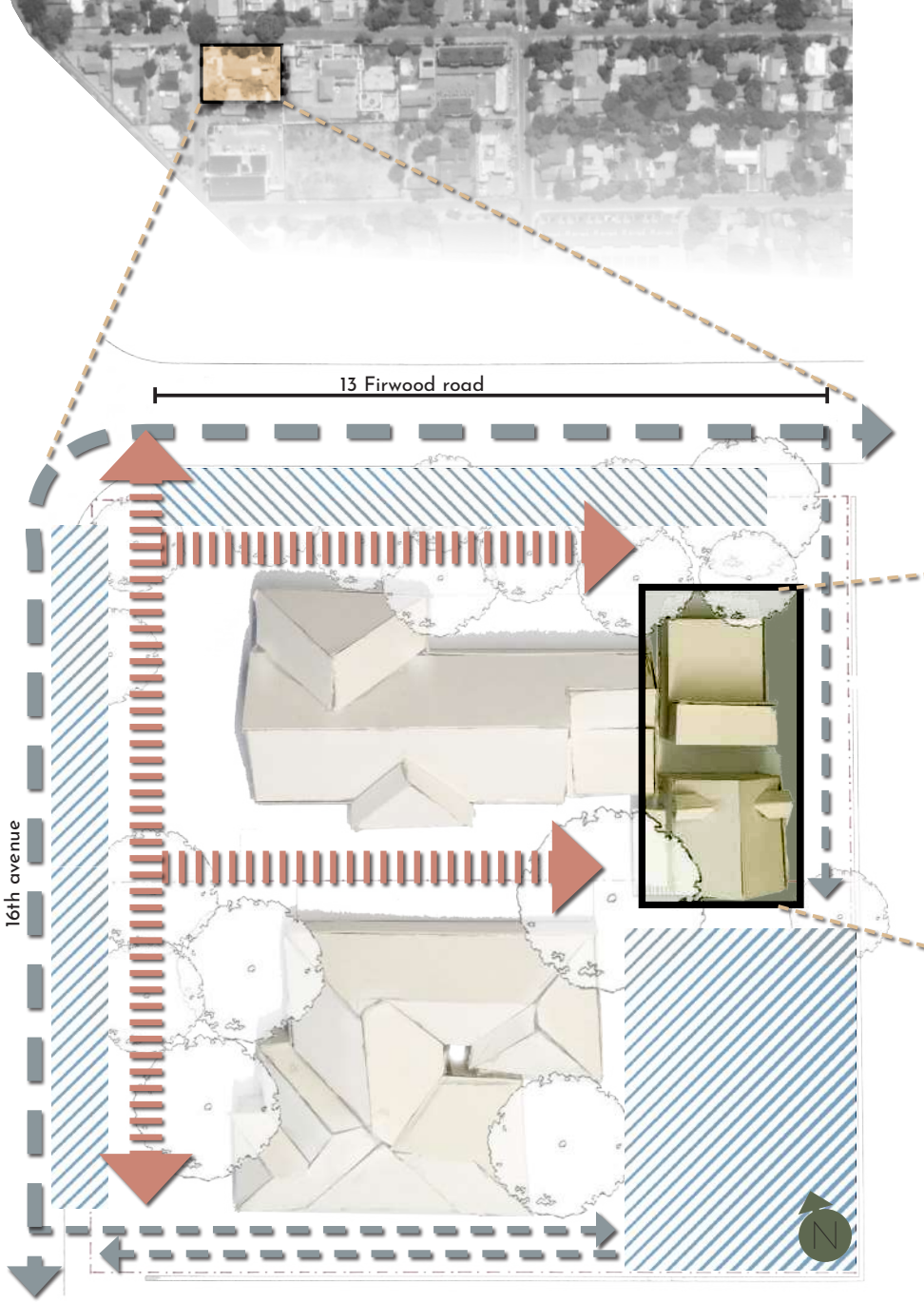
Expanding on the existing site is crucial owing to the strong connection the site has to the theoretical argument discussed in part 2: Context.

3.1) General information

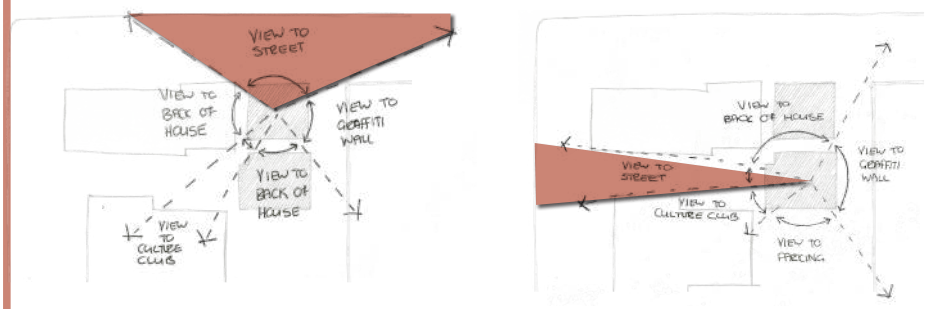
However, the site has various problems. The views towards it are few and the heritage building is not visible (Figure 19). Access to the site is also limited by the poor placement of a newer shipping container constellation (Figure 20). These factors make the existing building a bad space for retail (its current function). The site is also located on the edge of the activity in the street, so, not being activated, it is becoming neglected and lost in an otherwise very active and vibrant area (Figure 22, Figure 23).

3.2) Solar study

Solar study is required to visualize the amount of sunlight available on site. This will indicate the ideal position for solar solutions as well as a retail-specific roof garden (Figure 24).



Views to and from site

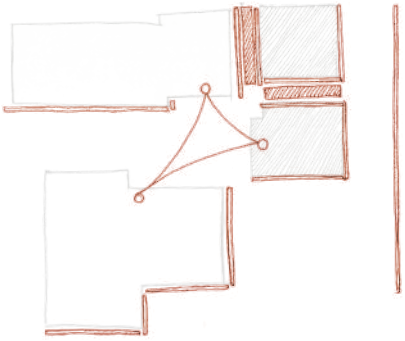


Containers block view towards "heritage building"
Not enough view towards whole site, front face is blocked by a tree

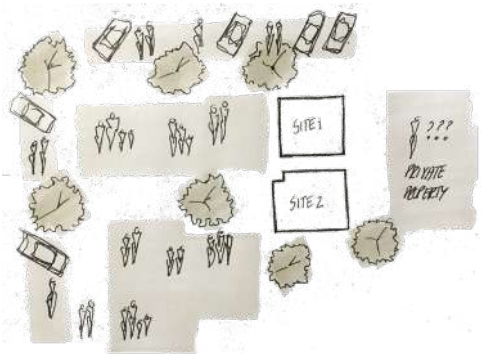
Figure 19 Bottom Left: Views to and from site (author,2019)

Figure 20 Top Left: Site movement graphic (author,2019)

Figure 21 Below: Close up of selected site



boundaries, preventing access to the site

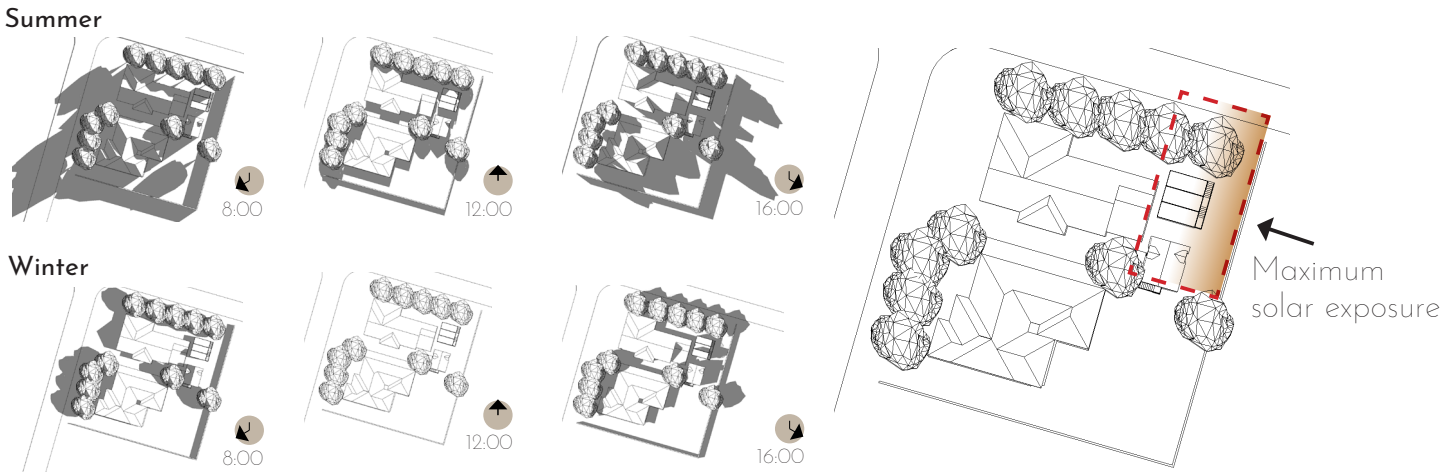


Spatial dynamic and use, High concentration of people with wide demographic variety

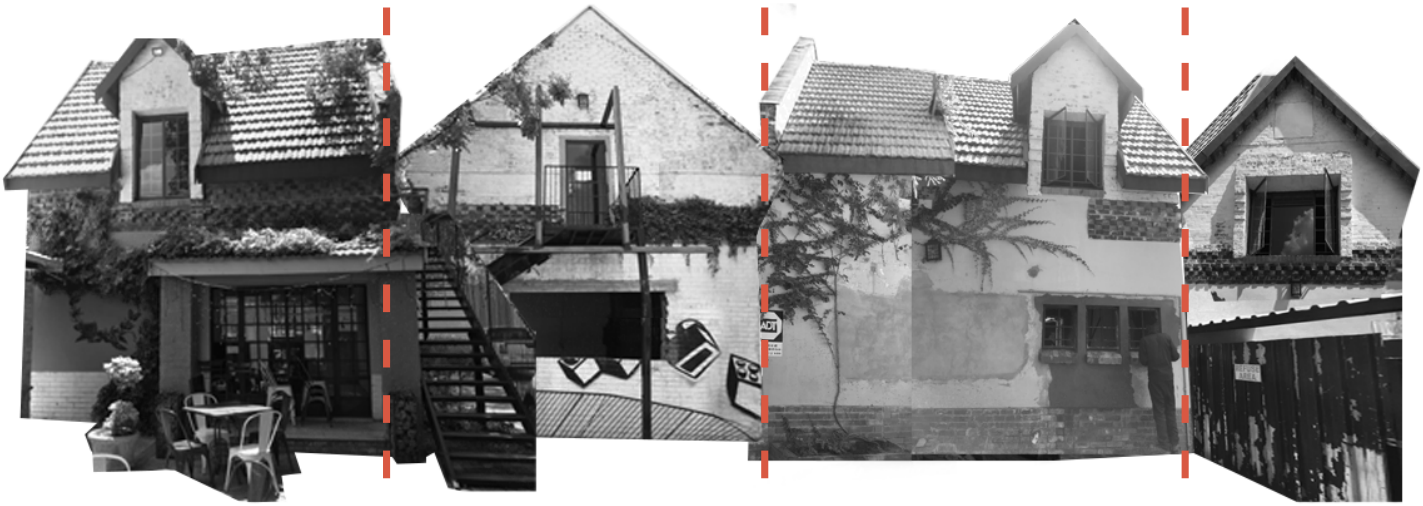
Figure 22 Top: Boundaries around site (author, 2019)

Figure 23 Above: Spatial dynamic and use (author, 2019)

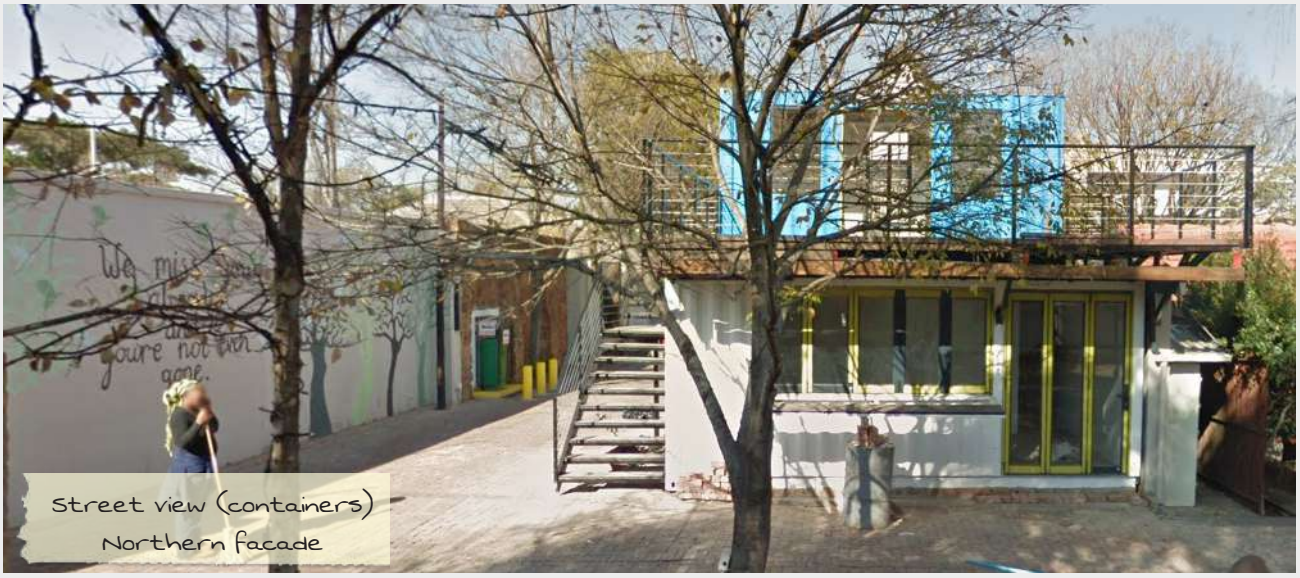
Figure 24 Below: Solar study diagrams (author, 2019)



SITE PHOTOS



West facade South facade East facade North facade



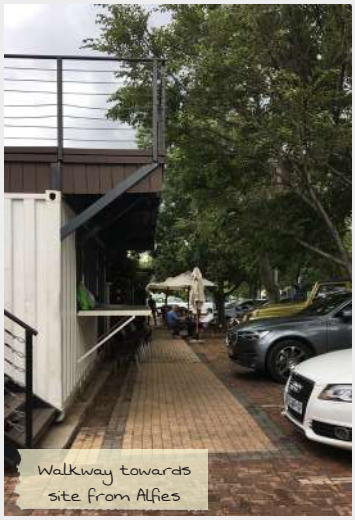
Street view (containers)
Northern facade

Figure 25 Top: Graphic illustrating all four sides of the existing building (photos, and graphic done by author, 2019)

Figure 26 Below: Google street view image of the front facade (Google street view, 2019)

Figure 27 Right: All images taken by the author (2019)

View to parking, eastern facade



Walkway towards site from Alfies

Eastern facade, driveway

House brick detailing

House ground floor, timber floor above

House first floor, scissor trusses

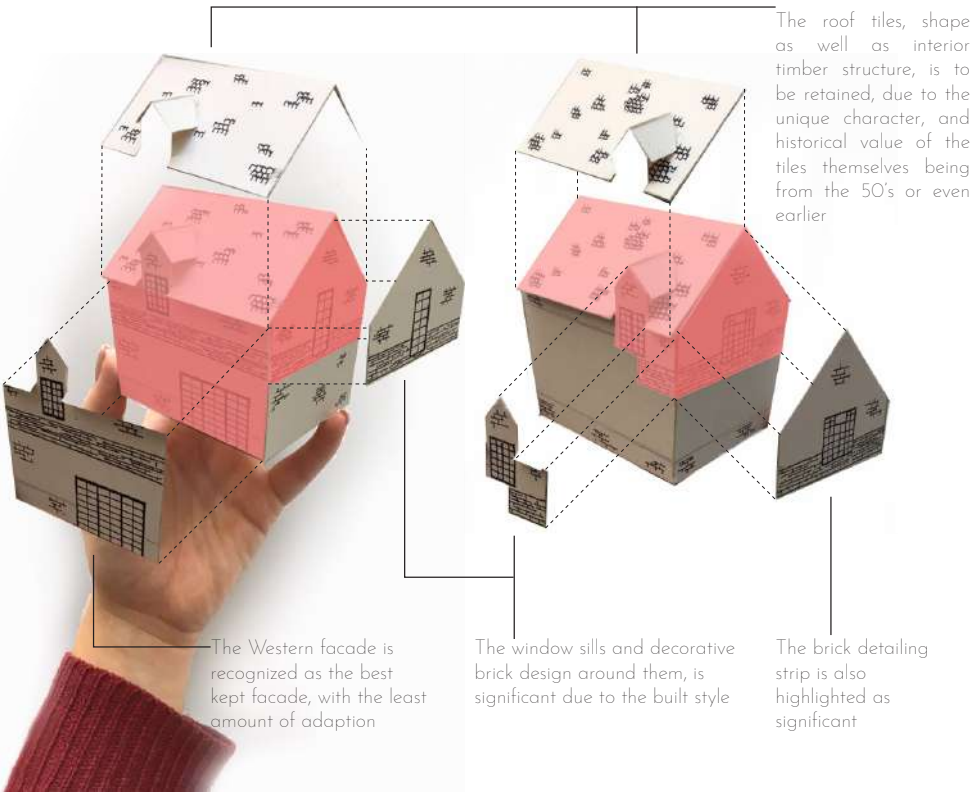
Figure 28 Below: Diagrammatic building model (author, 2019)
Figure 29 Right: Entire site axonometric (author, 2019)
Figure 30 Bottom right: Extruded axonometric of old house (author, 2019)

3.3) Heritage

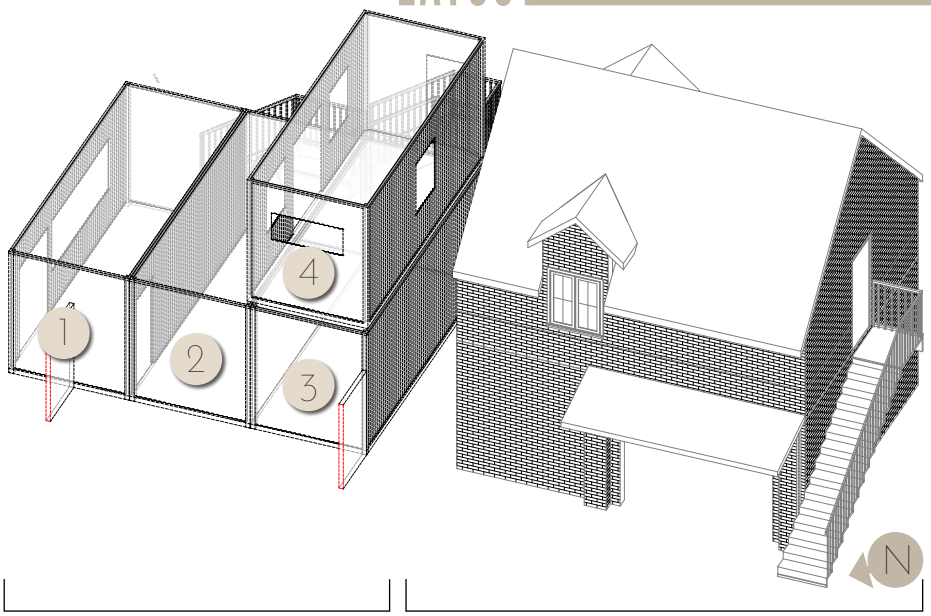
The building on the site is not listed as a heritage site; but there are some significant features. The unique brickwork is not traditional in South Africa, and the roof tiles are the same as those used in the Klubsaal on the University of Pretoria's Hatfield Campus, which was completed in the 1930s. The heritage aspect informs the design response to the site, in order to respect the existing building.

The building has undergone numerous adaptations, transformations and demolitions; therefore, a detailed investigation was done to identify its various elements and decide what should be kept and what can be adapted. Figure 28 illustrates the findings. Some specific elements were identified for the unique characteristics they add to the building. The following elements will be retained/remembered/re-used to emphasize some of the undocumented heritage value:

- Solid hardwood roof trusses: Interior roof trusses, redone within the last 20 years, presumed oregan pine, in a scissor style that is not often seen
- Brick detailing: Intriguing brick patterns on the facade of the building, similar to textures used around window frames and on the exterior gable
- Old roof tiles: The same as ones on a protected building down the road as well as on numerous Gerhard Moerdijk buildings built between 1919 and 1936



EXISTING SITE LAYOUT



4 cut shipping containers, not insulated

Building built near 1930's with various modifications

BUILDING ASSEMBLY

Clay tile roof, carried by the Oregon pine trusses and structural walls

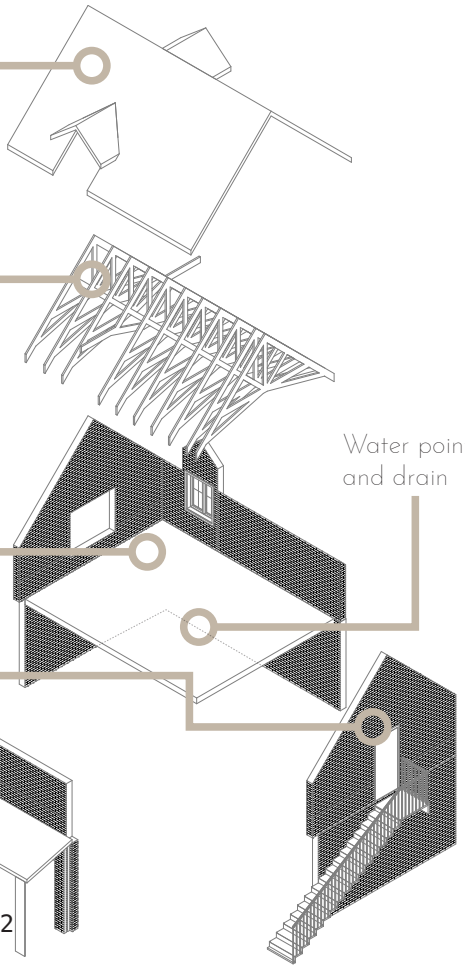
Intricate Oregon pine **scissor roof trusses**

Oregon pine timber floor,beams built into walls, **full floor was not constructed at the same time**

Entrance door to above level, **built** within the **last 10 years**

Western facade, only facade kept in its **original aesthetic**

Water point and drain



ENVELOPE AS INFORMANT

Graphic visualizing interior concept through bringing the different significant and site elements together as unique ways of adaption and re-use

Historic hub

A space where people can go to connect to the past of the neighbourhood, a homely landscape filled with well knows trinkets from their homes. A warm and inviting interior space

Pre-graphic conceptual sketch

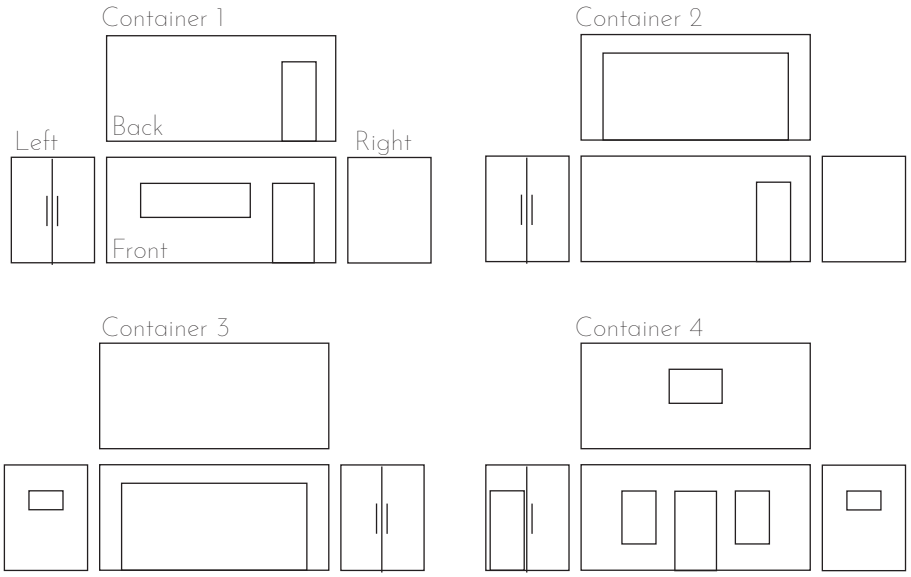


Figure 31 Above: Shipping container diagram, visualizing the various cut outs (author, 2019)

Figure 32 Bottom right: sustainable tool implementation guide (author, 2019)

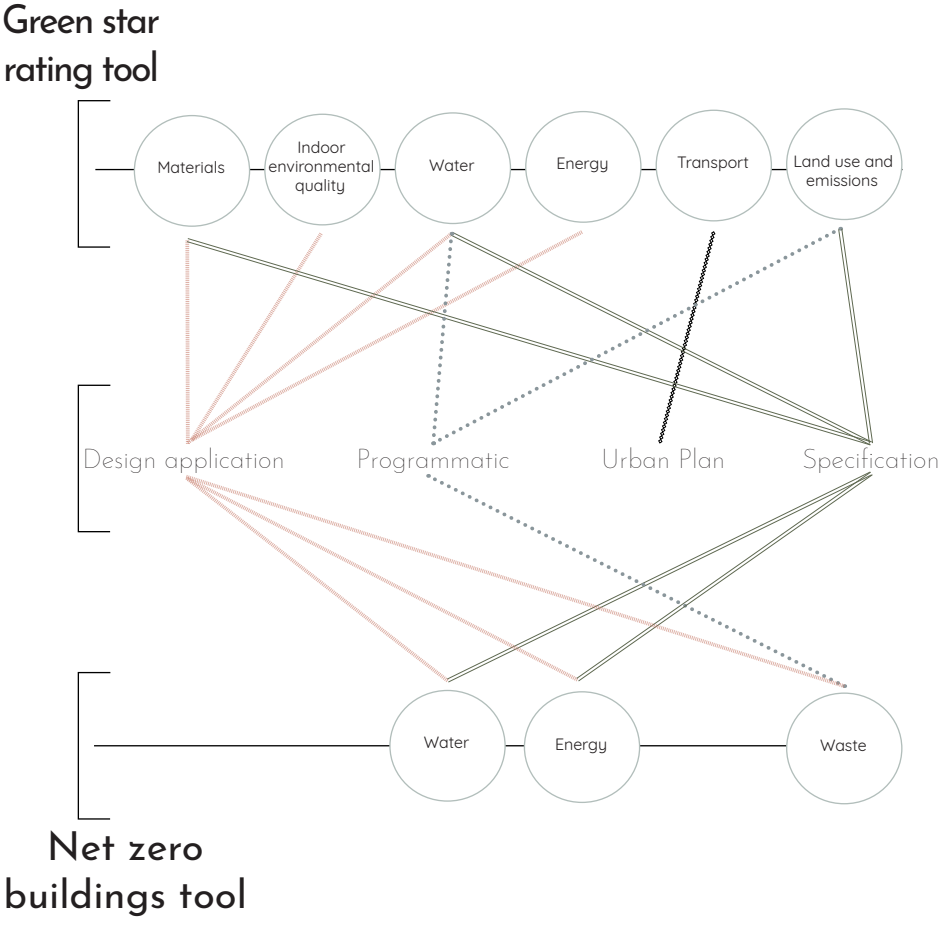
Figure 33 Right: Graphic illustrating graphical summary of the authors design thinking at this point in the study (Author, 2019)

3.4) GBCSA

As this project is fully within the scope of environmental sustainability, it was identified that an assessment tool would be crucial to guide design decisions.

The Green Star rating tool, as well as the net zero buildings tool (mostly as a supportive document), will be the key testing methods for the building to ensure that it is not only sustainable, but sustainable to a measurable degree.

The diagram (Figure 32) illustrates at which stages of the design process various elements will be under focus, to ensure that sustainability is integrated into the design and not just an afterthought

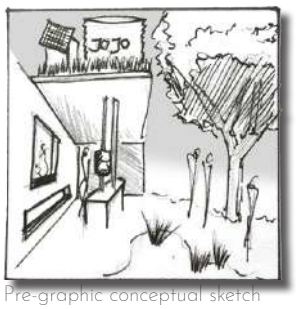


VISIBLE SYSTEMS

Graphic visualizing possible interior applications from various rating tools available for net zero and green interiors (GBCSA green interiors and GBCSA net zero buildings)

Green star eco shop

Retail as a central information point for all zero waste related dealings, a zero waste lab of sort, displaying supplying and educating the community on the possibilities and workings of zero waste



Pre-graphic conceptual sketch

Part 4

PRECEDENT

Sustainable retail is a very broad research field. It elicits different ideas in every person who thinks about it. In order for this dissertation to be successful, it was crucial to not only look at one or two core precedents to align it with current trends and ideals, but also to do a broader study to acquaint the author and the reader with the scope of sustainable retail and highlight the lack of intervention in the field.

4.1) Background

The starting point of this investigation was grounding it in theory. The coding process was inspired by Raymund Koningk's 2015 thesis, in which he used an imagined interior to analyse the production of culture through interior design. This systematic coding of retail gave rise to a better understanding of the spaces analysed and an ability to distil core information from them, without having to do a full study or a site visit to the various retailers.

This process was adapted to provide core information on a broad spectrum of sustainable retailers, all of which were analysed on a visual level, similar to Koningk's process. This visual analysis method was selected owing to the time limitations and not being able to personally visit these retailers. It was also done in this manner because there is a broad spectrum of sustainable retailers who are not all documented owing to sustainable retail being a rather new venture in design. Therefore, the superficial information is all that is currently available. If one were to look only at the well-documented projects, they would reflect limited scope and understanding of what sustainable retail can be, as they are mostly documented because they achieved certain Green Star or LEED qualifications. This in itself is equated to a limited view on sustainable retail. Sustainable retail takes numerous forms around the world. The majority are DIY projects or designed from necessity or passion, and not by professional designers.

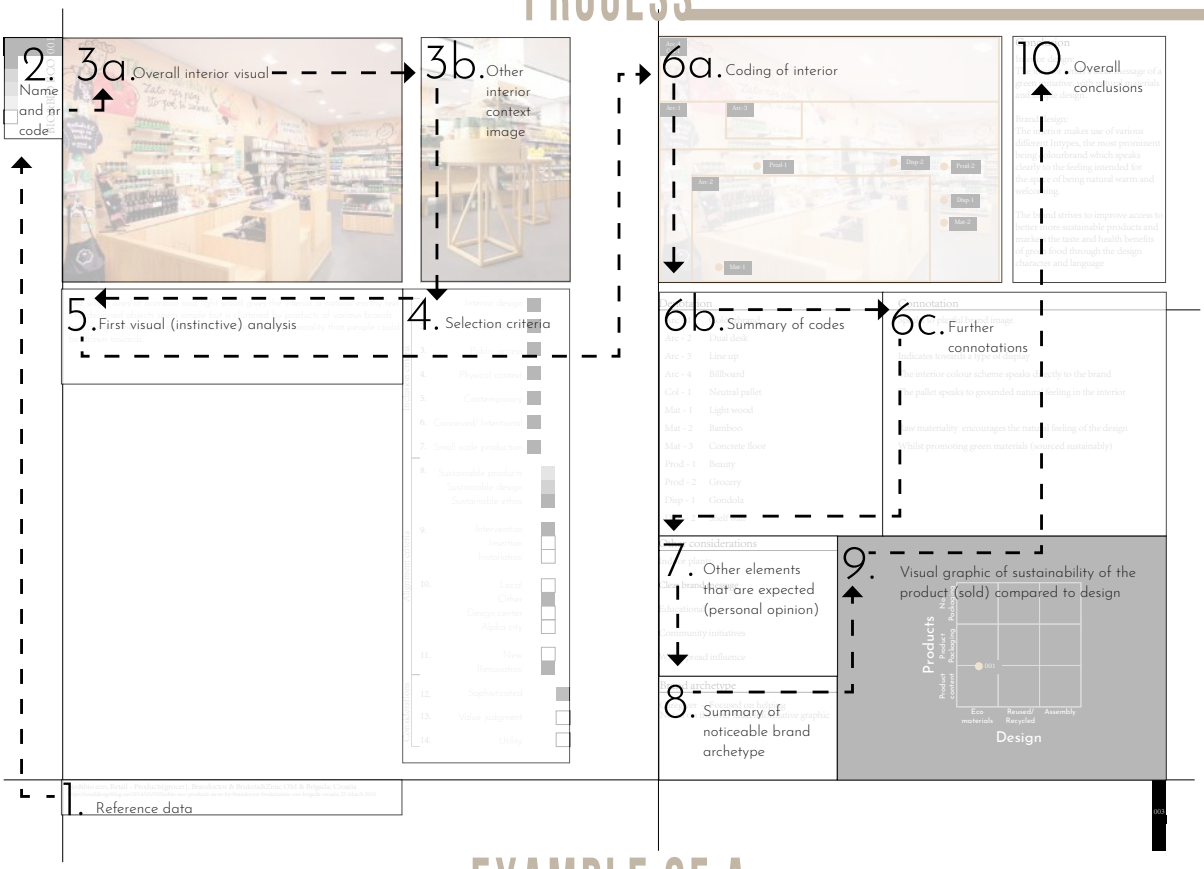
The body of this chapter will deal with the various steps taken for each retailer, the data that were analysed and where the consideration came from. The actual analysis can be found in appendix A

INDEX 000

Figure 34 Left: List of Retailers that were analized, to be found in appendix A

001

ANALYSIS PROCESS



EXAMPLE OF A PRECEDENT

Figure 35 Top Left: Step by step diagram of investigation process (Author.2019)

Figure 36 Bottom left: Graphic representation of Precedent appendix A(Author.2019)

Figure 37 Right: Summary graphic of selection criteria (Author.2019)

4.2) Analysis process *(Figure 35)*

1. Reference data

Project title; Type of retailer – typology; Architect/Designer; Country
Web address; Date accessed

This data is gathered to keep track of the geographical information and context in which the project is designed. This is important as it makes it easier to find the project again at a later stage. The architect/designer is noted, if applicable; however, it is acknowledged that various projects are designed by the owner, or even the community.

2. Name and code

Each project name is specified with a code associated with it. This is used for indexing, but also to be able to easily identify and group projects in an orderly manner.

3. Interior visuals, two images are selected

Two images are selected for each project from images available online to represent the project holistically. The first is an overall photograph, and the second tries to highlight important aspects that are not visible in the first. The intention is not to overwhelm the viewer with numerous visuals, but rather to distil the project to two images that show the most noticeable visuals and aspects of the design and provide an overall understanding of it.

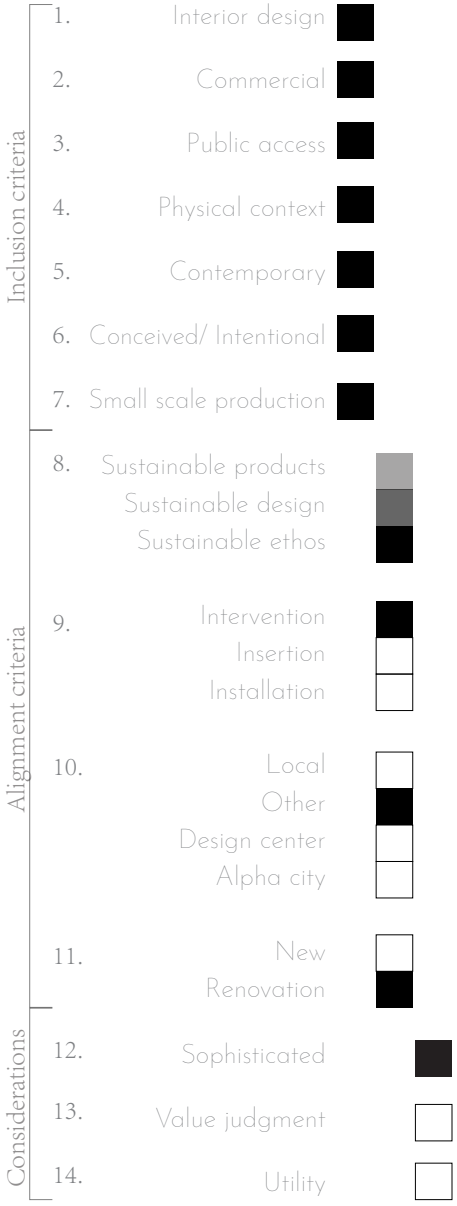
4. Selection criteria (Figure 37)

The criteria are compiled and adapted from the set that Koningk (2015) collated, they were changed to align with sustainable retail examples rather than cultural production.

- First, the inclusion criteria are selected, as these ensure that the project is within the scope of interior architecture. They are colour-coded on a scale from darkest (indicating the most relevant) to lighter tones, with the last being a white box signifying a criterion that does not apply to this precedent. It must be noted, however, that if a project does not meet all the inclusion criteria it is not selected, unless stated otherwise.

- Next, the alignment criteria are considered to ensure the precedents align with the type of information the analysis is looking for, but also to give more contextual information, such as the geological area. They give the project a scope within which to conduct the analysis, as well as indicating its scale and its type of superficial sustainability. These criteria are set up to be either/or-type options. a project has to include one from each group, but is not required to represent all of them.

- Finally, the consideration criteria are included to ensure that valuable data are not lost if the project does not meet the above r



5. First visual opinion (instinctive)

This paragraph is written instinctively, before reading the article related to the retail project; however, after viewing the images available and checking whether the project meets the inclusion criteria, the project is only understood at a superficial level. This is a good point in the analysis to get a first response on the design from a designer's perspective and that of retail users. This is a broad reading into what is visible without considering theory. This step is included to remove some bias from the process and to get personal opinion out of the way.

Figure 38 Right: Product categories divided into more specific groupings (author,2019)

Figure 39 Next page: Summary of 12 brand archetypes (by author, 2019; Icons from, Noun Project, n.d.)

Packaged	Bare products	Fresh produce
Beauty	Beauty	Bakery
Grocery	Dry products	Fresh produce
Miscellaneous	Wet products	
Perishables	Fish	
Cleaning		
Beer		

6. Coding of the interior

This is done in three parts:

- The coding is done to highlight specific criteria that would be of use in extracting data from the interior design project. It is done over the image to highlight the parts that contain the associated code.
- The extracted codes are then documented, along with their associated meanings.
- The connotations of those meanings are expanded on and highlighted in more depth.

The coding process also stems from work done by Raymund Konigk (2015); however, it was crucial that the information gained from the

coding was relevant and not related to his topic of cultural production. Therefore, five categories were used to code the interior. These elements were selected for their relevance to interior design, the possibility of coding them from a singular image, and the information needed to understand what makes sustainable retail different. The five categories are as follows:

1. Arc – Intypes: This concept is drawn from the Cornell University study on intypes (interior archetypes), the focus of which was on documenting the elements that make interior architecture come together. This documentation was used to understand the spatial, lighting and archetypal uses of elements throughout the retail space, which gives a good understanding about the intention the space has for its users.

2. Col – Interior colour scheme: This is based on a visual observation of the selected image, only to document the overall colouring and tone of the interior. The intention is to understand what the current colour trends are for sustainable retail spaces, as there is an expected result of them all being some shade of green. Understanding the colour trends provides insight into the brand's position towards its image, as all colours have associations.

3. Mat – Material pallet: This is also based on a visual observation of the selected image. It is done to document the prevailing material pallet to understand the associations people make with sustainable retailers. One expects to see a lot of wood in the interiors as there is a strong link to natural-feeling interiors and timber. This will help identify material trends, which can then be commented on and used or disregarded.

4. Prod – Visible products: This is of importance as it puts the observer and researcher on the same page in terms of what is being sold at a green/sustainable retailer. The intention is purely to understand what products are being sold. The process started by visually analysing the images and documenting the products visible. This leads to the study having 11 categories of things that the retailers are selling. It was found that this is too cumbersome to distil data from, so these were divided into simpler groups. Figure 38 shows the initial categories and how they were divided.

5. Disp – Types of display used: A selection of six categories was identified throughout the analysis. These were documented to understand the display typologies used for retail stores. It is assumed that the types of product determine the display, but there are still some variations found within this. The intention is that this leads to some information on spatial and retail archetypes. The categories are as follows:

    a. Table display – flat horizontal ground unit

    b. Shelf wall – horizontal wall unit

c. Grid wall display – vertical grid system

d. Dispenser – mechanical dispensing system

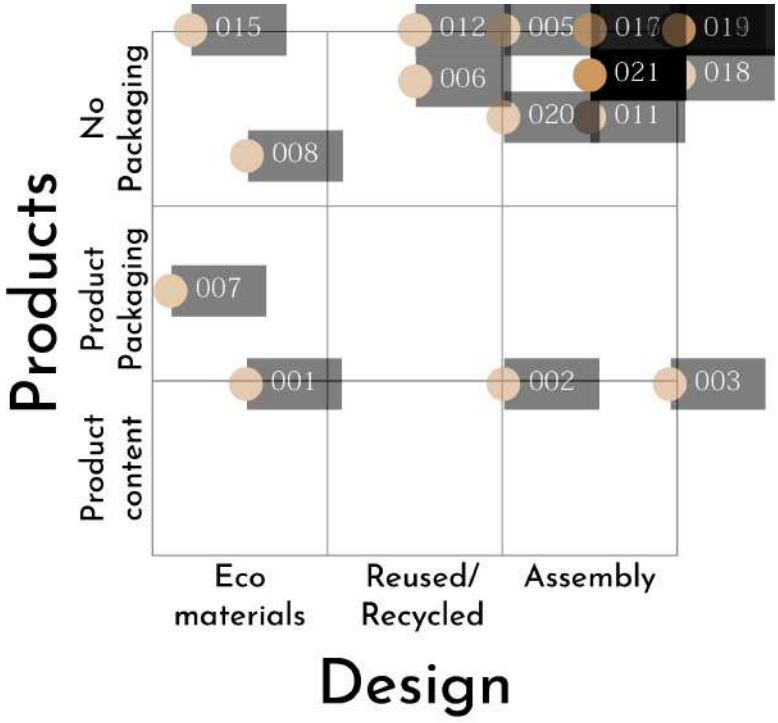
e. Gondola – free-standing block of shelves

f. Container – vessel carrying products

7. Other elements that are significant/expected based on previous reading and understanding

1. Indoor plants: In the GBSCA documentation for zero waste design and the green interior rating tools, it is mentioned that indoor environmental quality should be considered, and that plants should be present in interior spaces (GBCSA). It is currently seen as good practice to have some air filtering plants throughout the space. This is for the well-being of the users, as vegetation has a positive impact on people, and the indoor environment (International WELL Building Institute, 2019).
2. Clear brand message: In designing for retail, the brand should be of importance as it is the image the retailer conveys to the world (Roberts, 2010). This is the personality of the space and the retailer, the element that talks to a certain person's interests and what entices them to go inside (Roberts, 2010). It is expected that a clear brand image be noticeable through branded merchandise, an overall aesthetic and consistent hints of the brand's vision and stance.
3. Educational: The GBCSA documentation on zero waste design and the green interior rating tools mention that it is important to not only be sustainable and practise waste management, but also that the space make it public and visible. The actions of the retailer should educate users on how these sustainable steps can be taken (GBCSA). This is also noted in the barriers to a sustainable lifestyle. Users need to be educated on what sustainability means, as this might inspire them to take it up as a lifestyle (Axon, 2017).
4. Community initiatives: In research on sustaining a sustainable lifestyle and what the barriers to a sustainable lifestyle are (Gleim et al, 2013; Axon, 2017), it is noted that it is easier to make and sustain lifestyle changes when doing so together with a community (Axon, 2017). Petermans et al (2015) highlight that we are currently in the third

Figure 40 Right: Comparison graphic (Author, 2019)



generation of retail, which means that communities are forming around various topics online. By giving these communities a place to conduct their activities, retailers can gather a fairly large client base that helps drive them forward. These types of initiative are smaller-scale workshops and events hosted at the retailer.

5. Widespread influence: In the context of this project it was noted that it is important for the retailer to be more than a small intervention in the neighbourhood; it must have a rippling effect throughout. There is a need for this movement to spread and influence others, to grow the community and inspire other communities of people to take on the challenge of changing their lifestyle

8. Summary of brand archetype (Figure 39)

The theory on brand archetypes is very broad and stems from multiple sources. As this is not a research dissertation, a summary of the brand archetypes is used as compiled in a thesis by Candice Roberts (2010) titled 'Exploring brand personality through archetypes'. In it she investigates and illustrates the importance of considering 12 identified archetypes when designing for a brand.

The importance of brand archetypes is noted because it provides knowledge of how retailers portray themselves as brands. Understanding their archetypes allows for the analysis to better extract some of the aesthetic decisions made, and guides the research towards what is expected for a sustainable retailer, as well as what is possible (Roberts 2010).

9. Visual graphic of sustainability of the product (sold) compared to design (Figure 40)

Figure 40 serves as a summary of perceived success. It measures each brand's product against its design decisions and plots each retailer on a scale. The intention behind this graphic was to compare the relative success of the various retailers, especially with regard to the significant elements in terms of sustainable retail and sustainable design.

It is assumed that each step makes a better design/sustainable product. Therefore eco-materials are sufficient, re-used materials are better, and assembly (design for disassembly) is best (Kumar 2014). The same goes for the products: product content (which refers to sustainable content such as green cleaning products) is a good step towards sustainability, but sustainable packaging is better, and the complete avoidance of packaging is the best option in terms of reducing waste. This scale is applied during the final stage, after a thorough visual investigation to ensure that the retail space is well understood.

4.3) Precedent Variety

A visual collection of the 20 retail precedents that were analyzed, organized by style , from typical clinical natural interiors to more contemporary style focused designs. The explained process was applied to all of these retail spaces in order to extract visual and design data from them. The conclusions found follows on the next page

Figure 42: Green common concept (Greentrooper Design Studio, 2015)

Figure 48: Nada grocerie (Nada, n.d.)

Figure 46: Ecostore (Albert Comper, n.d.)

Figure 49: negozio leggero (negozio leggero, n.d.)

Figure 50: Package free shop (Package free shop, n.d.)

Figure 51: Goodfor (Goodfor, n.d.)

Figure 54: Be free (smith, 2018)

Figure 57: Shop zero (Shop zero, 2019)

Figure 53: Seed (Seed, 2019)

Figure 41: bio&bio eco (Blazevic, 2014)

Figure 56: Bare ware (Bareware, n.d.)

Figure 52: Bulk market (Bulk market, n.d.)

Figure 47: Robust (de Gouw, 2017)

Figure 59: Naturally (Formroom, 2018)

Figure 60: Kamikatz public house (Nacasa and Partners Inc, 2015)

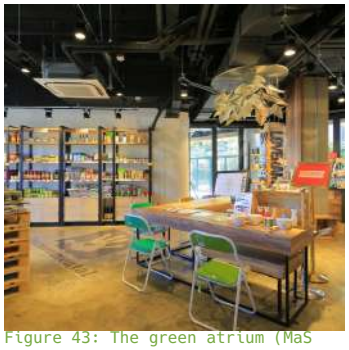


Figure 43: The green atrium (MaS Studio, 2015)

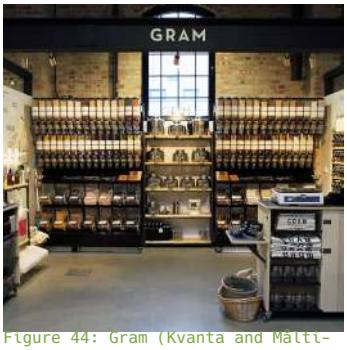


Figure 44: Gram (Kvanta and Mälti-der, n.d.)

Figure 58: Lush (Lush, n.d.)

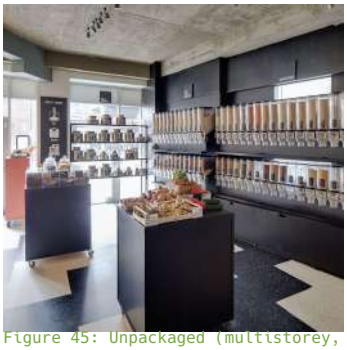


Figure 45: Unpackaged (multistorey, n.d.)

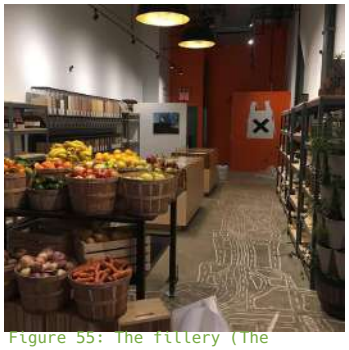


Figure 55: The fillery (The fillery, n.d.)

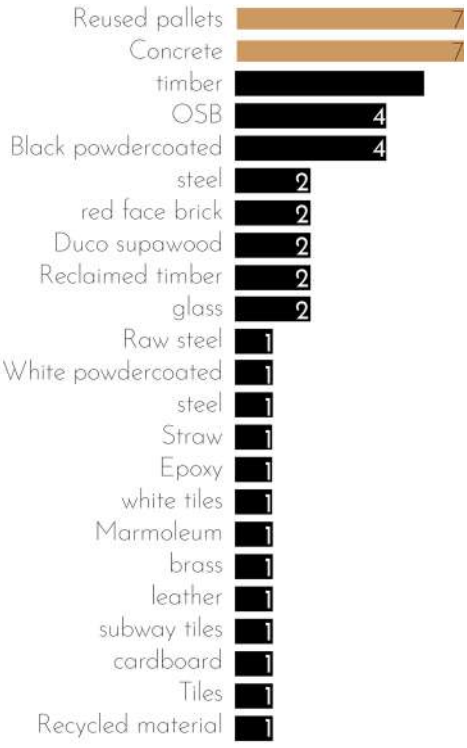
Figure 61 Centre: Material use table

Figure 62 Right: Colour use table

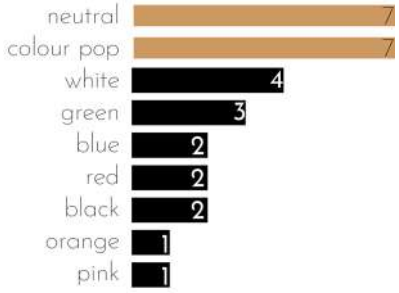
4.4) Findings

1. **Material use (Figure 61):**
As expected, the most used material in all of the retail precedents is some form of timber, such as re-used pallets. The second-most used is concrete (floors). It should be noted that concrete is not a sustainable flooring method, but most white-box interiors come standard with a screed floor, which makes these interiors sustainable in that they are keeping the raw floor finish and not replacing it with some new layer.

The argument of material life cycle and closed loop design should have a strong influence on the selection of the materials. Regarding the relative impact of a material, Sassi (2009) writes that if something with a large ecological footprint (such as steel) is used in a building that will stand for 500 years, it could be deemed as sustainable. The large footprint is attenuated by the lifespan as the material can also be re-used. The same goes for well-finished timber that is left to rot, as this material can last a long time and then decay naturally. But a shelf that is made of aluminium is more often sent to a dump rather than being re-used, due to its malleable nature (Sassi 2009). This is referred to again in part 8.1. The gist of the argument is that material use is relevant, and just like with a green economy, if something can be kept in the system and in use without being incinerated or sent to a landfill, then its use can be justified (Sassi 2009). Therefore, a stance should be taken on materials to do a thorough material analysis before materials are selected for the project, and an after-use plan should be highlighted to ensure that nothing ends up being wasted.



2. **Colour use (Figure 62)**:
The colour use in the interiors was expected to feature a lot of green; however, what was not the case. The overwhelming majority were treated with neutral tones such as beige, all timber and white. Second to that was a large number of colour pops, often paired with white or neutral tones. Only after that was green the most-used colour. Colour sets the tone for the interior, as colours have certain associations. Sustainable retailers are expected to be green, but if they intend to break the rules and send a different message, they can use other colours such as red or orange. The colour use and the brand archetype should go hand in hand, in order to send a clear message of brand intent (Roberts 2010).

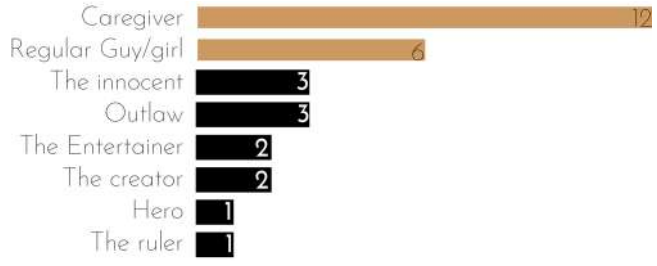


3. **Brand archetype (personality) (Figure 63)**:
The caregiver archetype talks to the sustainability message that, together with the regular girl/guy archetype, would make a strong very sustainable brand, as it communicates delicate care and a relatable brand (Roberts 2010). However, it must be questioned whether

Figure 63 Left: Brand archetypes
Figure 64 Top right: Level of branding
Figure 65 Right: Types of display

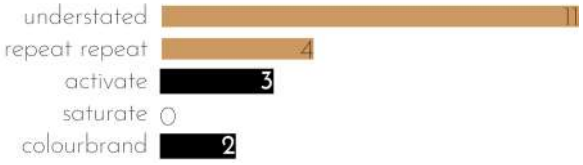
this is the right strategy for the location in question and for the current views that people have around sustainability. As noted in the paper by Axon (2017), several barriers prevent people from adopting a sustainable lifestyle, one of which is lack of trust in the products. This is a significant barrier for a brand archetype that builds its image on caring or being reliable.

A stance must be taken on the brand archetype that expands the possibilities of what a sustainable retailer can speak to. It can be the outlaw or the entertainer (as proved by four of the more successful retailers in the analysis), as that could excite people and build new trust in the products. Going the expected route is not always the best approach, especially if that path is littered with distrust and bad associations. This approach is noticeable in the stance taken by the beauty brand LUSH. It falls under the outlaw archetype, contrary to expectations of beauty and personal care products, which are usually grouped under the innocent archetype, such as Dove. LUSH is a great example of how breaking the trend can put you in a stronger position (Strumpman, 2016).



4. **Level of branding (Figure 64)**:

The last part relating to aesthetic and branding is a summary of the level of branding found in the various retailers. This links back to the importance of a brand, as highlighted earlier (Roberts 2010). A visible and prominent brand gets a message across clearly, which helps build brand trust. The brand can be visible on labelling, but also more intricately through the design of the space. It is noticed that the majority of the brands do not make full use of the possibility of building a brand throughout an interior retail space.
It was expected that a well-designed retail interior would fall within the "activate intype" with regard to branding, as this hints at the brand design throughout the space without overwhelming the user.



5. **Type of display (Figure 65):**

It was noted that the majority of retailers still use tables and shelves to display food, but in bulk retailers there is an opportunity for this typology to change and adapt to one where the bare products are displayed. This is a great opportunity for the retail landscape to not only embrace a more sustainable type of shopping, but also step into the third generation of retail which values experience over product. Creating a retail experience is a key next step in keeping up with the current generation (Petermans et al., 2015).

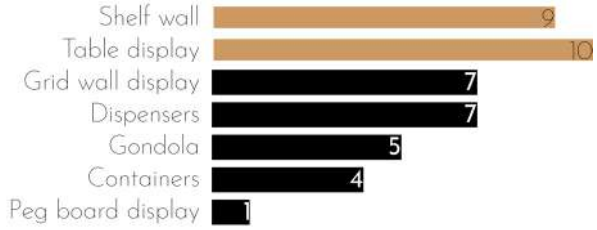


Figure 66 Left: Photograph of Kamikatz public house interior, sell by weight store/ pub (Hiroshi Nakamura & NAP, 2017)

Figure 67 Top: Photograph of Kamikatz public house exterior (Nacasa and Partners Inc, 2017)

Figure 68 Right: Graphic illustrating graphical summary of the authors design thinking at this point in the study (Author, 2019)

4.5) Case study

Kamikatz Public House, Hiroshi Nakamura & NAP architects

Following the precedent study, it became clear that a specific case study would be required to bring the various concepts of retail, sustainability, zero waste and a social community together. As highlighted in the precedent study section, there is a wide variety of sustainable retail types and approaches. However, the concepts are not integrated; retail stores are still being treated as shops rather than places for communities to form. This is a problem for three reasons:

The future of brick and mortar stores is in experiential retail, where stores are no longer mono-functional and give patrons numerous reasons to visit and experiences when visiting (Gensler Research Institute, 2018).
The third generation of retail stores should be designed for specific communities of people, rather than to sell specific products (Petermans et al., 2015). The barriers for the zero waste community, as identified part 1.2, can all be surpassed with a retail store designed for this community, although this would mean that the social aspect is crucial, as a community cannot grow if people cannot share ideas (Gleim et al., 2013; Bonini & Oppenheim, 2008).

In light of this, the Kamikatz Public House was selected for the case study. The project is categorized as a brewery (not goods retail, which is the focus of this dissertation), but it features various programmes: the brewery, a public BBQ area, a pub where the community can drink and buy beer together, and a packaging free store (sell-by-weight) store as an auxiliary function of the pub (Figure 66)(Castro, 2018). The project is located in a zero waste community that has been building towards that target for a few years. They have divided their recyclable waste into 34 categories and are reselling it from another retailer in town (Stevens, 2017). The public house is a celebration of their efforts, a place where the community can feel pride in their actions. The project focuses on the paradigm shift necessary to move towards zero waste, the change in the way retail uses and perceives re-using, and changing the way people buy products.

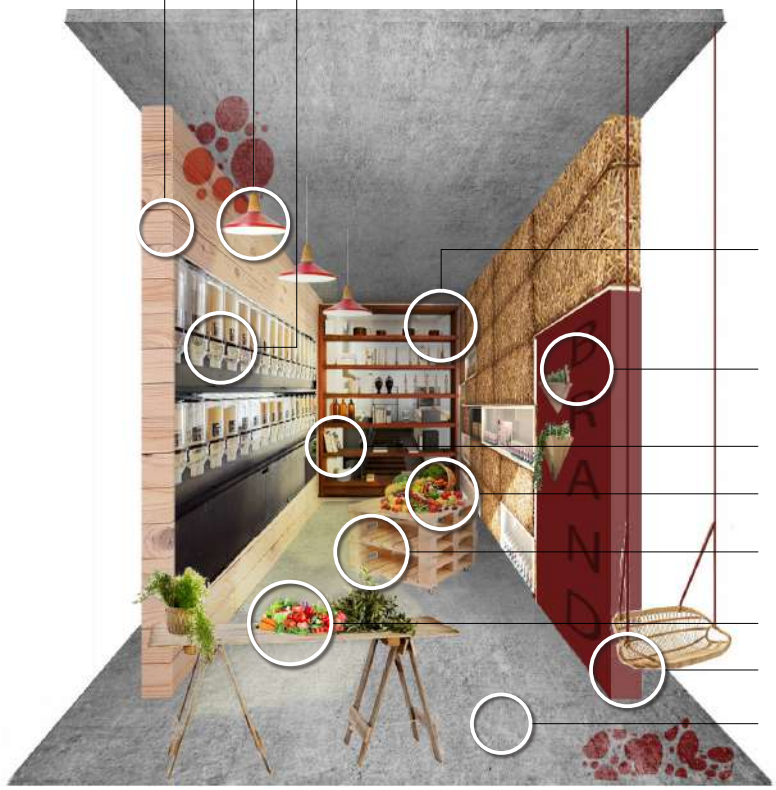
Elements to take away from the study

- Building on their extensive recycling programme, Kamikatz Public House used found objects from the centre to create various objects and elements of the design. The luminaries are made from glass bottles, the shelves from old tables and wedding chests, and even the front facade of the building was created from the windows of abandoned buildings in the town (Figure 67). This aesthetic created an environment where the people of the town recognised their own things in the design of the space, which gave it a sense of co-creation (Castro, 2018).

- The building deals with sustainability on multiple levels, not only through re-using the community's "rubbish", but also through employing various sustainable design interventions, such as natural ventilation and double glazing, which was done using two layers of the community windows with an air gap between them, rather than spending copious amounts of money on double-pane glass. The materials used for the building are also sourced from the forest surrounding the town (Castro, 2018).

ZERO WASTE SIGNIFIERS

Originating from precedent, by sussing out the most successful green retail interiors, this concept represents the ideal green retailer as currently known



Light colored timber

Colour pop (not green)

Food dispensers

Other timbers and natural materials

Understate brand visual/ repeat repeat

Wall shelf displays

Table top displays

Reused pallets

Grocer/ Convenience store (not just green grocer)

Playful

Concrete flooring material

Trendy zero waste store

Retail as calling card for sustainable living, a one stop shop for all your daily needs, a colourful and fun place thats exciting and inviting at the same time, a branded retail interior that walks and talks the sustainable '"image" - as per precedent

Pre-graphic conceptual sketch

Part 5

BRAND

The brand is built from the various informants that originate from the design intention. The brand and personality is used as an informant in order to guide the interior design.

5.1) Brand Concept

As discussed in part 1 - Theory, brand is a key component in the eventual success of not only a retail store but also in a store that aims to encourage a lifestyle change. A strong brand becomes something people want to buy in to (Strumpman, 2016).

The following series of graphics illustrates (Figure 69) the key components towards creating the eventual brand of Livable, a food and deli store. At every aspect of the brand design various considerations were taken into account. The brand personality of the maverick (outlaw) was selected as has a very specific impact on the design language and how the retail space will aim to get a message across.

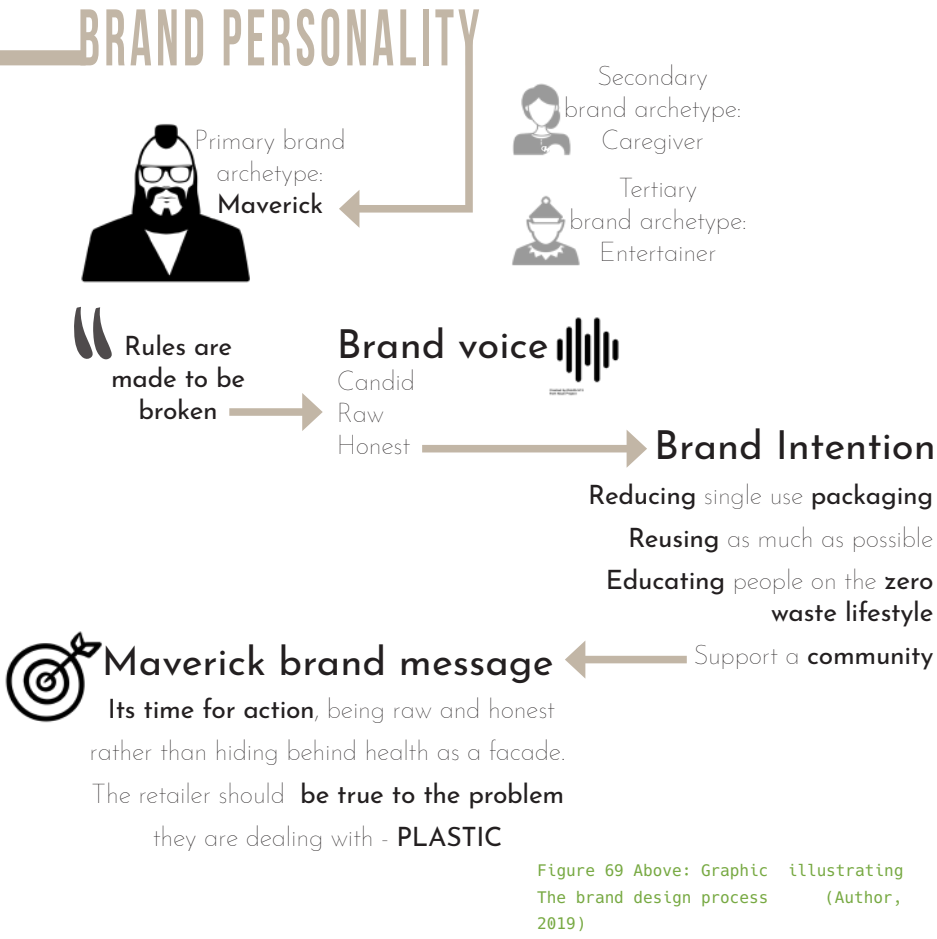


Figure 69 Above: Graphic illustrating The brand design process (Author, 2019)

MAVERICK AS DESIGN CONCEPT

The maverick brand is selected as the conceptual approach for this design project. The personality speaks about disrupting and taking a stand.

Within a zero waste retailer this is interpreted into various levels of the design.

Changing the way we shop - new experience without plastic

Offering just what you need - food for necessity not leisure

Giving you flexibility on price - only pay what you buy (per g)

BRAND NAME

Livable Adj.
[liv·able]

- worth living.
- (of an environment) fit to live in.
- easy or bearable to live with

A name fit for a sustainable retailer trying to voice change needing to happen

- Sustainable, **what type of world do you want to live in**
- Comfortable in **your decision** to be a **conscious consumer**

Figure 70 Right: Logo design (Author, 2019)

Figure 71 Right: Series of brand graphics (Author, 2019)

5.2) Brand identity

The brand is created from various informants set out on this page into the various parts of the brand design (corporate identity)

It must however be noted that this project is focused on interior architecture as the core subject, and the brand design is just a supporting tool for the creation of a wholesome retail environment. The design of the brand identity was for that reason not taken further, as the following content served as enough information in order to continue with a wholesome interior design

FONT

A **fun and quirky** font
Against the grain of mainstream green retailers
Reflects the importance of **sociability and fun** in the brand

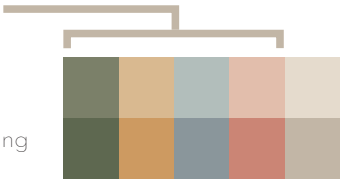
LIVABLE
FOOD AND DELI

Crisp sans serif font to **signify the seriousness** of **the brand message**

COLOURS

Colours are **muddled** - **contrasting to pure bright colours** often used in mainstream green retail

Muddled colours **connect to earth tones** relating strongly to the **ecological** side of the design



ICON

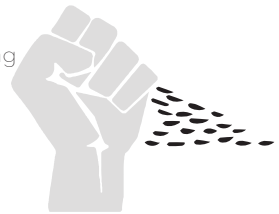
The revolution fist used to **signify the change** that needs to happen in our **consumerist ways**

The fist is softened and contextualized towards retail, and as part of the **3rd gen of retail** the **hand and falling grain** connotes touch as part of a **interaction experience**

PATTERNS

Falling out of the hand as a **bare product,** symbolizing **packaging free** and new **experience** with food

Patterns are inspired by the 5 main **product categories** of in the retail space **(vegetarian)**



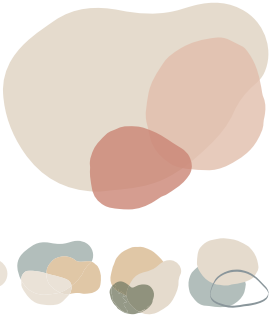
- Beans - Grains - Nuts - Oils - Fruit & veg

GRAPHICS

Three shapes signify the **three critical parts** of **the program** working together

The shapes are of **organic form** to connote to the **sustainable nature** of the program.

Colours and organic shapes **can adapt** to signify flexibility in the spatial design but should **remain within visual consistency**



Part 6

PROGRAMME

As explored in the theoretical argument and brought up again in the precedent studies, the intention for this project is a sustainable retailer that focuses on creating an opportunity for a lifestyle change towards zero waste for the community of Hazelwood, and the expanded online community interested in zero waste.

6.1) An integrated program

As mentioned in the introduction, the community of Hazelwood is in flux, as it is undergoing a shift from a residential community towards a mixed business area (City of Tshwane, 2012). This area also has the characteristic of having a good balance between the different generations. This balance created a good opportunity to make a change in the community at various levels.

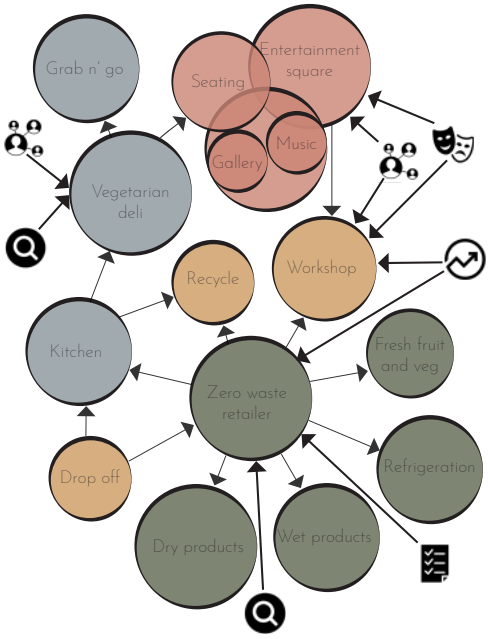
The project programme is built on the five barriers to moving towards zero waste. Its intention is to address these barriers and thereby create a new and unique opportunity for zero waste to become a possible community lifestyle. As noted with the theory on the third generation of retail, part 1.5, community is built upon common interest. Therefore, a space that can teach and inspire common interest can drive a community to solidify. Sustainable retail addresses the various barriers in the following ways:

- *Associated high prices:* offering only what clients need without excessive products or packaging
- *Difficult to maintain momentum:* being a hands-on connection for the people to focus on small steps, and forming a community to do it together
- *Lack of knowledge:* taking advantage of the opportunity to educate customers on sustainable possibilities
- *Lack of sustainable alternatives:* providing alternatives of which clients are not aware
- *Lack of trust in sustainable products:* striving to be realistic and honest about sustainability rather than "greenwashing" its products.

As a point of departure, a sustainable retail programme should focus on achieving and overcoming these five barriers.

It was discovered through a series of precedent studies and the case study in part 4 that many of the existing zero waste retailers do not address all of these barriers. There is almost never a social aspect to these retailers and they are mono-functional, two things that are

Figure 72 Top: Bubble diagram of spaces and their overlapping functions (author, 2019)

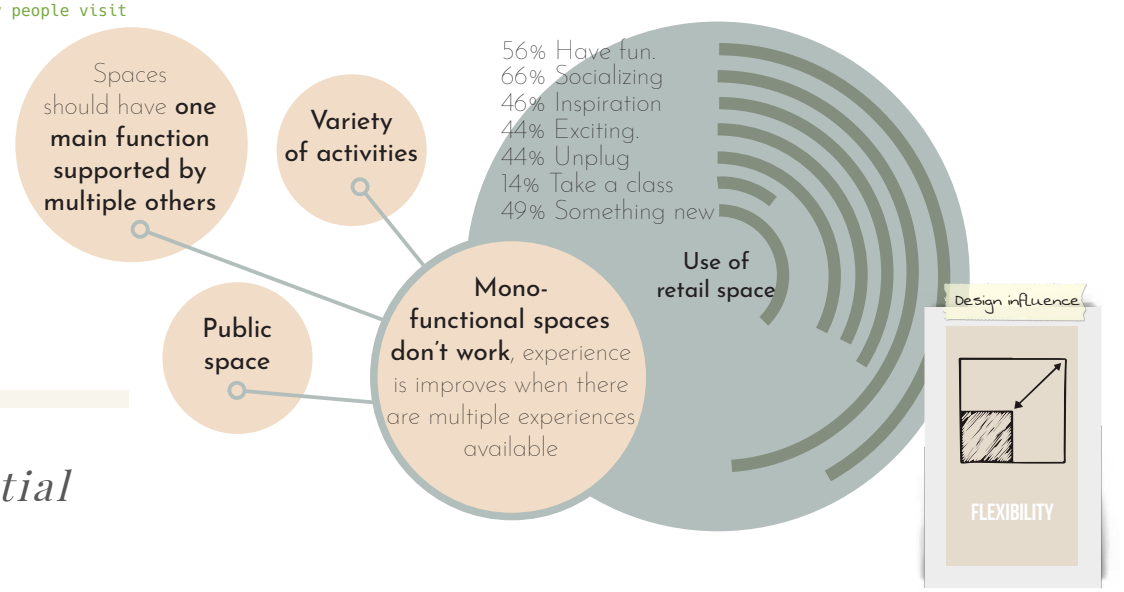


crucial not only for experiential retail, but also for the formation of a community. Following these considerations, three integrated spaces are proposed to work together not only to include the whole demographic of the area, but also to allow for a wholesome space that encourages change towards a sustainable lifestyle (Figure 72):

- A zero waste bulk retailer – A bulk retailer that focuses on providing the community with a selection of sustainable daily necessities, where products are sold in their bare form, without packaging, in a sell-by-weight manner.
- A vegetarian deli – An on-the-go deli that specializes in food that supports the ideals of a zero waste community.
- A social square in between the two spaces, a place where strangers and the zero waste community can meet and socialize, and participate in workshops,to better educate clients about a zero waste lifestyle, Figure 79 illustrates the types of workshops proposed.

It is intended for these three spaces to overlap and support each other.

Figure 73 Left: diagram of Why people visit retail spaces (Gensler, 2018)



6.2) Experiential Retail

Being in the third generation of the retail paradigm, it must be noted that generational change is a core aspect of this dissertation's topic (retail). Research by the Gensler Research institute (2017, 2018) focuses on how retail is staying relevant in a technologically driven era. They highlight the importance of experiential retail and the various ways that people from different generations interact with retail spaces (Figure 73).

The bulk of the information that is relevant to this dissertation looks at the various experience modes that are found in successful contemporary spaces. The experience mode is defined as the reason a person would go to a place, the core of their intention. There are a total of five experience modes, each of which is associated with a specific way to satisfy a client with that intent (Gensler Research Institute, 2018);

- Task mode: The client is focused on getting something done. People in task mode want a space to be legible and easy to navigate, they want efficiency.

- Social mode: The client wants to engage with other people. This is seldom seen together with other modes; people in social mode are looking for a sense of community.

- Discovery mode: The client is focused on killing time. People in discovery mode enjoy excitement, novelty and unexpected encounters.

- Entertainment mode: The client wants to be entertained as a break from everyday life. The design should have a memorable impact.

- Aspirational mode: The client wants to connect to a larger purpose. People in this mode are seeking personal growth.

These modes should be considered in the design of the space to ensure that it is inclusive and exciting to a variety of people see Figure 74. However, the research on experiential retail does not stop there; the actual design considerations of spaces have changed with the growth of technology. Standard brick and mortar stores do not stand a chance as they offer exactly what an online store offers without the ease of access. Therefore, the inclusion of experiential retail is crucial to keep retail relevant; the space needs to offer more than just retail (Reinventing retail, 2013; Alagaih, 2017; Gensler Research Institute, 2017).

An experiential retail space should focus on a few key points that revolve around contemporary store design and the experience modes. The retail space should have an intuitive, easy-to-navigate design. There should be a high concentration of human interaction, which is something an online retailer cannot offer and an important part of creating a memorable experience (Maloney 2018). The space should provide a meaningful, immersive and captivating experience that people want to talk about and share with others (Ruff 2019). Furthermore, retailers should focus on personalizing their design to the clients' needs, showing the community that the store is for them rather than designing it for the product (Maloney 2018). This would ensure that the store is accessible to the community for whom it caters and highlights their preferences. This dissertation looks into these topics in order to design a space that is not only technically correct, but also feasible on a social and contemporary scale. Experiential retail gives the project the opportunity to be more than just a retail store, but a place for a community of like minded people.

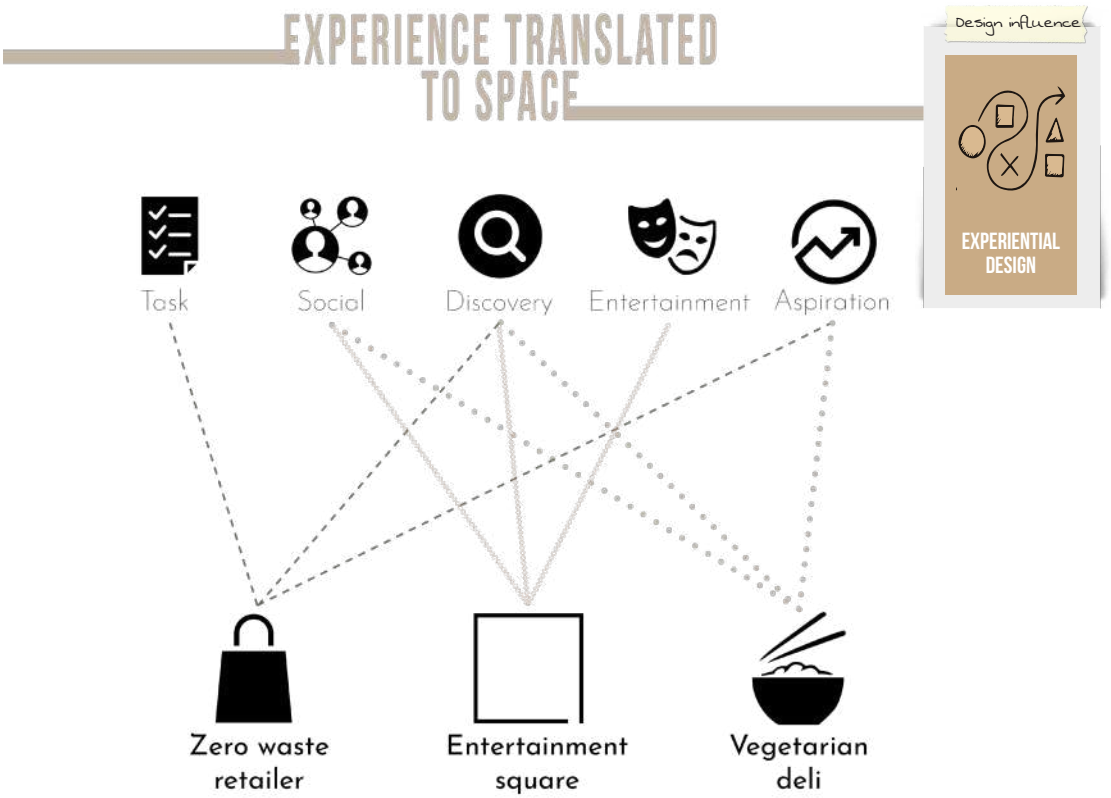


Figure 74 Above; Diagram illustrating how the suggested programs overlap with experience modes.(Author 2019)

6.3) Contribution

This dissertation deals with retail and sustainability on multiple levels. To tie it all together, three main categories: encourage, zero waste aspects and lifestyle aspects are dissected.

Encouraging

Four parts of the proposed design are intended to encourage users to adopt a more sustainable lifestyle:

- *Educational workshops:* These are focused on sharing information and knowledge about sustainable lifestyles.
- *Food education:* This is integrated to inform users about the importance of sustainably sourced foods, but also the ways in which alternative foods can aid them in their personal growth towards less waste.
- *Recycling and composting:* Tightly interwoven with the design of the space is education and information on composting and responsible recycling.
- *Only the necessities:* By only providing the necessities in the retail space, rather than a wide selection of various brands and varieties, the consumerist tradition of overbuying is curbed.

Zero waste

The notion of reducing your own personal waste to landfill is crucial for the design and ethos of the store itself, but also an opportunity it provides to the clients. By being packaging free, the retail store eliminates the waste that the clients take home with them. By providing some means of on-site recycling (but which is also integrated into the urban plan, part 2.6), the lifestyle of recycling is encouraged. The encouragement of social activity helps to build a stronger community, and through this it can initiate a lifestyle of zero waste rather than just an instance.

Lifestyle

Sustainable consumerism is a topic that deals with how retail is promoting a smaller impact on the environment for the clients, the changes made to the design of the store, and the concept of encouraging lifestyle change. The first step towards sustainable consumerism is providing only vegetarian options. This has been identified as the most effective way to reduce your environmental footprint, even more so than using green appliances or recycling (Bonini et al, 2008). The second is promoting the 5 Rs, as it is good practice among a sustainable consumers and crucial for someone who is aiming to produce zero waste. Lastly, the retailer is encourages clients to buy local produce as it is situated in a residential community. This means that clients have to drive less (possibly even walk), and it reduces the travel impact of shipping food from other continents.

Figure 75 Right; Local business woman (Image online, available at: http://pikony.com/media/51228514496914286/)

Figure 76 Far Right Above; Proud vegetarian (Photo by BROOKE AUSTIN PHOTO (https://www.brookeaustinphoto.com/portfolio/)

Figure 77 Bottom left; A zero waste enthusiast (Photo by Mark Jefferson Paraan (https://psiloveyou.xyz/why-not-you-never-know-830e3a20cd0)

6.4) User groups

In order to ground the literature on experience modes, user group profiles were set up. This was done to better understand the age demographic of the area, and also to visualize how the experience modes correlate with the three proposed activity zones for the project.

The use of user group profiles is a valuable tool in retail design because it ensures that the design is relevant. The information used to set up the demographic analysis is from site observation as well as a personification of certain types of people who would support a sustainable retailer. The user groups are not exhaustive and only represent three of the most likely users.

This was a fast exercise to ensure the design does not neglect the experience modes of different user groups but also keep their personal interests in mind. Another necessary inclusion was to consider the different generations that might visit the retail space, as retail design is always strongly related to the generations it provides for. This created a design challenge as the retail space aims to cater for multiple generations, this can be equalized by creating different activities that lure different generations. Below is a break down of the generational needs and how they can be dealt with in a retail environment.

LOCAL

Business woman

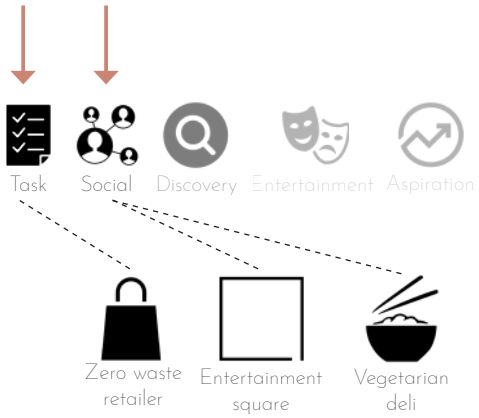
Age : 34

Interest : Foodie / Socialite

Testimony :

I go shopping every afternoon after work at the **local store to stock up on some necessities**. I have a few friends in the neighbourhood and we were very excited to discover a **new healthy food deli and food market** in our neighborhood

My intention when visiting a retail store is often for necessity and for the social aspect that comes along with it



A local business woman:
Working at one of the company's in the surrounding area. She is a millennial (Gen Y1) shopping is a social endeavor more than anything else, she can find anything online, and therefore goes shopping for a social connection.

A proud vegetarian:
A student and part time photographer, age 25 , a millennial (gen Y2). part of the younger group of millennials. They prefer brick and mortar stores over online, for the unique experience and possibility of discovering new things. Shopping is a social activity for this generation.

A zero waste enthusiast:
A yoga instructor and proud mother, age 42, she is part of Generation x, a generation that is often forgotten about, falling between the boomers and the millennials. As a generation they distrust marketing and are very shy with their spendings, therefore require a lot of hands on attention and guidance in their shopping experience in order to be satisfied.

PROUD VEGETARIAN

Student / photographer

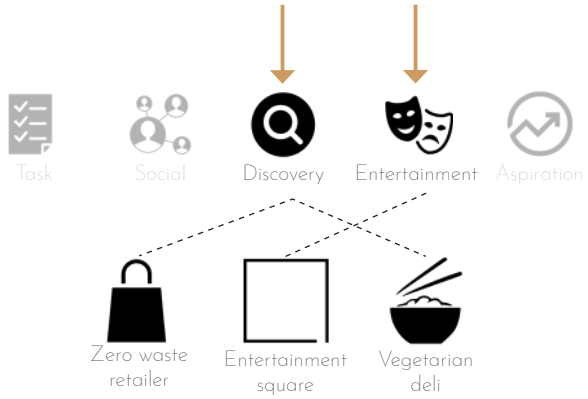
Age : 25

Interest : Animal rights activist

Testimony :

I saw online that there is a **vegetarian deli** that opened up, i went there and stumbled upon a zero waste retailer, The food store was **hosting a workshop** on living sustainable. There I met a few **like minded people** and we are intending to do an eco drive together.

My intentions when visiting a retail store is based upon discovering new things and to be entertained by something out of the ordinary



ZERO WASTE ENTHUSIAST

Yoga instructor

Age : 42

Interest : Healthy future for her and her family

Testimony :

I noticed a **waste free workshop** being advertised in my area and wanted to become **part of the community**. I now host weekly yoga classes there. I enjoy stopping by in the mornings before work to **grab a snack** at the deli.

My intention when visiting a store is to support my lifestyle and connect with people around me.

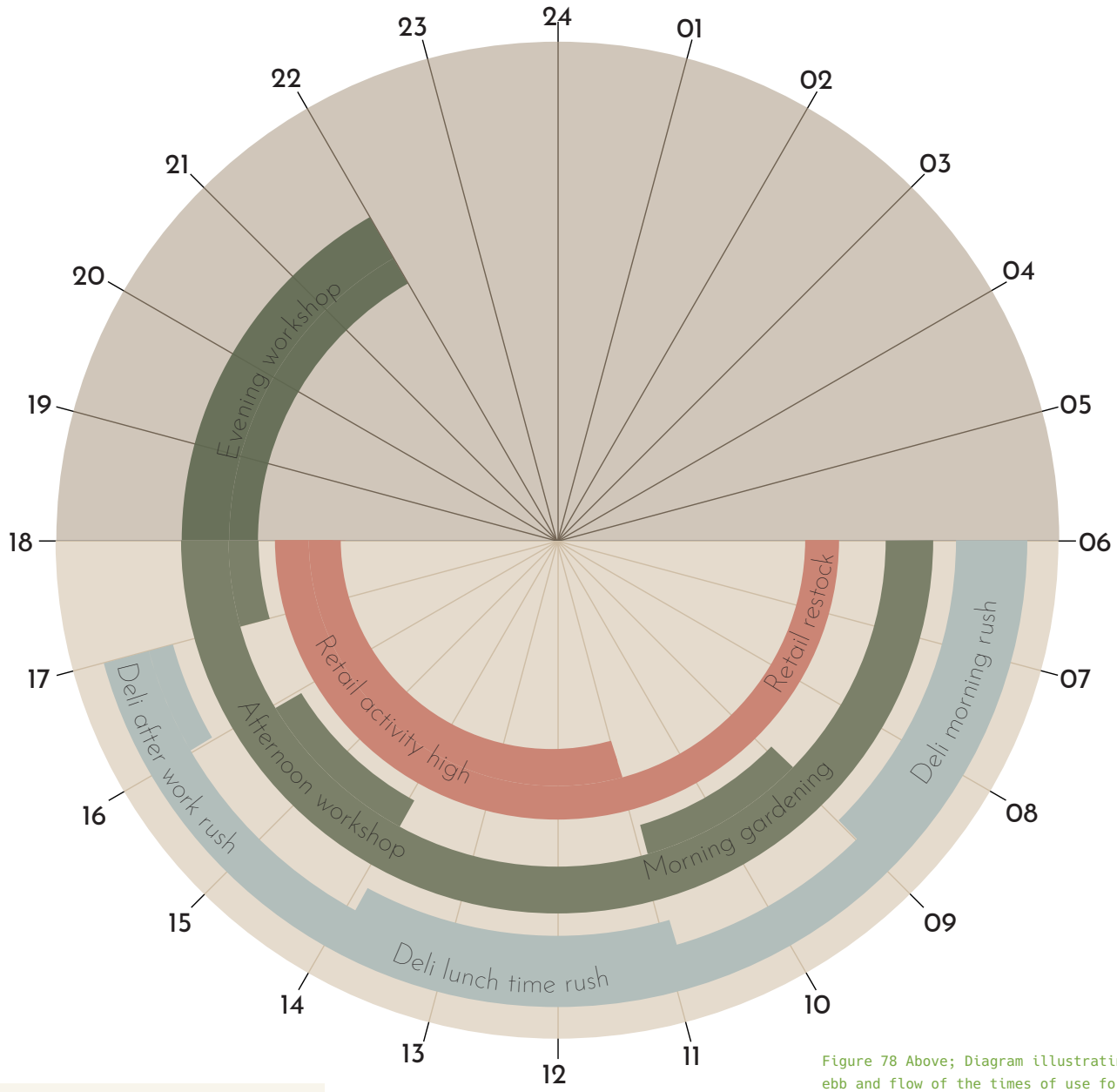


Figure 78 Above; Diagram illustrating the ebb and flow of the times of use for the whole interior space (Author 2019)

6.5) Time of use

The intention with the interior space is to be a space that ebbs and flow's throughout the day. With three distinct functions each supporting each other as noted in part 6.1, it was important that the times of use made sense.

Upon approach you would first encounter the deli (the blue ring in Figure 78, the intention is that the whole space begins to come to life at 6 in the morning, early enough for the pre-work coffee/snack buyers, or someone who would like to hang around in order to miss traffic. The deli intention is a grab and go deli, however the opportunity should be created for some lingering to happen in order to entice clients to become retail costumers. Therefore the lingerings pace happens deeper into the interior, within the transitional space between the workshop and the retail area.

The workshop space, is an anomaly in terms of spatial use, the intention is that it is majority located towards the side however the greenhouse space is also part of the workshop area, therefore it was crucial to identify how workshops and its activities can happen in the quieter times throughout the day, in order to ensure the most space is given to social when its needed in the peak times.

The retail space is intended to only officially open around 8 in the morning however staff should use the early morning times to restock and curate the interior, as it is the intention that this should change often in order to keep the space visually interesting (like dressing up the mannequins every other day in a clothing store)

Figure 79 Above; Poster graphic for workshop advertisement (Author 2019)

6.6) Workshop intention

The intention with the workshop inclusion into the program is to become one of the social drivers. As noted in the time of use graphic in part 6.3, the workshop is the program that runs for the longest time throughout the day. The reason is that there are so many possible workshops and community growing activities that can be incorporated into the space.

The above graphic (Figure 79) is an example of a poster that would be part of the workshop marketing.

The workshops are meant to spark interest and excitement in a growing zero waste community. and give people a common ground where they could meet like minded people

Part 7a

INFORMANTS

In Part 6 it was concluded that the design deals with retail and sustainability on multiple levels. Each of them has been dissected and expanded upon in the various parts of the dissertation. The next step is to initiate the design process, and for this it is necessary to simplify the information gathered up until this point. The research and studies are amalgamated into key informants that can be used as a guideline in the design process

7.1) Introduction

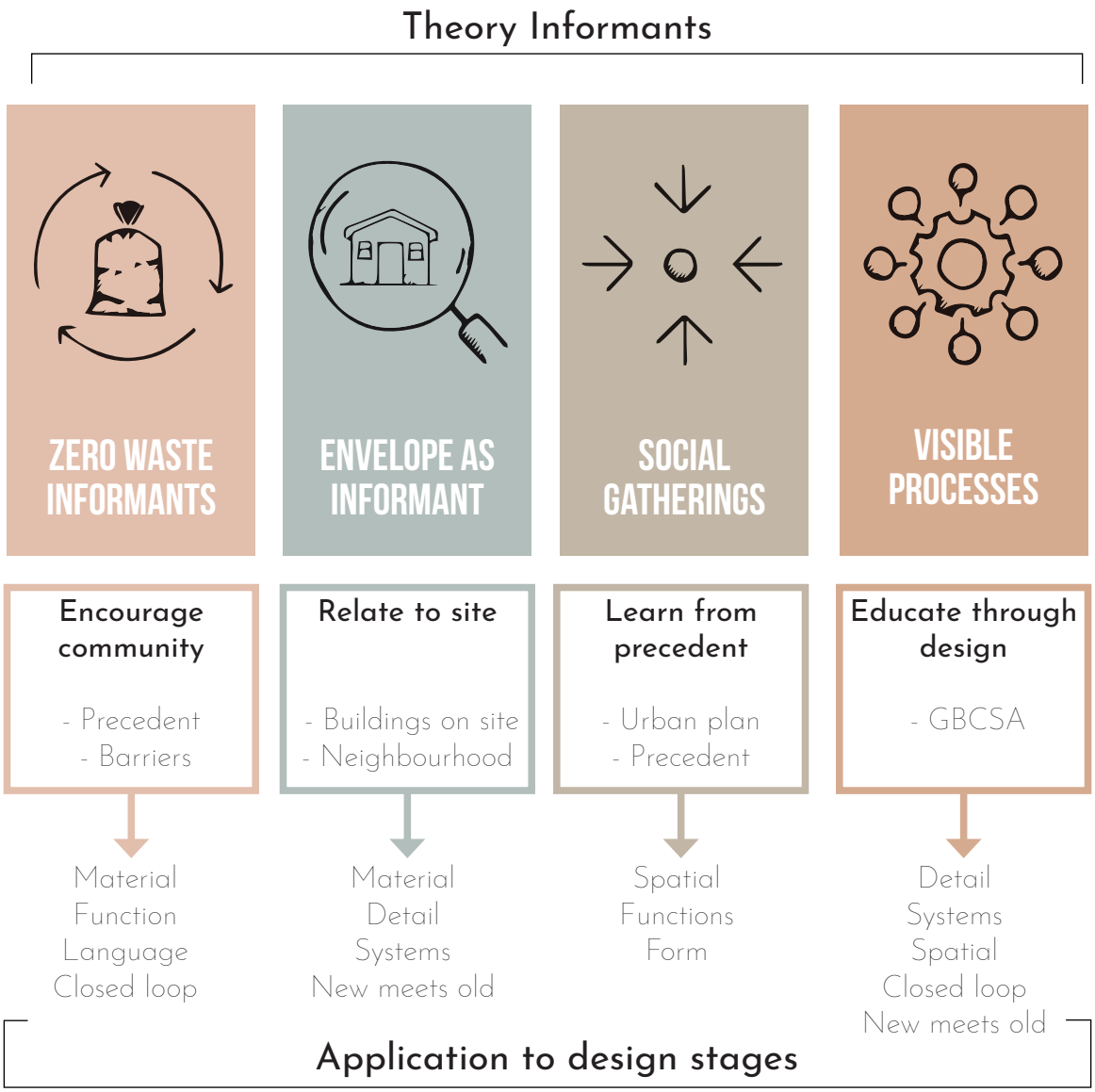
The key informants can be divided into two categories, viz. theory and conceptual informants, each with its own place in the generation of the final design. The two categories work together to inform and create a technically and conceptually strong project that is grounded by research. These informants were noted throughout the parts, with graphics as early references, to create a seamless understanding of the origins of the various influences. Therefore, this part effectively serves as a summary of the previous parts of the book, but also includes the application of the various informants in order to give the design direction.

7.2) Theory informants

As explained in the introduction of this chapter, the theory informants are one of the informant categories. This category focuses on the direct influences on the design aspects that create the overall space and concept.

Zero waste informant:
The core concept originates from Theory – part 1, where zero waste is dealt with in depth; however, the topic is also discussed in Precedent – part 4.2, as its influence is found in the various different projects that were investigated. The first aim of this informant is to help guide decisions made around material selection and the function of elements in the space. More function leads to less waste of material and space. As discussed in part 6.3, in order to encourage a community of people to change the way they live, the design must speak of sustainability and zero waste, even in the way that it is constructed.

Envelope as informant:
This originates from Site analysis – part 3.3, which looks at the existing buildings on the site and the various materials and details used in them. It is also influenced by Theory – part 1.5, where the use of heritage buildings as experience generators is discussed. The aim of this informant is to guide decisions made



around material selection, in order to keep the materials contextual to the site, but also to respect the existing building. Detail design elements found in the trimming and brickwork of the existing building are incorporated.

Social gathering:

This originates from Context – part 2.6, which summarizes the total findings that a social design is one of the crucial steps towards success for the retailer and project. This same topic was mentioned in Theory – part 1.2, where it was shown that social gathering can help build a community and eliminate the barriers to a more sustainable lifestyle. This topic was also very prominently discussed in Precedents – part 4.5 with the case study focused on creating a place for the community rather than a general store. The value of this was that the buy-in into the retail space was more successful as people could feel at home. The aim of this informant is to assist with the decisions around the spatial layout of the design, as well as the form and functionality of the designed parts.

Visible processes:

This originates from Site analysis – part 3.4, which deals with the GBCSA rating tool as well as the net zero building tool, unpacking how and at which stage of the project they will take reference. This informant was an important consideration, not only for the overall sustainability of the project, but also because it is intended to guide the decision-making in terms of various parts of the design, including the detailing strategy, the implementation and application of various systems (water harvesting, electrical and so forth), leading the way in creating a closed-loop design and informing how new and old should meet. The decision for the focus to be on visible processes came from the constant requirements of educating and making sustainability a learning tool. This also worked co-operatively with the intention to encourage zero waste as discussed in part 1.2.

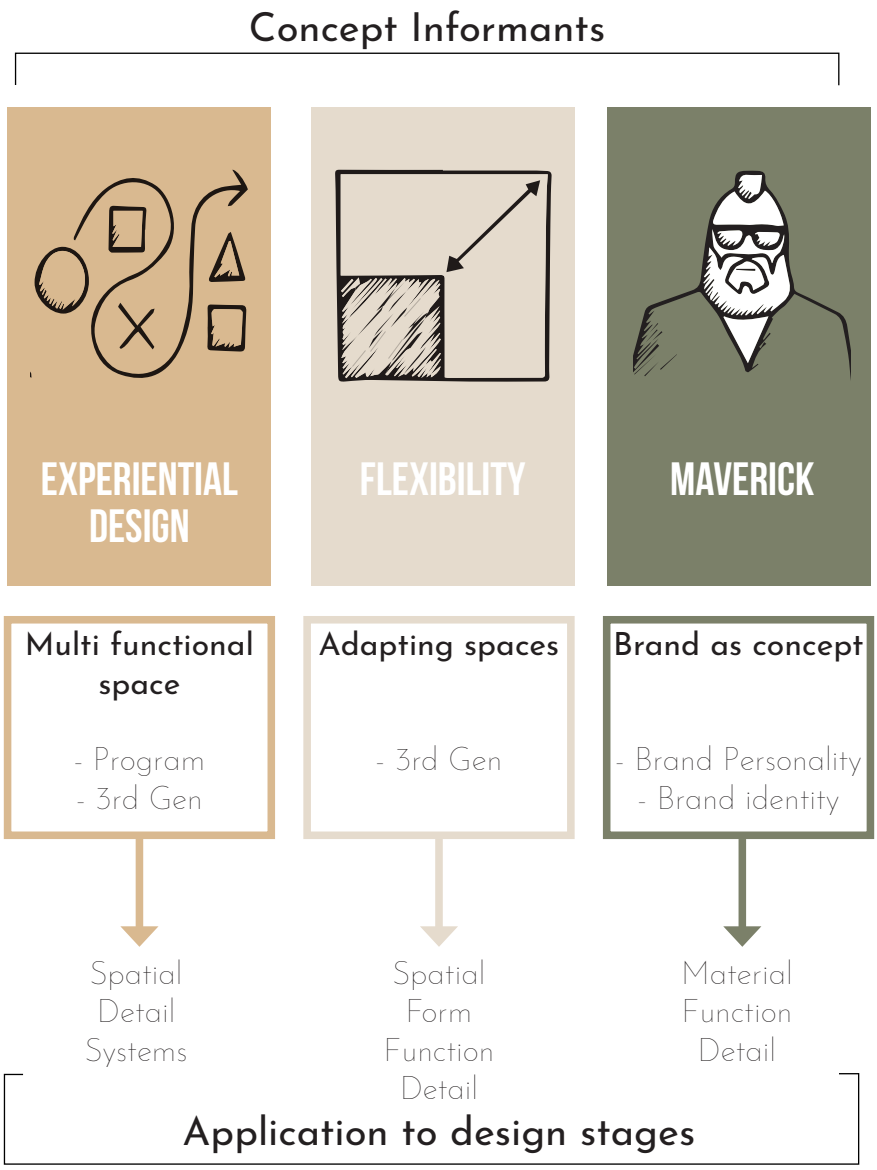


Figure 80 Left; Diagram illustrating The theoretical informants (Author, 2019)

Figure 81 Right; Diagram illustrating The conceptual informants (Author, 2019)

7.3) Conceptual informants

This is the second category, and its focus is aligned towards aspects that are not necessarily visible, but rather related to the feel and the overall experience of the designed space.

Experiential design:
This originates from Programme – part 6.2, in which it was brought to light that in order for a brick and mortar store to stay relevant in the current generation of retail, it needs to cater for multiple experience modes. The topic is discussed further in Part 6.3 & 6.4. This informant aims to direct decisions dealing with the spatial design aspect, as well as the detailing and system design. Rather than having them be merely necessary and mechanical, this informant asks whether they can be an experience

Flexibility:
This originates from Programme – part 6.1. Following from the previous informant, an experiential space requires flexibility to improve its functionality. This informant acts as a reminder of the necessity for the design to be more than just one thing. It requires that the project consider the functionality as flexible, in order to allow for multiple uses as noted in part 6.5 as well. This informant will specifically influence the design of the spatial form and function, as well as the detailing required to layer multiple functions or re-use the space, as another form of flexibility.

Maverick:
This originates from Brand design – parts 5.1 and 5.2, which explain the aspects that form the wholesome brand for the retailer. This helps guide material selection and detailing methods. This informant also finds relevance in the Theory chapter – parts 1.3 and 1.4, which deal with the importance of a brand not only to attract clients, but also to consolidate them into a strong following of customers who consider it lifestyle changing and want to buy into it.

.7.4) Concept development

The first conceptual generator that was explored focused on the social aspect of the design, and worked on integrating social interaction into every facet of the design. However, this concept fell short under critique as the design space lacked architectural intervention and richness, and the social aspect left too much to the imagination. Social design as a concept was also a very inefficient generator of form, and left the space wanting more, i.e. not utilized to its full potential.

After this, the approach changed direction. With the title in mind, it was apparent that the concept needed to be reworked and reconsidered, as the social driver was not sufficient. The intention for the design concept was that it embrace everything the project deals with. The concept had to take a stand, say something meaningful, and allow all the influences to be utilized and retain their worth. With the project aligning with the sustainable design field of study, but also requiring a strong social link in order to build a community, as well as dealing with a building with heritage potential, the concept had a lot to "live up to".

Going back to basics, the concept formed itself from the well-known phrase "reduce, re-use, recycle". What better way to encourage sustainability than to express in a way that the community can comprehend? Sustainability is translated to the community through re-use and upcycling in a manner that is relatable to them. The social aspect of the design does not go away, but is expressed in the designed space rather than the whole concept. The intention was to design the space with an object that everyone in the neighbourhood knows well but has thus far been wasted. The solution came about upon reassessing the initial site photographs, noting various demolition notices around the area (various back-to-back properties are bought up and used for the development of small complexes). It came to mind that one object from a building site is often dumped in landfills because newer technologies have taken its place. and it is seen as too much effort to recycle. This humble object is the steel-frame window. The intention is to re-use steel-frame windows to build the majority of the structure, and in this way not only create an architecturally intriguing, exciting and experiential space, but also express re-use at its best by extending the life cycle of an often wasted object. This became the new conceptual driver – using objects everyone knows in new and innovative ways (upcycling). By using objects that the community can relate to and understand, they could be made aware of the worth of often discarded objects, including elements such as building waste, plastic, food scraps, and even paper. Through expressing these materials in a new light, this concept aims to touch on all seven informants and meet the eventual goal of encouraging a zero waste lifestyle. Against this backdrop, the importance of reducing waste can further be expressed through educating and creating a social environment to discuss it as a community.

The overall concept comes down to creating a great social retail space that is a talking point in terms of its design, but also its intention, a space that embodies a better future for the environment and the people using it, by reducing waste, encouraging waste-free shopping and strengthening the community.

Part 7b

DESIGN

The design stage of this project more of a throughout intervention, every step of the way some design would happen and the final product evolved from there, for that reason the design is placed within the concept chapter, it is still an ever evolving element of the project. There are various iterations of the design, none like the other.
This part will illustrate the stages of the design through the project each with an analysis about the decisions made with each iteration.

7.5) Material selection strategy

The process towards selecting the various materials was a structured process influenced by multiple facets of the design. The results are summarised in Figure 82

The first consideration was to satisfy the reduction of waste in the project, as further dealt with in part 8. As the project deals with reducing waste, and educating on a zero waste lifestyle, the first step would be to reuse. Therefore a large selection of the materials used would have to be existing. This included the brick from the demolished northern wall of the house, the Oregon pine mezzanine floor of the existing house, as well as the brick pavers used all around the site. All of these materials should be stripped and cleaned, for reuse. The on-site reuse is not limited to demolition materials but also the shipping containers, which will be reused as is with some moderate modifications, as dealt with in more detail in part 8.

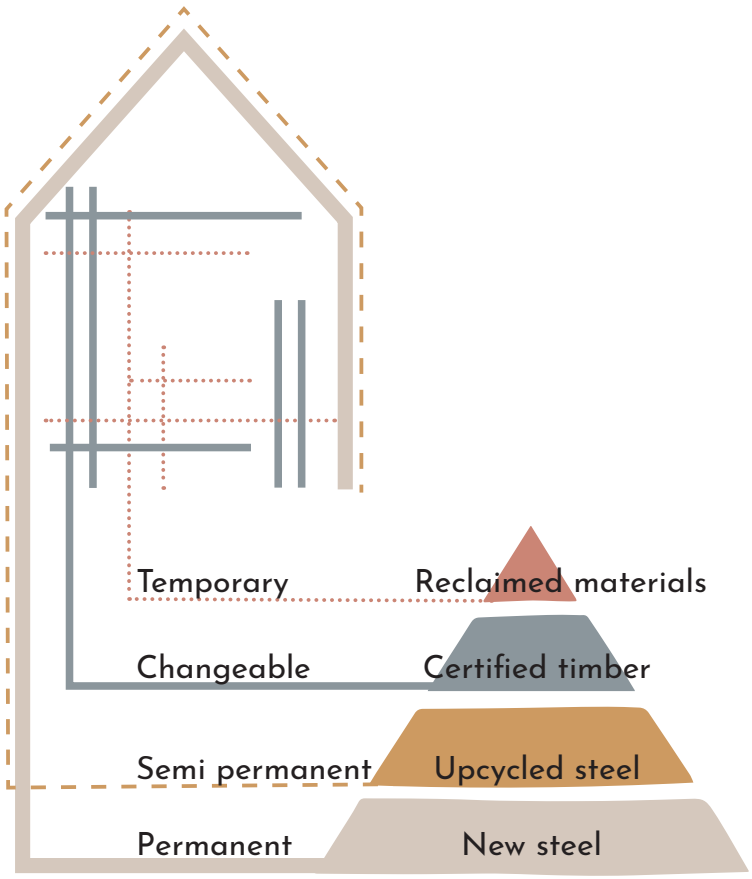
The second material inclusion phase was the material selection for the greenhouse. As the window concept came before the idea of the structure it was known that steel-frame windows will be reused from the neighbourhood current developmental changes as discussed in part 7.4. However the structural material to carry these frames needed a more in depth decision making process. Refer to Figure 83, Figure 84 where a comparative study was applied to a selection of possible materials.

The ratings were made based on a set of preconceived intentions that stem from design intentions a well as structural requirements. They are as follows:

- The material had to be structurally strong enough to carry very high loads of weigh.
- The material would need to be durable and weather resistant.
- With the intention of this structure being permanent the material should perform accordingly.
- The material should either have a low embodied energy, or be widely reused and recyclable with little labor added.

With this it was found that steel would be the most suitable material, although it has a very high embodied energy, it has multiple reuse applications in its original

Figure 82 Right; Diagram illustrating the hierarchy of the materials, and their applications (Author, 2019)



form, and can also easily be recycled and reused.

The last part of the material selection process was to identify the main structural/infill material for the interior fit out. This was a tough decision as there were already so many different materials in the mix. Initially it was an instinctive response to design the interior from steel as well, as noted in iteration xx seen in part 7.x. However after the iteration was complete the space seemed overwhelming and the steel was overpowering the products on display, it also seemed wasteful to use such an energy intensive material for something that is not permanent such as the greenhouse structure.

However for the sake of the concept of reuse/reduce and the continuation of this throughout the project it was crucial to consider the interior material pallet to the same extent as the exterior structure. Therefore the same materials were used, as they ere all possible materials that would make a decent interior fit out, the comparative table is as seen in Figure 84.

Same as with the steel structure the ratings were made based on a set of preconceived intentions that stem from design intentions a well as structural requirements. They are as follows:

- The interior fit out would have to be changeable, to allow for flexibility with time and growth of the retail space.
- It would have to have a low embodied energy or a strong lifecycle argument, as the material is more likely to end up in landfill if not addressed.
- It would have to be fitted in a disassemblable manner to allow for easy reuse and flexibility.
- It would have to be lightweight, to allow for mobility and personalization.

With these consideration reused as well as certified timber deemed to be appropriate, for the required application, as it is widely reused, and biodegradable, it is also strong enough and lightweight enough to be moved around with moderate effort. The decision was made to use certified timber over the reused, due the slightly lower score (which was decided by the aesthetic implication of using recycled timber, which would not be favorable).

With a very full material pallet the next challenge was to make the various materials flow together.

Figure 83 Right; Material matrix, used for the selection of the structural material (Author, 2019)

Figure 84 Right; Material matrix, used for the selection of the fit-out material (Author, 2019)

STRUCTURAL FRAME MATRIX

Design considerations

MATERIAL NAME	FUNCTIONAL PURPOSE	PERMANENCE	MATERIAL ORIGIN	SPATIAL QUALITY			CONNOTATIONS AND PERCEPTIONS	APPROPRIATENESS 1-5
				ACOUSTICS	TACTILTY	LIGHT REFLECTANCE		
Reused plastic	Surface material, non structural	Does not decay, or biodegrade, however can become brittle with high levels of solar exposure	100% recycled material restructred through heat into a dence surface can be worked similarly to timber	.75 (20mm pannel) 0.23	smooth, hard, temperate to touch	dependant on finish could be high reflectance as well as light sheen dependant on the finish(polished or smooth)	durable, affordable, bad for the environment	1
steel	structurally strong, durable material	very durable, can rust if not treated regularly	From landfil/ manufactured from iron ore	N/A	smooth to rough dependant on the finish, cold to touch	high reflectance dependant on the finish,	cold, strong, hard, industrial	2.5
reclaimed timber	Durable material, ideal for non structural use, seating, flooring screens	can be brittle and rot easily, very suceptible to bugs	found in landfill to be reused	0.18 *.6 if wood fiber	directional texture, smooth if painted/treated, warm	very little reflectance, dependant on the finish and colour, high gloss finish wuld have high reflectance other than that , the timber would have some light diffucion charecteristics.	warm, inexpencive, strong, practical	1.5
Certified timber	Structuraly strong material, durable, used for frames and shopfitting	can rot easily if not treated, very suceptible to bugs	cut from a certified growing forrest specifically aimed to reduce	0.18 *.6 if wood fiber	directional texture, smooth if painted/treated, warm	very little reflectance, dependant on the finish and colour, high gloss finish wuld have high reflectance other than that , the timber would have some light diffucion	warm, inexpencive, strong, practical	2
bamboo	structurally strong material, furniture, framing and shopfitting material	can rot easily if not treated, very suceptible to bugs	rapidly growing plant / 100% renewable souce, high water usage	0.62	smooth texture, roughness varies dependant on reworking process, cold to touch	meduim sheen would reflect some light off the treated surface	warm, inexpencive, strong, practical, natural, exotic	2.5

FIT-OUT MATRIX

Design considerations

MATERIAL NAME	FUNCTIONAL PURPOSE	PERMANENCE	MATERIAL ORIGIN	SPATIAL QUALITY			CONNOTATIONS AND PERCEPTIONS	APPROPRIATENESS 1-5
				ACOUSTICS	TACTILTY	LIGHT REFLECTANCE		
Reused plastic	Surface material, non structural	Does not decay, or biodegrade, however can become brittle with high levels of solar exposure,	100% recycled material restructred through heat into a dence surface can be worked similarly to timber	.75 (20mm pannel) 0.23	smooth, hard, temperate to touch	dependant on finish could be high reflectance as well as light sheen dependant on the finish(polished or smooth)	durable, affordable, bad for the environment	1.5
steel	structurally strong, durable material, heavy, in weight and visually	very durable, can rust if not treated regularly, labour intensive fixing	From landfil/ manufactured from iron ore	N/A	smooth to rough dependant on the finish, cold to touch	high reflectance dependant on the finish,	cold, strong, hard, industrial	1
reclaimed timber	Durable material, ideal for non structural use, seating, flooring screens	can be brittle and rot easily in wet areas, very suceptible to bugs, well known materal very workable	found in landfill to be reused	0.18 *.6 if wood fiber	directional texture, smooth if painted/treated, warm	very little reflectance, dependant on the finish and colour, high gloss finish wuld have high reflectance other than that , the timber would have some light diffucion charecteristics.	warm, inexpencive, kitch, practical	5
Certified timber	Structuraly strong material, durable, used for frames and shopfitting	can rot easily if not treated in wet areas, very suceptible to bugs,	cut from a certified growing forrest specifically aimed to reduce	0.18 *.6 if wood fiber	directional texture, smooth if painted/treated, warm	very little reflectance, dependant on the finish and colour, high gloss finish wuld have high reflectance other than that , the timber would have some light diffucion	warm, inexpencive, strong, practical	5.5
bamboo	structurally strong material, furniture, framing and shopfitting material, can be bulky, as thickness is required for strength	can rot easily if not treated, very suceptible to bugs, very workable	rapidly growing plant / 100% renewable souce, high water usage	0.62	smooth texture, roughness varies dependant on reworking process, cold to touch	meduim sheen would reflect some light off the treated surface	warm, inexpencive, strong, practical, natural, exotic	3.5

Environmental considerations

EMBODIED ENERGY	CHARACTERISTICS	REWORKING PROCESS	CONNECTIONS AND FIXINGS	OPPERTUNITY TO BE REUSED	APPROPRIATE NESS 1-5	Total
80.9 - 89.5 mj/kg	High melting point, high recyclebility, inexpensive, currently recycled extensively	smelted and extruded into think fibres which are felted together	woven, glued, nailed, skrewed create a singular object, could be used as 3D printing material (looses translucence as it densifies the plastic).	2	2.5	3.5
38.1 - 42 mj/kg	very durable, high maluablity	can be recycled with moderate impact, smelted and reformed, cut up and rewelded, reused as is	weld, bolt, used as singular object	3	4	6.5
10.5 - 11.6 mj/kg	strong material, can be used for various aplications , can be reused, but is biodegradable (does however release its carbon content back into the atmosphere)	can be shreaded for wood fiber, also cut and sawn to create new products, can be upcycled	nailed, screwed, glued, friction joint	3	3	4.5
10.5 - 11.6 mj/kg	strong material, can be used for various aplications , can be reused, but is biodegradable (does however release its carbon content back into the	can be shreaded for wood fiber, also cut and sawn to create new products, can be upcycled	nailed, screwed, glued, friction joint	3	3	5
1.7 - 2.58 mj/kg	not recyclable, but is biodegradable, very high compresive strength, very afordable due to rapid production	can ge shreaded into fibers to create dence panel system, can not be reused as structural integrity becomes questionable	fricton tight rope joint, fit in joint, pin connection, butt joint	2	3	5.5

Environmental considerations

EMBODIED ENERGY	CHARACTERISTICS	REWORKING PROCESS	CONNECTIONS AND FIXINGS	OPPERTUNITY TO BE REUSED	APPROPRIAT ENESS 1-5	Total
80.9 - 89.5 mj/kg	High melting point, high recyclebility, inexpensive, currently recycled extensively	smelted and extruded into think fibres which are felted together	woven, glued, nailed, skrewed create a singular object, could be used as 3D printing material (looses translucence as it densifies the plastic).	2	2.5	4
38.1 - 42 mj/kg	very durable, high maluablity	can be recycled with moderate impact, smelted and reformed, cut up and rewelded, reused as is	weld, bolt, used as singular object	3	2.5	3.5
10.5 - 11.6 mj/kg	strong material, can be used for various aplications , can be reused, but is biodegradable (does however release its carbon content back into the atmosphere)	can be shreaded for wood fiber, also cut and sawn to create new products, can be upcycled	nailed, screwed, glued, friction joint	3	3.5	8.5
10.5 - 11.6 mj/kg	strong material, can be used for various aplications , can be reused, but is biodegradable (does however release its carbon content back into the	can be shreaded for wood fiber, also cut and sawn to create new products, can be upcycled	nailed, screwed, glued, friction joint	3	3.5	9
1.7 - 2.58 mj/kg	not recyclable, but is biodegradable, very high compresive strength, very afordable due to rapid production	can ge shreaded into fibers to create dence panel system, can not be reused as structural integrity becomes questionable	fricton tight rope joint, fit in joint, pin connection, butt joint	2	3	6.5

THE ITERATION PROCESS

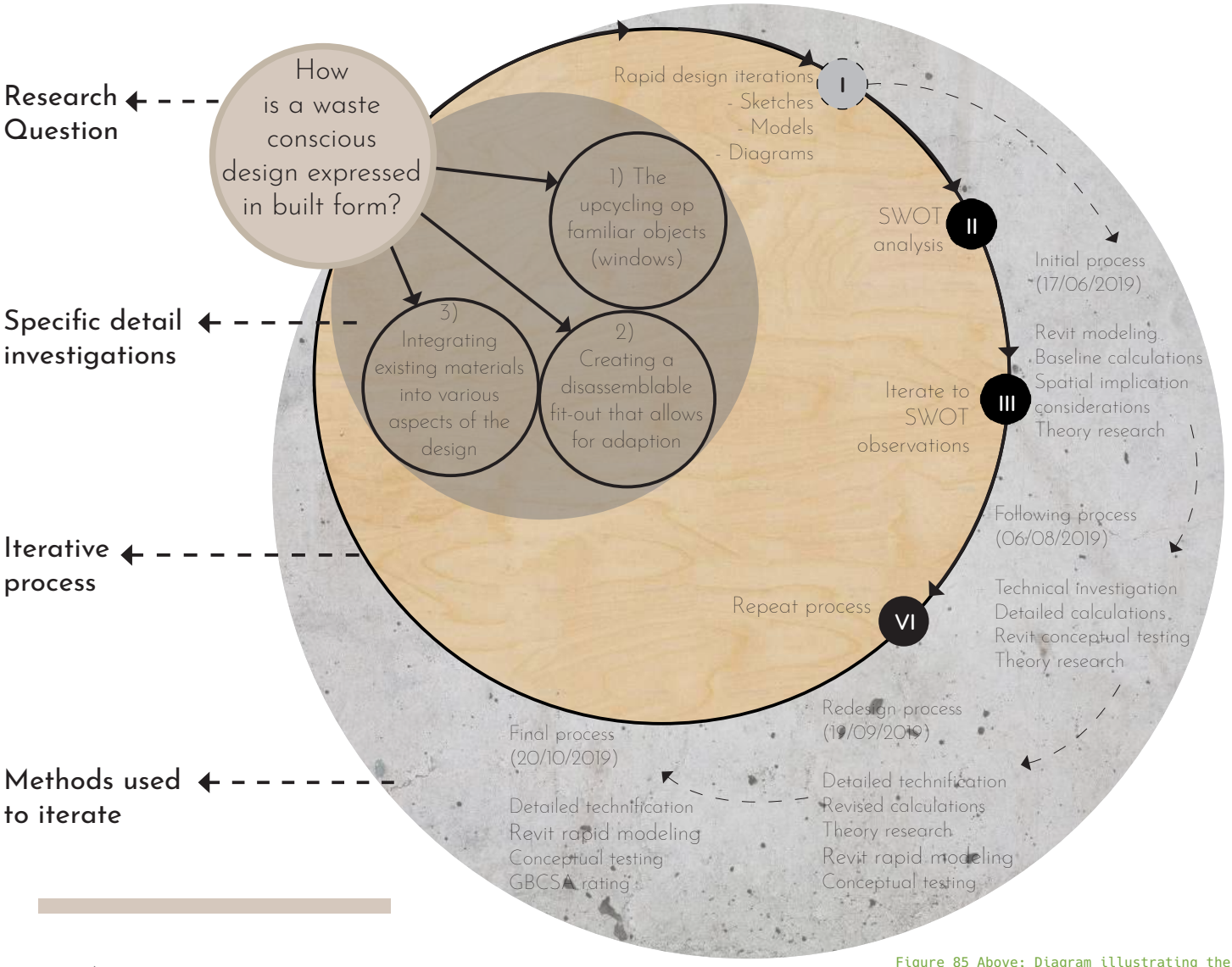


Figure 85 Above; Diagram illustrating the iteration process, the visuals of the graphic are adapted from a previous project (Author, 2018)

7.6) Iteration process

As the design project runs the entire year, the iteration process was stretched throughout this time. At each different stage the process was stopped and critically analysed to ensure constant improvement throughout the year. The aims of the iteration process are as follows:

- Improve the spatial narrative of the design as well as strengthen the intention of designing a space that can inspire change.
- Saturate the interior space with various experiential moments, that educate visitors.
- To ensure a well thought out final design, that embodies sustainable initiatives.

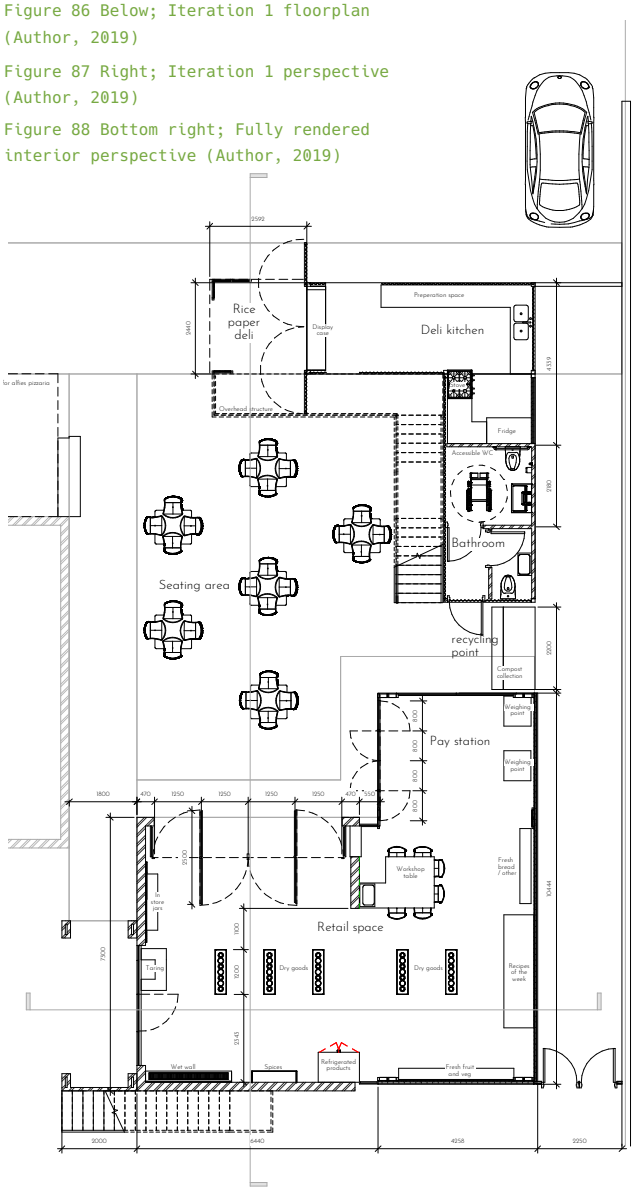
Figure 52, illustrates the whole process that was followed. In the following pages the analysis of the various iterations will be set out and explained.

This process was selected to allow the design to be analysed critically even though the various iterations vary wildly, a SWOT process allows a level ground to assess the different design and also learn from the various iterations and their intentions.

Figure 86 Below; Iteration 1 floorplan (Author, 2019)

Figure 87 Right; Iteration 1 perspective (Author, 2019)

Figure 88 Bottom right; Fully rendered interior perspective (Author, 2019)



Iteration 1 17/06/2019

The design driver for his iteration was to design a space that embraces the possible social aspect of retail space. The design attempted to remove the Eastern wall in order to increase the size of the interior space. This lead to various design challenger regarding structure as well as the interior space not being usable due to too many openings, as more than half of the interior wall space were doors.

S The light quality brought in by the glass roof creates an intriguing interior space

O The use of adaptable fit outs create a great opportunity for the interior to suite any configuration

W The doors around the edges of the interior, cause a circulation problem. There is not enough shelf space

T The exterior courtyard is underutilized as its just movement space

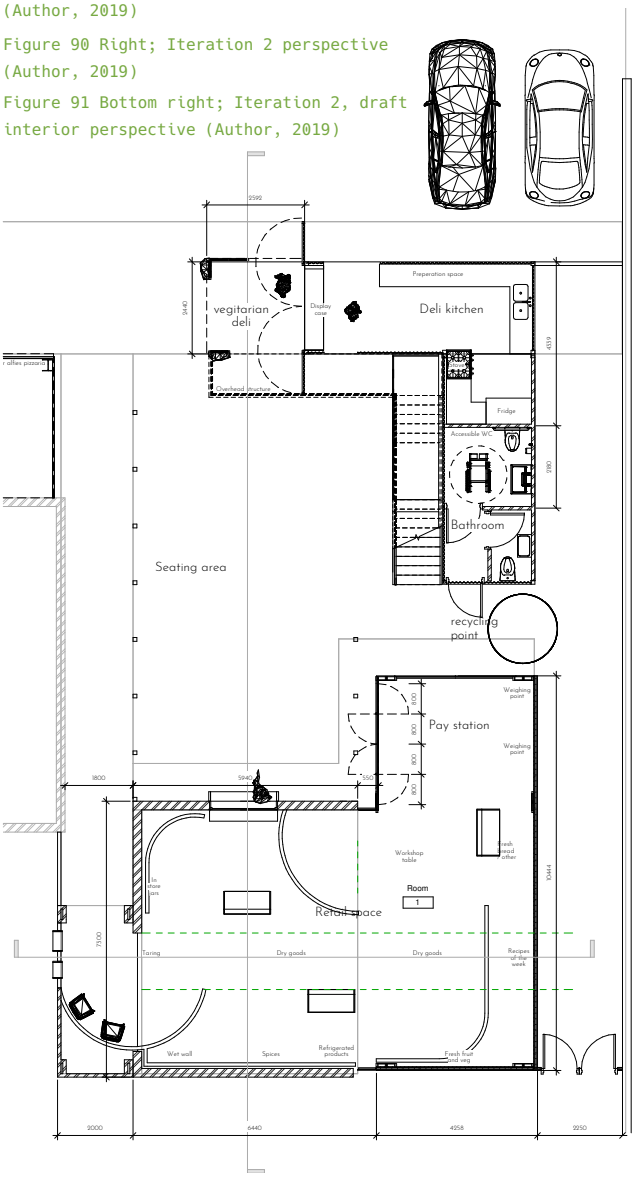
What is the take away:

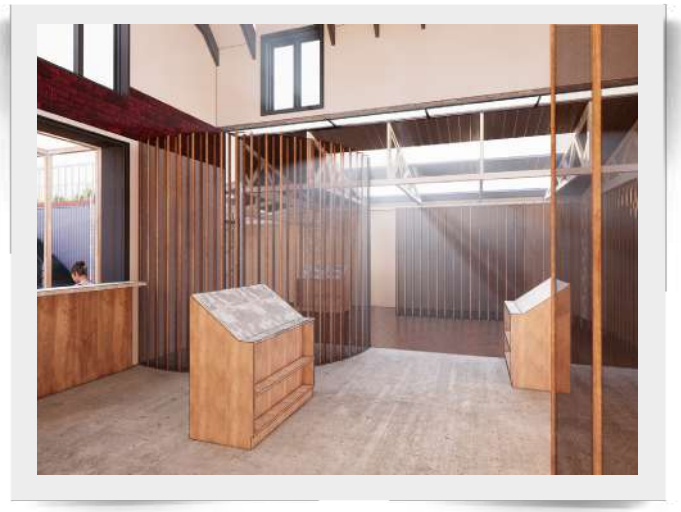
- Adapt the approach into the interior space to minimize wasting wall-space.
- Improve glare and solar control in the conservatory space.
- The exterior area seems haphazard and not utilized fully.

Figure 89 Below; Iteration 2 floorplan (Author, 2019)

Figure 90 Right; Iteration 2 perspective (Author, 2019)

Figure 91 Bottom right; Iteration 2, draft interior perspective (Author, 2019)





Iteration 2 06/08/2019

The design driver for his iteration was to improve the internal circulation and make better use of the exterior courtyard. The addition of the curved elements in the interior space allowed to control the flow of the retail and direct views towards certain key points in the space.

The product space was increased with this iteration however the disconnect between outside and inside was also more prominent as the entrance was pushed towards the side.

S The material pallet of timber creates a soft and welcoming retail space.

W The curves create dead corners of unusable space, and does not connect to the shape of the interior

O The window towards the courtyard lends to a great opportunity to connect the two spaces, possibly combine

T The interior shape and the entrance located at the side makes it a challenging space to navigate

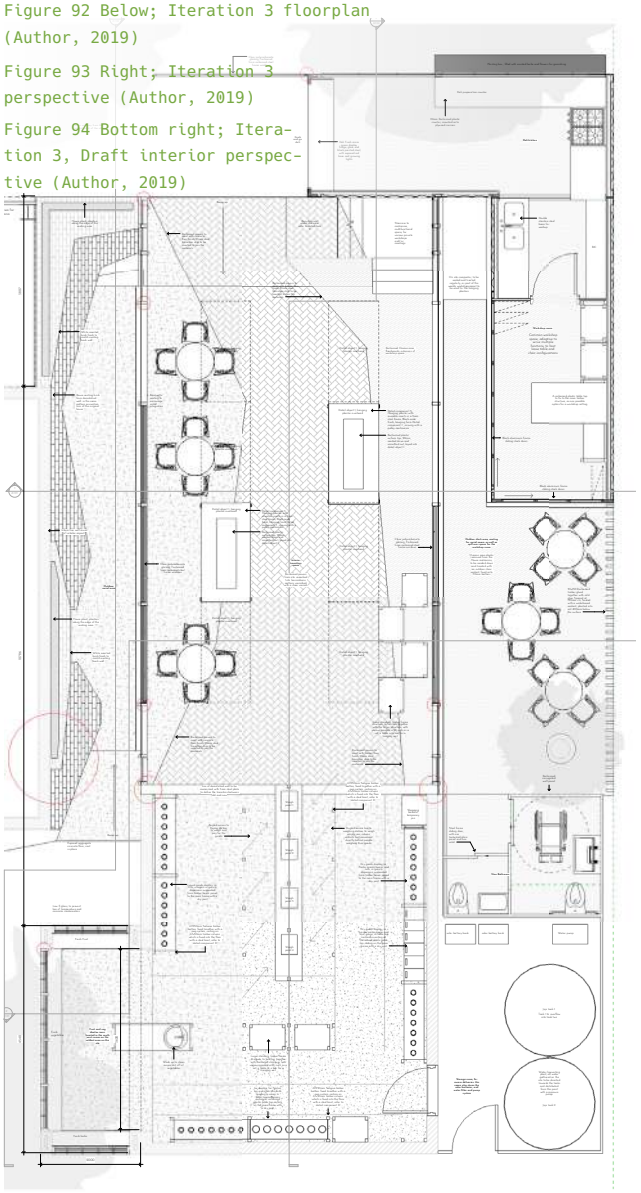
What is the take away:

- Simplify the design, don't force the shape
- Design the exterior as an extension of the interior, the two can become one.
- Strengthen the concept of reuse in the built form.

Figure 92 Below; Iteration 3 floorplan (Author, 2019)

Figure 93 Right; Iteration 3 perspective (Author, 2019)

Figure 94 Bottom right; Iteration 3, Draft interior perspective (Author, 2019)



Iteration 3 19/09/2019

The design driver for his iteration was found int he discovery of the surrounding demolitions. Using the reclaimed window panes brought a whole now concept to light. The interior opens up forwards rather than to the side and makes better use of the whole site. The three programs are better integrated and connected through one singular internal 'nave' that leads the user to the back, the whole space becomes an experience rather than just the retail aspect

S The strong directionality and interior quality of the greenhouse makes for an intriguing space

W The interior can become quite hot if ventilation and solar control is not dealt with

O The adaptable interior fit-out is a strong addition, if it can be designed to function well

T various materials and textures need to come together, and blend well to define space and use

What is the take away:

- There is a great need to critically design the solar control and ventilation.
- The interior space lacks directionality and needs a stronger narrative

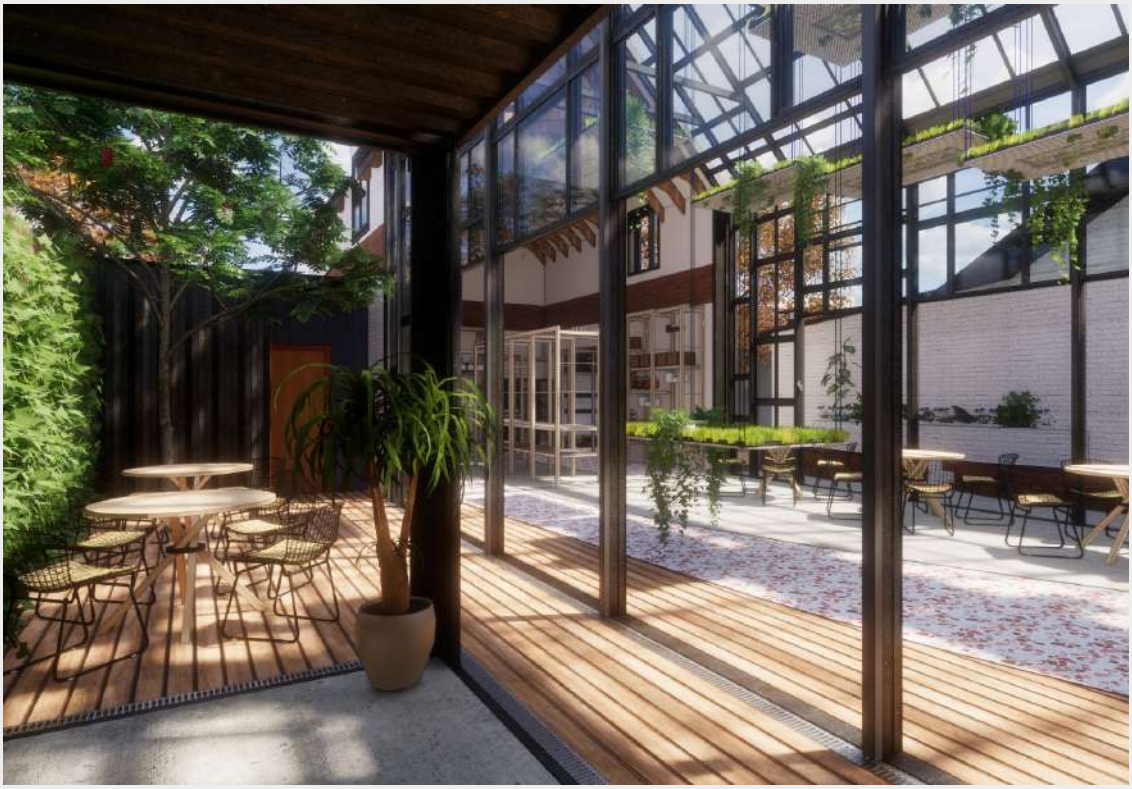
7.7) Rendered floor plan

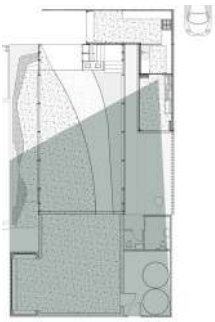
7.8) Renders

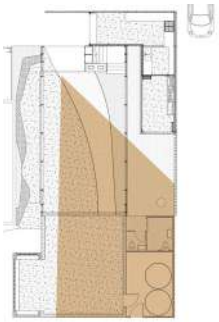
Figure 95 Top; Exterior view inwards (Author, 2019)

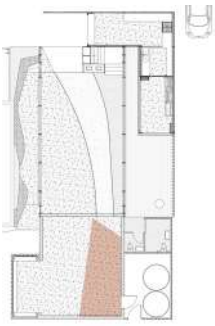
Figure 96 Bottom left: Retail display view (Author, 2019)

Figure 97 Bottom right: Approach view (Author, 2019)









7.9) Section render

Figure 98 Below; Sectional render (Author, 2019)

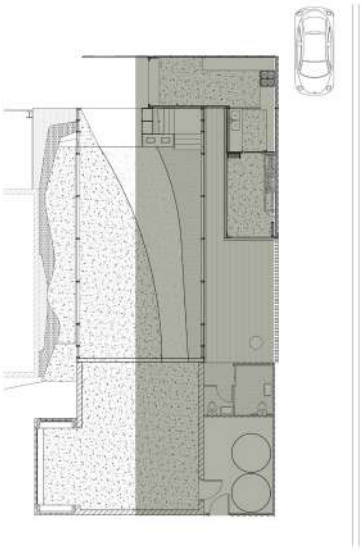
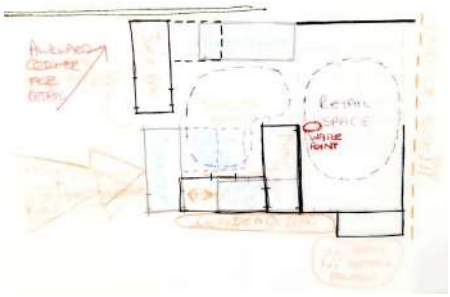


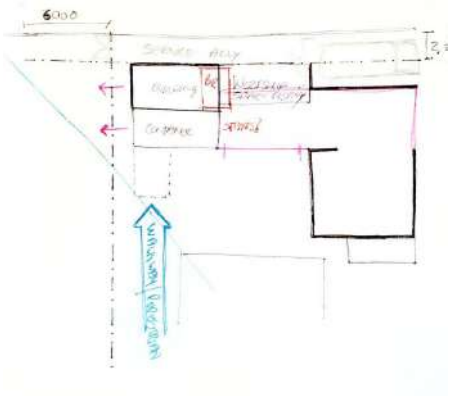
Figure 99 : Various sketches made throughout the year (Author, 2019)

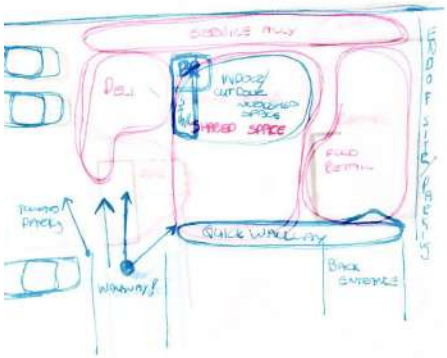
7.10) Spatial design development

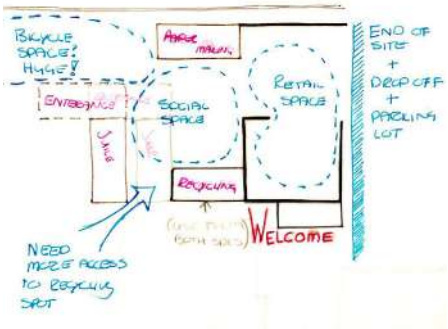
A series of floor plan iterations from the beginning of the year through to the last iteration before technification. The sketches are notebook sketches of rapid fire design drafts before committing to the drawing and converting it to a computer draft as seen in the iteration comparisons.

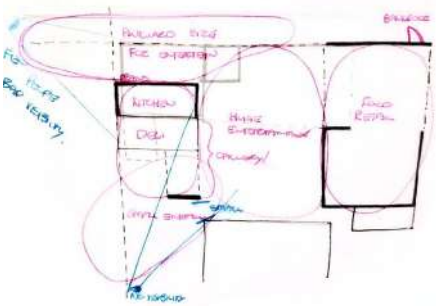
They illustrate the balance between manipulating the existing house in various ways, as well as placing the shipping containers in different locations, the sketches were made to test out the various spatial impacts of the containers. In an attempt to provide visibility to the existing building and also create a wholesome social space.

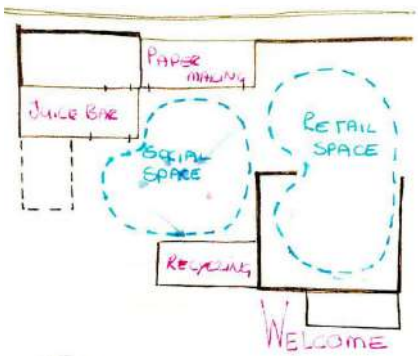


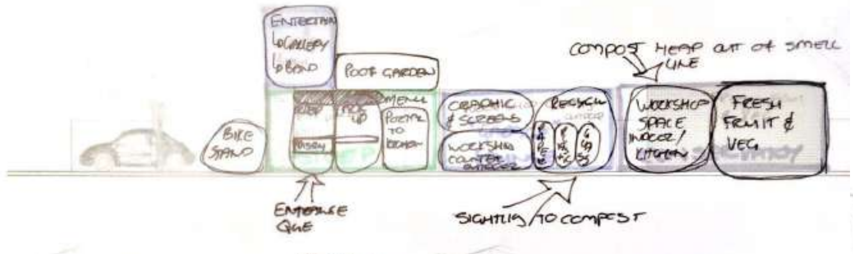


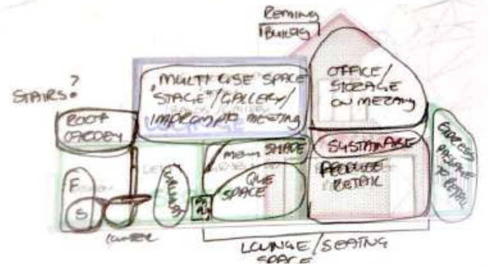


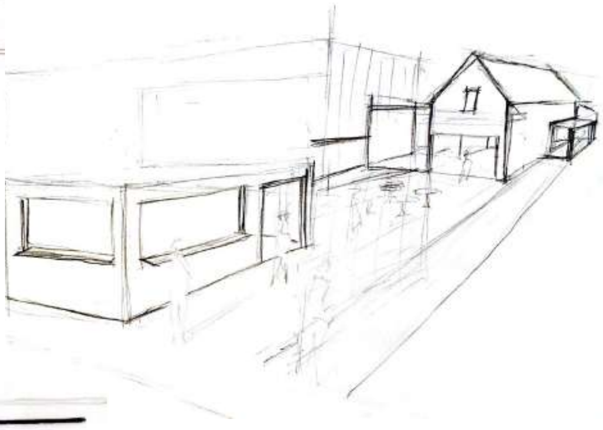


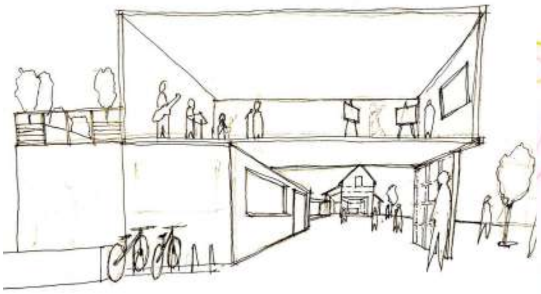


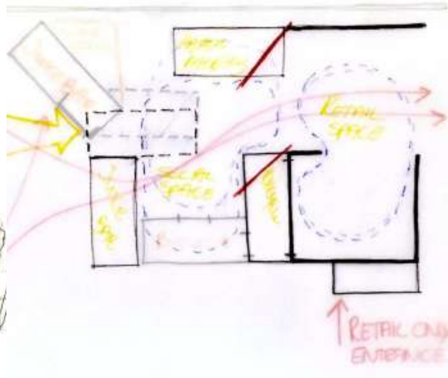


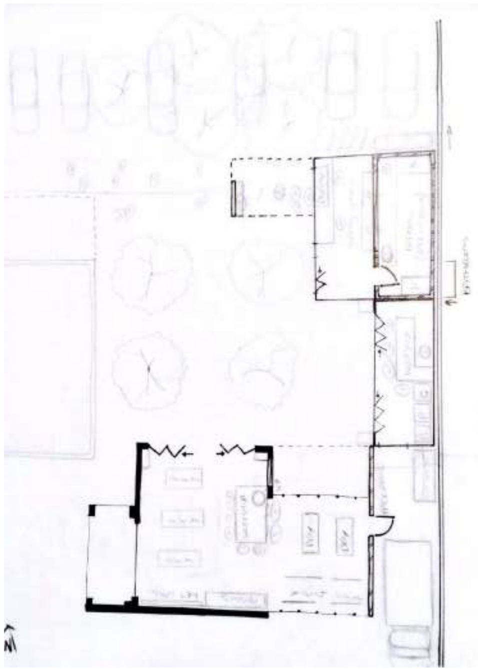

COMPOST HEAP OUT OF SMELL LINE
ROOF GARDEN
BIKE STAND
GRAPHIC & SCREENS
WORKSHOP SPACE
FRESH FRUIT & VEG
ENTRANCE QUE
SIGHTLINE TO COMPOST

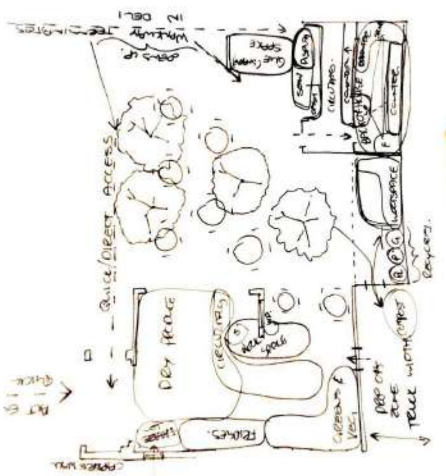

STAIRS?
ROOF GARDEN
MULTI USE SPACE
OFFICE/ STORAGE ON MEZZ
SUSTAINABLE PRODUCE RETAIL
QUE SPACE
LOUNGE/SEATING SPACE

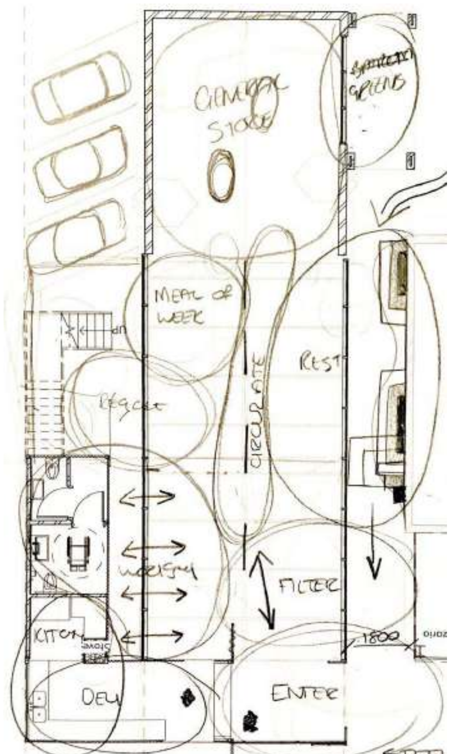





RETAIL SPACE
RETAIL ONLY ENTRANCE




QUICK/DIRECT ACCESS
DRY PRODUCE
FRIDGES


GENERAL STORE
MEAL OF WEEK
CIRCULATE
REST
FILTER
DELI
ENTER
295 MODULE

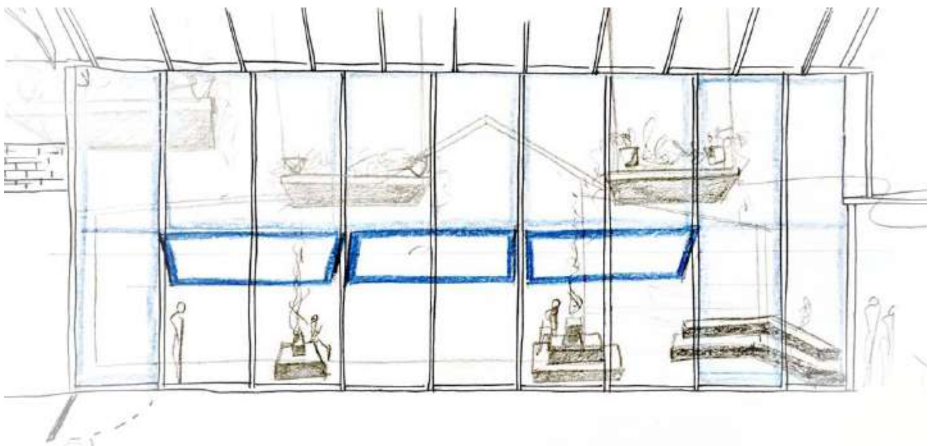
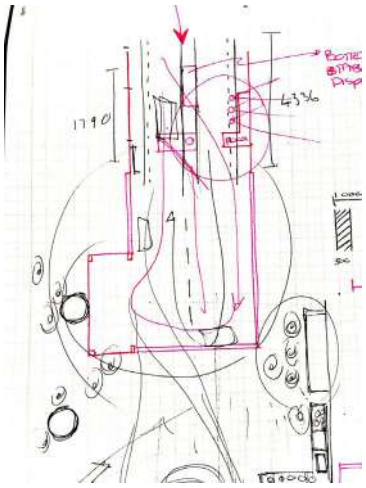
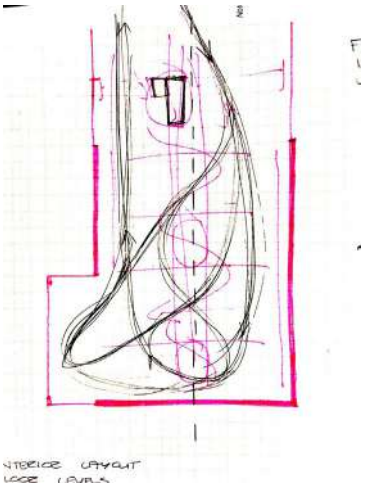
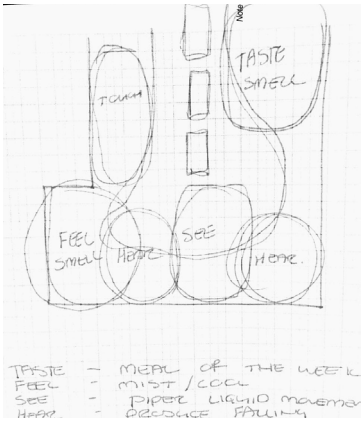
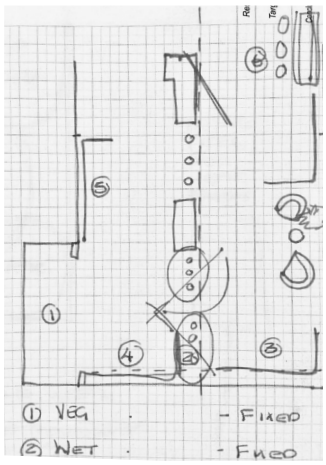


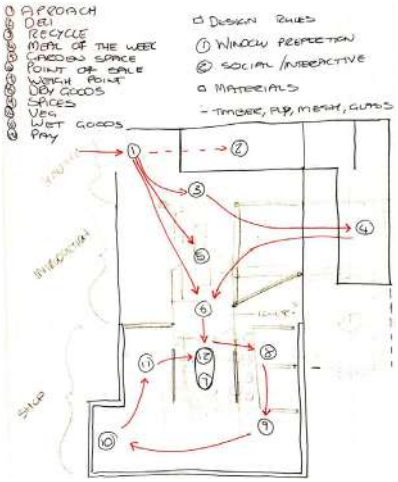
Figure 100 : Various sketches made throughout the year (Author, 2019)







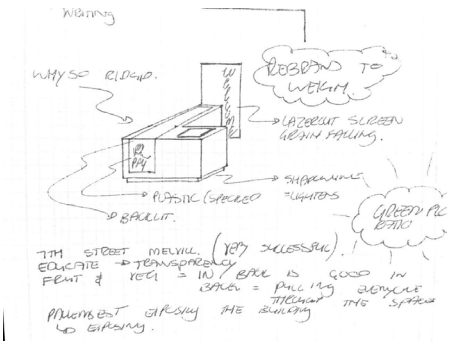


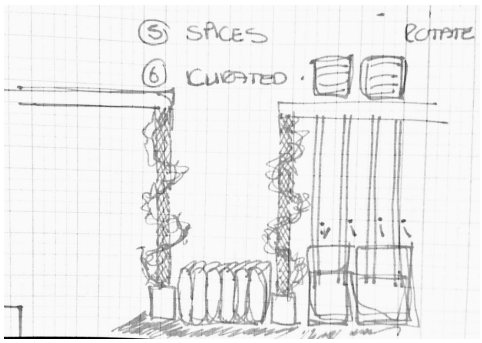


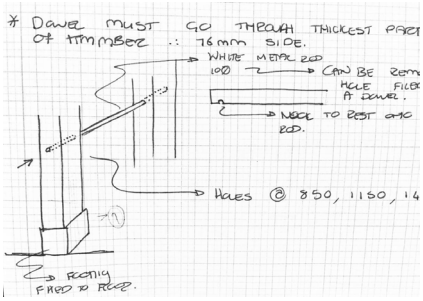
7.11) Interior design development

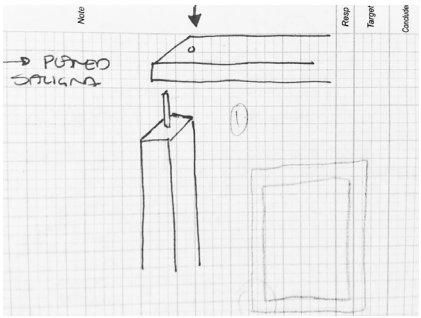
Following the spatial development was the planing of the interior layout and movement, specifically regarding the retail space.

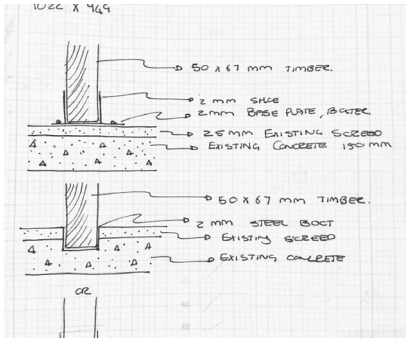
7.12) Shelving design development

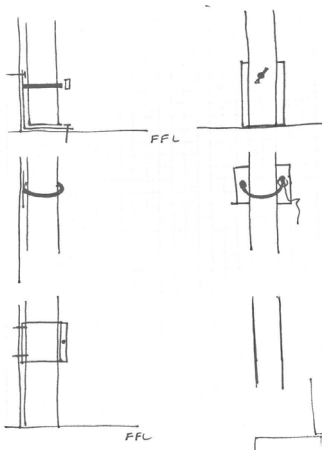




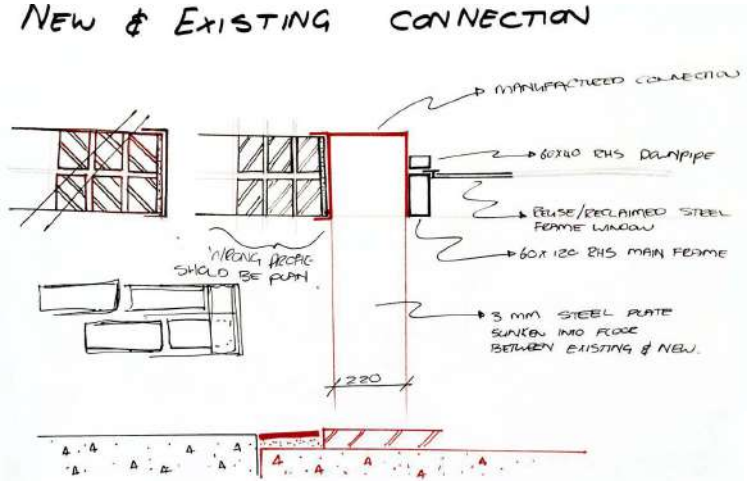


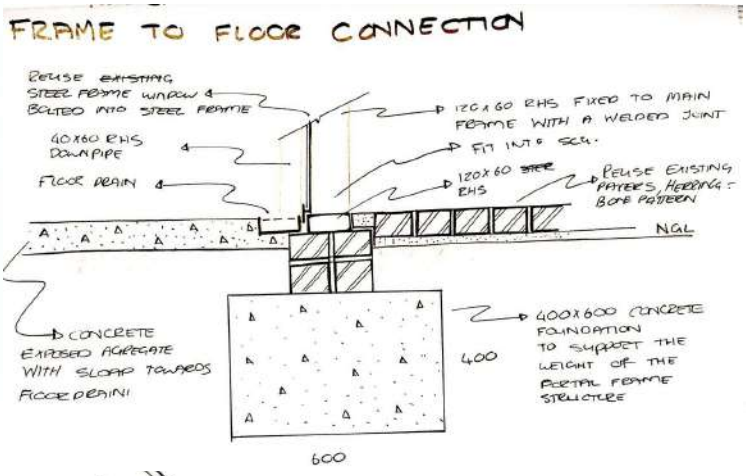


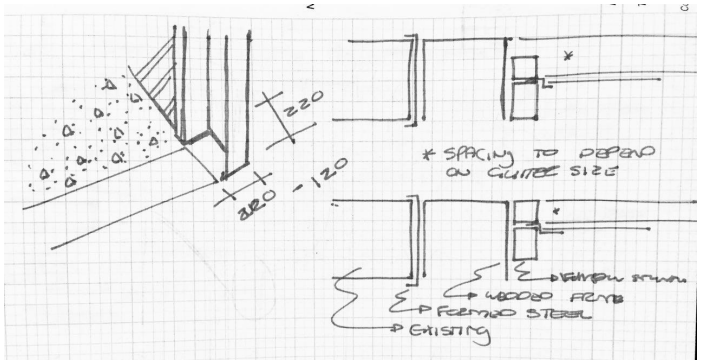


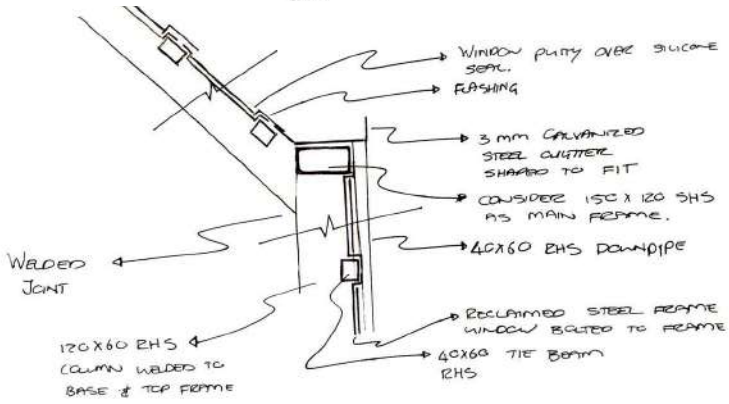


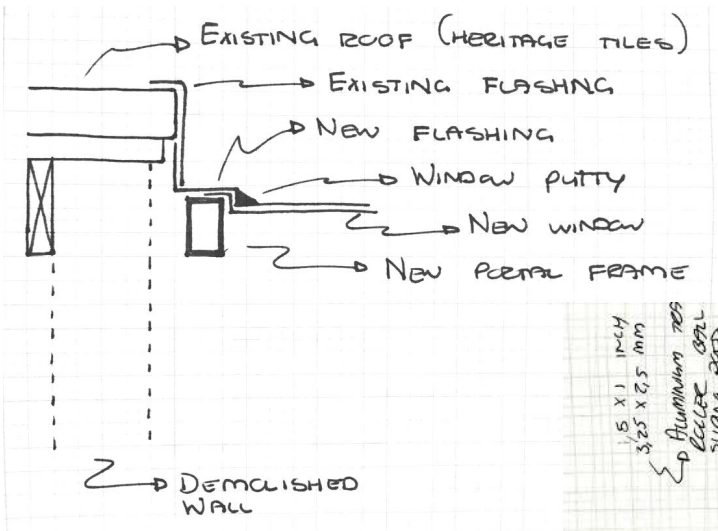
7.13) Structural design development

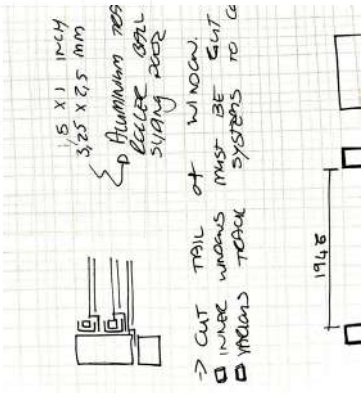




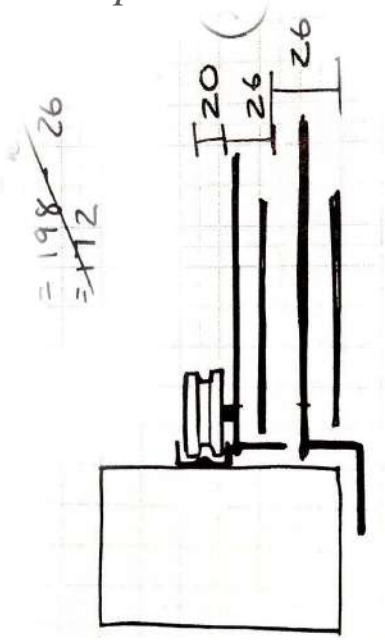








7.14) Window design development



Part 8

TECHNICAL

The technical investigation is initiated by the complexities of the architectural object, but also by the topic of sustainable design. An array of different investigations is required to fully comprehend and illustrate the requirements of the project. A large consideration for the technical investigation of this project was the inclusion of the GBCSA Green Star rating tool and its requirements as set out in part 3.4.

The technical investigation promotes the integration of upcycled/upcycle-able objects into sustainable technologies to encourage opportunities for zero waste.

8.1) Conceptual approach

With the knowledge of sustainability, and given its role as a driver for the project, a crucial first step was to weigh the argument of life cycle vs. embodied energy. As a large part of the project relied on material selection, a stance had to be taken. The decision was taken to align the project with the life cycle approach rather than that of embodied energy, as the life cycle approach aligns more closely with the concept of zero waste (Sassi 2009). Zero waste aims to reduce waste to landfill, and the life cycle approach strengthens this by focusing on increasing the lifespan of a material, which allows you to eventually offset its embodied energy, thereby making the material extraction worthwhile. Thus, it was decided to reduce waste to landfill from the outset of the project design.

The embodied energy approach fell short, as although it strongly encourages the use of sustainable, low-energy materials, these materials tend not to have the required lifespan for a permanent structure like the one proposed for the greenhouse (Sassi 2009). Furthermore, the embodied energy approach does not bring up the idea of re-use, focusing only on using the lowest embodied energy materials to offset your environmental impact (Sassi 2009).

8.2) Aluminium vs steel

The choice between steel and aluminium was a large consideration in the project; however, it was decided that steel would be a better choice for the project, especially taking into account the zero waste aspect. Although aluminium is widely recycled, the process is a stringent one which largely increases its embodied energy. The life cycle of aluminium is also difficult to extend. Aluminium is known to be weaker and more ductile, and is therefore seldom re-used, whereas steel is hardier and can often be re-used with minor adaptations (Zahner 2019).

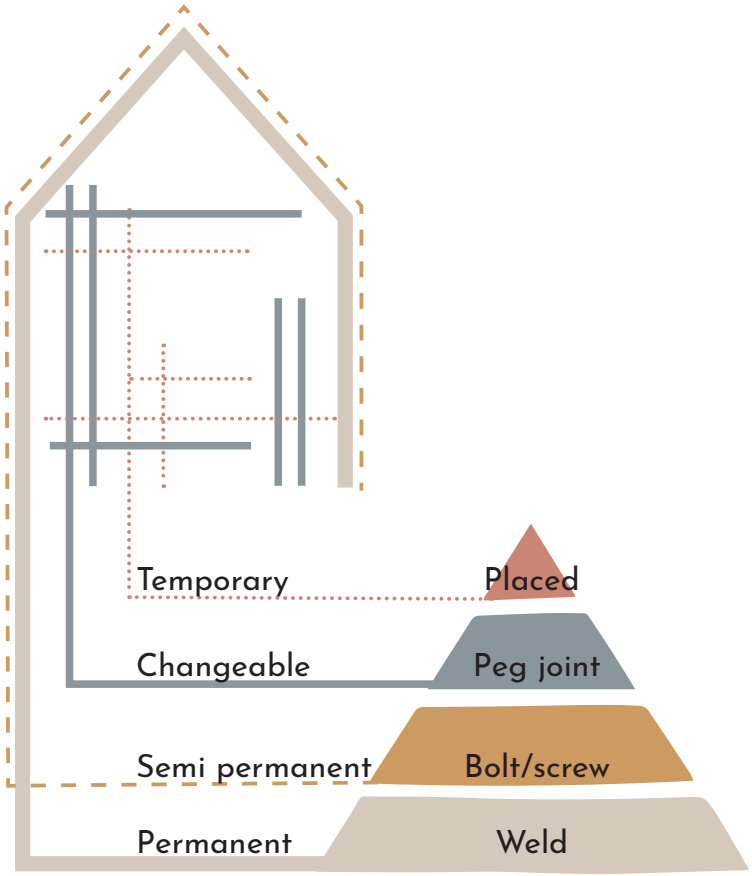


Figure 101 Right; Diagram illustrating the material fixing hierarchy (Author, 2019)

8.3) Fixing methods

With the life cycle approach chosen, designing for disassembly became the next consideration for this project, as this is the only way to allow for the materials to be recycled or upcycled for future use. A strategy was required for this. The intended lifespan of the various components had to be directly related to the method of fixing applied to the object in order to maximize the possibility of re-use. Figure 101 illustrates the fixing hierarchy used for the project. This gave the design and technification of the project a clear direction of intent that would be the framework for all decisions to follow, as it crucial not only to illustrate creative re-use within the project but also to understand what materials cannot be re-used owing to structural integrity.

The steel structure comprises two components, the first being the steel portal frame and the second the windows that are fixed onto that. Aligning with the various considerations mentioned earlier in this part, it was decided that, as the portal frame is a permanent feature, it should tie in strongly with the existing house and the shipping containers. It should also be fixed in a manner that is as durable as possible, but the structure should still be designed for eventual disassembly.

With this in mind, research began into various fixing methods for steel, and the findings were as follows. There are two main options for fixing steel to other objects, including other steel objects. The first is one of the earlier methods of fixing steel, which is to bolt the various objects together using elements such as base plates and shoes to fix corners vertically and horizontally (Silverstein 2008). Bolted joints are strong and this is an affordable fixing method that does not need a highly trained team to carry out. The second method is welding. A welded joint is incredibly strong and permanent, and a mitre weld (not chemically bonded on the horizontal face but rather welded together where the edges meet) facilitates disassembly of the object because the weld can be removed (Silverstein 2008). Welding and bolting each have advantages and disadvantages, specifically applied to the project at hand (Figure 102 illustrates the comparison). For the portal frame structure, the decision was made to use welded joints rather than bolting, as welds are more permanent and less likely to wear over time.

The fixing methodology for the interior timber designed structure should be similar, and was created based on the strategies set out for the larger structure. Therefore, it is specified that certified timber is used, to ensure that the material is sustainable. As with the steel structure, the design for the interior is based on the main carrying frame that is infilled with a smaller removable/interchangeable object. Although the main material selected for the interior space is not a re-used object (such as the windows), it is reusable. The secondary material for the interior, the infill material, would consist of upcycled materials such as an innovative reclaimed plastic surface. It is intended that other than the wall fixing, all other connections should be dry joints, where the main structural joints should be more permanent and harder

Figure 102 Right; Illustrating the comparison between bolting and welding (Author, 2019)

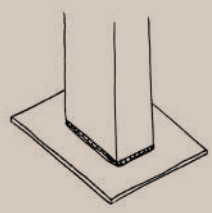
to remove. The infill panels should fit loosely and be interchangeable, as the store display ebbs and flows.

8.4) Steel treatment

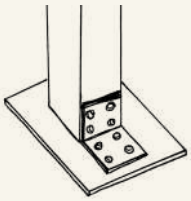
There are two parts to the argument for the steel treatment. The first is aesthetic and the second relates to durability. The steel is intended to be black. This is an aesthetic and design consideration to ensure a strong juxtaposition between the existing house and the new steelwork. The black aesthetic would also work well with the design of the surrounding area. The intention is to blacken the steel using a natural oxidation process; steel blackened by this method attains moderate corrosion resistance and also the desired black finish (Anoplate, n.d.).

The oxidation process is natural, which means that it changes the aesthetic of the steel without changing its physical characteristics (Ashby & Johnson, 2010). This ensures that the reclaiming process is retained and that it can be recycled or re-used without any extra processes to remove an added material. Other finishes that were considered but did not meet the requirements were powder coating and black paint, both of which have better corrosion resistance but cannot be easily removed (Ashby & Johnson, 2010). They also produce large amounts of waste and require extra processes before the steel can be re-used.

Welds **VS** Bolts



- Strong joint
- Brittle fracture
- **Does not wear with time**
- Expensive setup cost
- Overall low cost
- Requires skilled labor
- Hard to inspect
- **Difficult to remove**
- **Clean removal, with equipment**



- Strong joint
- Ductile fracture
- **Could wear with time**
- No cost to set up
- **Pay per connection**
- Unskilled labor
- Easy to inspect
- **Easy to remove**
- Clean removal with bolts to be reused

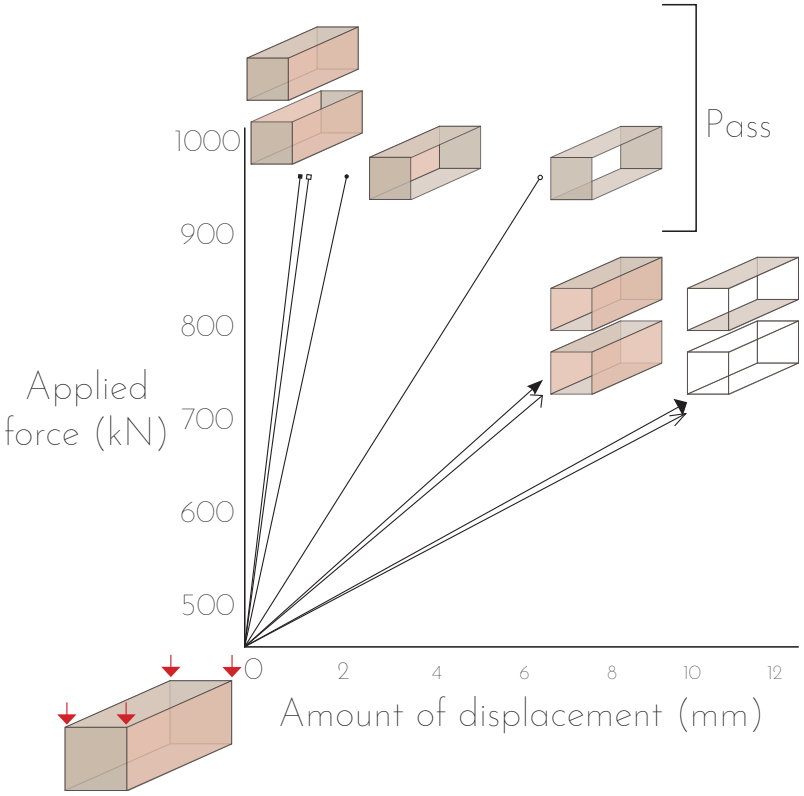
8.5) Shipping container research

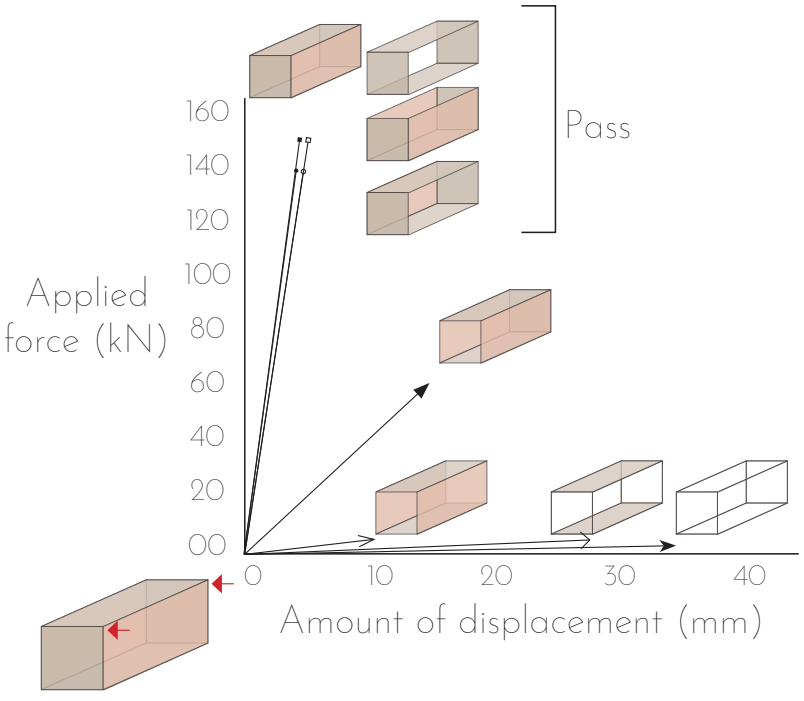
With the project reusing the existing shipping containers, various technical considerations had to be dealt with. The construction of a shipping container is very specific: four load-bearing columns connected by a horizontal structural component form a skeleton that is infilled with Inverted Box Rib (IBR) sheeting, which acts as a web for the structure (Giriunas, Sezen & Dupaix, 2012).

A rule of thumb for shipping containers is that all weight should rest on the corners of the frame as those points are engineered to take tons of weight. However, any weight placed on the horizontal frame would cause it to fail (see Figure 103) (Giriunas et al., 2012).

Figure 103 Top; Illustrating the amount of Vertical force a modified shipping container can carry, Graphic adapted from (Giriunas, Sezen and Dupaix, 2012)

Figure 104 Bottom; Illustrating the amount of Horizontal force a modified shipping container can carry, Graphic adapted from (Giriunas, Sezen and Dupaix, 2012)





In re-using the shipping containers, this was the largest concern, especially given that the design called for the top shipping container to have an overhang and be placed in the middle of the one below it. The structural weakness issue was negated by inserting a new set of columns in the centre to balance the weight on the frame. The second rule is to comprehend the role of a web, therefore if the long webs are removed (the two longest sided) then the container will be less likely to withstand loads from the front as there is no longer webbing (see Figure 104) (Giriunas, Sezen and Dupaix, 2012). Other than the structural strength issue, the intention to adapt one of the containers to fit a new form was also a barrier. For this, it was necessary to effectively shorten the vertical posts and add a new framing structure with a pitched roof. This was done by merely using similar steel member sizes and bolting them onto the shortened shipping container frame. IBR sheeting was then applied to the frame in a manner that allowed for efficient water runoff, and also ensured that overlapping would be possible. The roof structure used no new IBR sheets, but rather the "cut-offs" from the new openings made in all the other containers. Therefore, the dimensioning of the roof sheets might seem odd, but these dimensions were the logical solution to minimize on-site waste.

8.6) Steel window frame

The steel-frame windows were manufactured years ago and they function according to a very logical yet complex dimensioning system (Figure 106). The window frame is 32 mm wide, with the smallest window being 533 × 359 mm. Unfortunately, the window modules do not scale up incrementally from there (Steel Window Co., n.d.; KSW, 2019). This was the first hurdle that had to be overcome in designing the steel portal frame, as the intention was to clad the frame in reclaimed windows without altering the

Figure 105 Right; Image taken from an online add, attempting to sell Used steel frame windows (Gumtree, 2019)

Figure 106 Bottom; Graphic illustrating the different steel profiles of a steel frame window (Berkel, 2013)

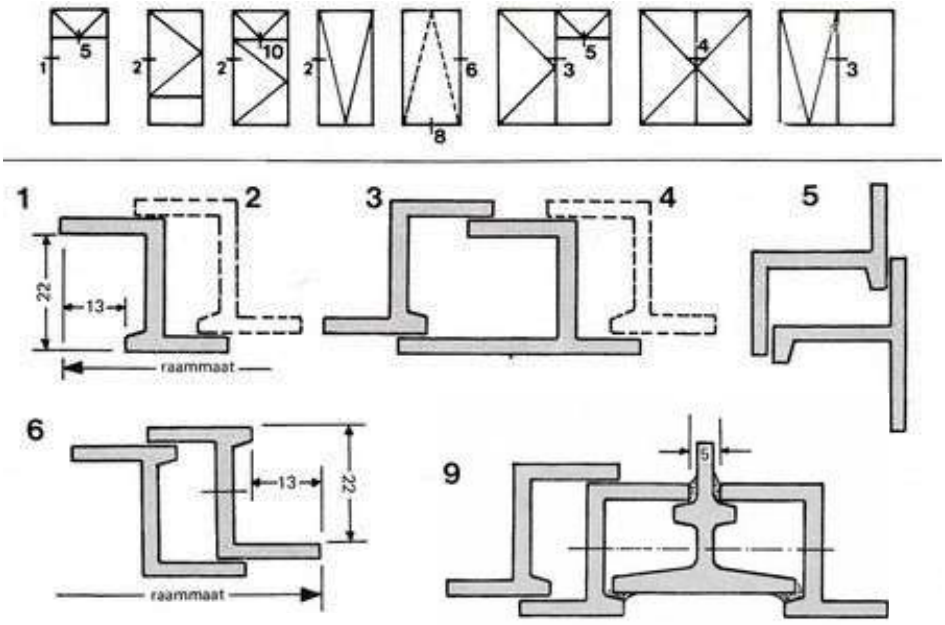
windows beyond their functionality. Therefore, the portal frame size was dependant on the size of the windows that would be clad onto it. It was decided to calculate the mathematical expression of the window sizing in an attempt to understand how variety could be achieved.

Width is calculated as follows:
$(a \times y) - (44 \times (a - 1))$
Where
a = width, in millimetres
y = number in the sequence

Height is calculated as follows:
$(b \times y) - ((44 - 20) \times (b - 1))$
Where
b = height, in millimetres
y = number in the sequence

It was found that there was very little leeway and all the windows in a vertical line would have to be of the same width. No alternation with half or quarter sizes was possible as none of the window sizes doubled up to form a larger one. The same is true for the height of the windows – only a selected combination of sizes was possible, and leeway between them could occur, but other sizes were left out of the design due to the sizing not allowing for ergonomic use.

Not only did the window sizes limit the variety of windows, they also limited the height and length of the



greenhouse structure. The narrowest pane that could be placed into the frame was 533 mm wide, so that was the determining factor for the total length of the structure, and some form of infill had to be used to fill the remaining space. The same was true for the height, with the minimum being 359 mm (KSW, 2019).

8.7) Window track systems

With the intention to install large opening "doors" fashioned from windows on both sides of the steel window structure, a strategy was designed to use a type of geared pulley system to hoist up the

Figure 107 Bottom; Graphic illustrating the comparison between various glazing options (Author, 2019)

windows. Various other methods were considered, such as horisontal sliding doors, but these would not allow for the total flexibility envisioned and would need multiple tracks on the floors. Another option was to use a pivot joint to open the doors upwards, but this solution seemed lacklustre as the opening height would be similar to the opening height of an average door. Thus, the final solution was to use the concept of a sash window, using vertical tracks along the portal frame' structural columns to guide the door upwards. The system also allowed for the inclusion of a mechanical geared system that could be powered by the solar energy produced on site.

The mechanical gear system will use a threaded rod fixed into the window frame structure to lift the windows off the ground. A manual chain on the side with a lock pin will be used to secure the system in case of failure, or as a manual override on overcast days.

8.8) Window glazing

The design intent for the project requires the greenhouse space to have two crucial but disparate characteristics. The first is that of being a naturally well-lit interior space, and the second is a comfortable indoor temperature. The term greenhouse denotes a space that traps heat inside to create a warm growing environment for plants. However, for human comfort, one would want the space to be temperate rather than hot. It must also be noted that most plants cannot handle full-day sun and many in fact require some shade. With these considerations in mind, the project required research on various glazing options. See Figure 107 for the comparison between the various options.

First, glass was used as a baseline material. Glass has very few insulating properties and allows around 87% light transmission. As a material, it causes a very strong warming effect on an interior, especially if the hot air is not let out through ventilation methods. An alternative would be to replace the glass windows with Palram flat solar control glazing. These sheets are designed with solar reflectance and less transparency. Therefore, while they let only 35% of light in (plenty to still get a full daylight effect, taking into account the sheet is a light diffusing material) and reflect most of the solar rays, the only warming experienced in the interior is through the material transmission, i.e., thermal bridging. This happens through the steel frame windows and is a function of the design that cannot be combatted without including a full roofing system that would then negate the aesthetic design of the space.

With the use of solar contol glass and the effect of a naturally ventilated space (as diagrammed in figure Figure 117), it would be possible for the interior space to feel not like a greenhouse, but rather like a warm summer's day, where the active effect of the sun is being blocked but the warming still occurs and is let out through a naturally ventilated system. It should be noted that it will not feel like an indoor office with an aircon blasting full day. The intention is to create a sheltered space that might feel more like sitting under a tree (or hanging planters, in this case).

Clear glass	VS	Double glazed	VS	Palram solar control
		Colour		
• Clear		• Clear		• Grey tint
		Solar heat gain coefficient		
• 0.87		• 0.67		• 0.45
		Light transmitance		
• 90%		• 78%		• 35%
		Haze		
• <1&		• <1%		• 52%
		Comments		
• Standard glass		• Improved but High solar gain		• Low light transmitance, but high haze balances it out

Figure 108 Right; selection of possible plants (Wells, 2019)

8.9) The moving planter system

The design intention for this system is to have a planter that can be hoisted up and down. This item is used as a shading device (umbrella) for the interior, but also becomes an active workspace when lowered to the ground, where a selection of fruit and veg can be grown and tended to as workshops for the community, but also as air-purifying measures. The design intent envisioned these green planters to give the space a fresh feeling. This is not just an aesthetic inclusion, but something that would also affect the smell and the atmosphere of the interior.

The movement of the planter will be controlled by four pulley wheels fixed to the sides of the reinforced steel frame, with one long piece of rope running between them. This method allows for easy, fluid control when lowering the system without complicating the convergence of various ropes. It was decided to use side-fixed pulley wheels and a 10 mm thick nylon rope that runs through steel eyelets fixed to the crossbeams in the portal frame structure. The rope is then fed to the side of the structure and runs along the wall where it can be manipulated at an ergonomic height of 1 500 mm (beyond the reach of small children but well within reach of the average adult).

A set of gears within a housing case can be manipulated by a hand lever to lift or lower the planter. This method allows the weight of the system to be reduced by up to a quarter, which would allow the average person to manoeuvre a full planter system of up to 300 kg at a comfortable relative pulling weight of 75 kg.

8.10) Planting depth

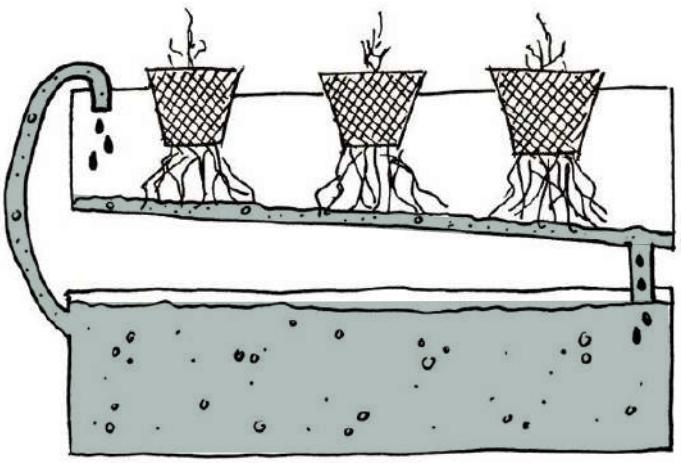
For the hanging planter, it was necessary to understand the planting depths of various vegetables, beans and fruit, to calculate the possible weight of the system. This was done before studying the possible planting/growing system. It is important to understand that the success of the planting system depends heavily on its relative weight; if it were too heavy it would not be manageable in the interior space without electrical assistance.

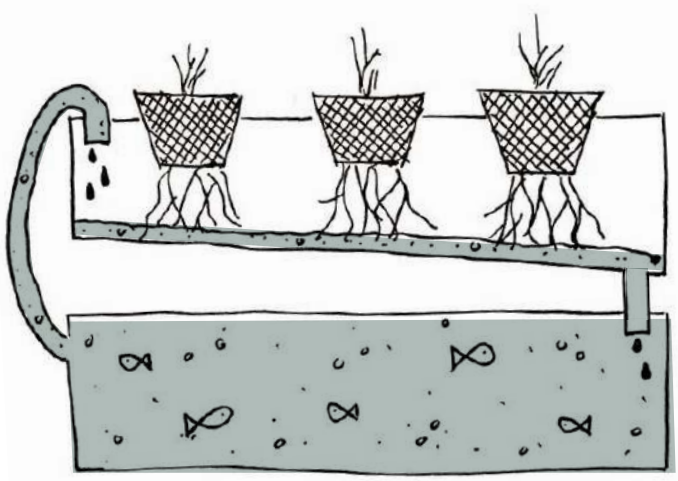
Limiting the soil depth was the only way to ensure that the system does not become too heavy, and when calculating soil weight, it is standard practice to use the wet weight to ensure the heaviest volume is measured. Regarding the planting depth, figure 70 illustrates the depth required for various plants. However, with a depth of 300 mm, the total weight of the hanging system would be around 700 kg, which is unmanageable.

In the end, the decision was to work on an average soil depth of 150 mm, resulting in the system falling below the weight limit of 400 kg. This means that a combination of plants requiring depths of 100 mm, 150 mm and 200 mm can be used (Wells 2019) in the various planters, provided that the total weight does not exceed 400 kg. For selection of possible plants see Figure 108.

Figure 109 Top; Graphic illustrating an Hydroponic system (Author, 2019)

Figure 110 Below; Graphic illustrating an Aquaponic system (Author, 2019)





8.11) Types of planting systems

The main intention for the planting systems is to educate clients on growing their own food, while supplying some food to the retail aspect and also illustrating the use of "homemade" compost. As this is one of the experiential, interactive and educational aspects of the design, it is crucial that the system implemented can easily be replicated in a home setting without too much hassle. This does not mean all other types of growing system would be ignored – as noted in figure 46 (part 6.5 possible workshops), there are various possibilities for workshops – but it does mean that the simplest system would have to be implemented.

It should also be noted that these systems are part of the hanging planters, and therefore their weight and the need to lift and lower them must be considered. The following systems were investigated.

Hydroponics (Figure 109)

This is a system that, rather than soil, uses a bed of flowing water (over sand and gravel) filled with liquid plant food to feed the plants. The system allows plants to grow very fast and they require no extra nutrients. It does, however, require a lot of water to be circulated, but not much of the water goes to waste as it is a closed system (AlShrouf, 2017).

With the need for the water to circulate to and from a tank and from one planting system to the next, this system would be very difficult to implement. Given that the water would preferably be connected to all the various systems, and the eight hanging planters are units that act independently, this would be a very challenging task. The complexity of using fertilized water would also pose a challenge with regard to educating clients, as appropriate nutrient solutions would have to be store-bought and cannot come from natural household supplies.

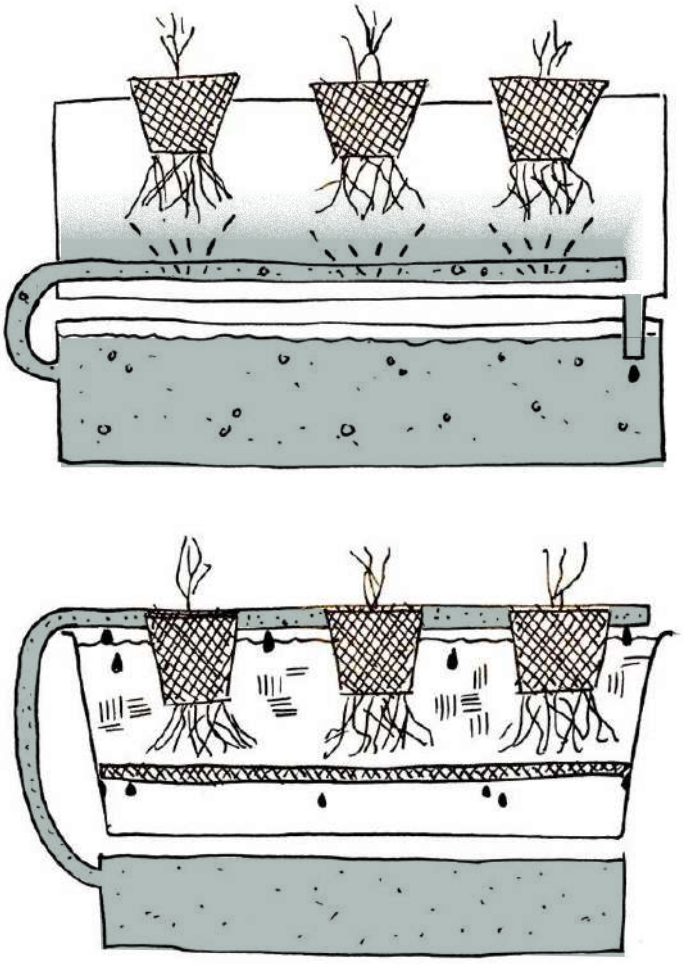
Aquaponics (Figure 110)

This is a system that uses a combination of hydroponics and fish (aquaculture) to create an ecosystem for plants to grow in. The system requires a fish tank, from which water filled with fish waste and bacteria is transported through a filter that creates fertilizer. This is fed to the plants, which grow without soil as the fertilized water flowing past them provides enough nutrients. Similar to a hydroponics system, this requires a large amount of water, although it is also a closed system and not a lot of water goes to waste as evaporation is minimized (AlShrouf, 2017).

This system is very feasible for a home setting, as the nutrients are created

Figure 111 Top; Graphic illustrating an Aeroponic system (Author, 2019)

Figure 112 Below; Graphic illustrating a Plastic tray planing system (Author, 2019)



by fish and an in-home ecosystem is a great accessory. However, the system is difficult to implement and requires a higher level of investment as a successful system would need a lot of space. The main problem with implementing this system in the retail setting would be the complexity of adding a whole biophilic component to the project. Furthermore, this system would require a very large intervention that is not related to retail and upcycling, and therefore outside the focus of this dissertation.

Aeroponics (Figure 111)

This system also makes use of fertilized water (liquid plant food), but the water is not flowing below the roots as in the two systems above – in this system, a water mist is sprayed onto the roots of the plants. This system uses a lot less water, as the feeding of the plant is much more localized; however, it does require sealed conditions to maintain the moisture and not lose the chemical plant food. This system is typically used in a sealed interior environment with controlled lighting to encourage plant growth (AlShrouf 2017).

Aeroponics requires a lot of maintenance and would be very challenging to implement in a home setting, as it also requires a controlled indoor environment. This project's use of natural ventilation thus precludes an aeroponic system.

Plastic planting tray (Figure 112)

This type of system uses a plastic tray layered with soil, a root-blocking layer and a water collection tray. It often includes drip irrigation channels integrated into the trays for ease of use (Columbia Green, n.d.). Plastic planting trays allow for various planting depths, dependant on the tray depth, which makes it possible to grow a wider array of foods. They are easily found and implemented, and although they are made of plastic, they last a very long time. They are also usually made from LDPE or HDPE, two forms of plastic that are widely recycled in South Africa (and also used for shelving in this project). There are various systems on the market, and the project specifically investigated those used for lightweight green roofs.

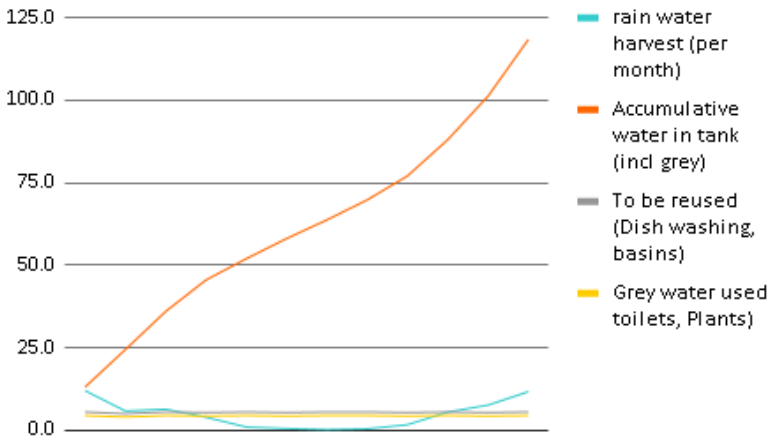
The plastic planting tray system was deemed the one best suited to this project, owing to its simplicity and ease of access. This type of system would be easy to implement in someone's back garden, even without the plastic tray. It is also simple in that it uses soil and compost as the growing medium, and can be irrigated using a drip system. This simplicity makes it a sustainable education and food-growing tool.

Figure 113 Top; Graph illustrating the water collection dynamics on site (Author, 2019)

Figure 114 Bottom; Pie chart illustrating the amount of electrical usage not covered by solar (Author, 2019)

Figure 115 Next page top; Table of calculations for the water collection and usage (Author, 2019)

Figure 116 Next page below; Table illustrating the electrical usage, and the PV panel strain (Author, 2019)



8.13) Water calculations

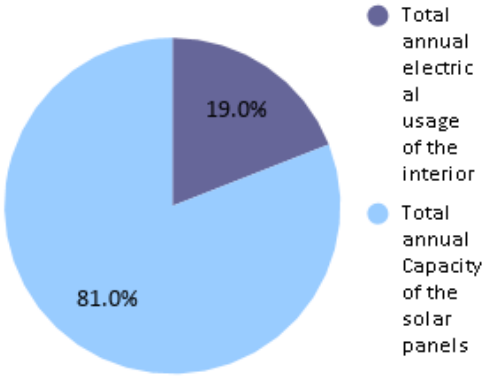
For the sustainability of this project, the sensitive use of water and electricity is very important, not only to satisfy the GBCSA requirements, but also in line with the design informant of visible systems. It was planned to visualize some technical operations of the interior in order to highlight their importance and other possibilities surrounding them. The design intention with the water system is to gather as much water on site as possible. Owing to the existing roof structure being of heritage value and the risk of destroying it, it was decided not to tamper with it; however, it would be much more feasible to include a comprehensive water collection system into the design of the new glass structure, as it covers a large area of the site.

As regulations require some services on the site to have potable water, a large supply of greywater is produced on site. This water is captured and prepared for re-use in other areas of the site using a comprehensive sand filtration system. Figure 119 illustrates the water system of the whole site.

The potable water (municipality supply) is used for food preparation and in the wash hand basins (as this might be used for drinking water as well). The water runoff from the basins is transferred to a sand filtration system on the south-eastern corner of the site (the same system used for rainwater harvesting), from where the greywater is pumped into a 5 500 l JoJo tank for re-use. A second tank is used for storage, which allows the site to hold two months' water supply in case of drought. The limitation of the tank sizes was due to space limitations. The amount of water collected on the site is, however, much greater than the amount used. The following calculations illustrate the water harvesting and use see Figure 113.

8.14) Electrical calculations

The electrical demand for the interior is much higher than initially anticipated. Although it is specified that all appliances are Green Star rated and meet low water and energy demands, the electrical demand surges with the night-time and early morning use of the site. As the intention of the programme is for the space to ebb and flow throughout the day, there are various functions that happen throughout the day. The demand for energy is kept relatively low, the highest demand being from the deli fridge, the cash registers (portable card machine) and some spotlights in the retail space. However, at night the use of space lights to illuminate the interior space places a high demand on the energy supply. This is not due to poor lighting selections, but rather the sheer amount of time that lighting is required. Referring to figure 45 (part 6.5), which illustrated the daily programme of the interior space, it is noted that the space opens in the early mornings (06:00). In the winter months, this might be before sunrise (which only occurs at 07:00), in which case some additional lighting is required. The space also stays open most evenings for workshop and entertainment functions, This might be until 22:00, in which case the energy demand flies through the roof. The only time the interior is planned to be closed at night is on Sundays (Figure 114).



Rainwater	month	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annual sum	
Yeild = P x A x C	avrage precipitation/ mm														
	(P) ave precipitation/m	0.15	0.08	0.08	0.05	0.01	0.01	0.00	0.01	0.02	0.07	0.10	0.15	0.73	
	(A) area of catchment	92	92	92	92	92	92	92	92	92	92	92	92		
	(C) run off coefficient	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85		
	Yield	12.04	5.87	6.41	3.99	1.02	0.55	0.23	0.47	1.72	5.55	7.66	11.73	57.24	m³
number of days	**Water usage in liters per day**	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**		
Hand wash basin usage	150	4650	4200	4650	4500	4650	4500	4650	4650	4500	4650	4500	4650	54750	potable
Dish washing	30	930	840	930	900	930	900	930	930	900	930	900	930	10950	potable
														66	m³
water per day for toilets (l)	130	4030	3640	4030	3900	4030	3900	4030	4030	3900	4030	3900	4030	47450	grey
Water use for plant watering	15	465	420	465	450	465	450	465	465	450	465	450	465	5475	grey
														53	m³
Monthly balance of potable water use towards grey water		6	5	6	5	6	5	6	6	5	6	5	6	m³	
acumalative balance in tank (m³)		18	29	41	50	57	62	68	74	81	93	106	123	m³	

rain water harvest (per month)	12.0	5.9	6.4	4.0	1.0	0.5	0.2	0.5	1.7	5.6	7.7	11.7	For the whole building
Accumulative water in tank (incl grey)	**13.1**	**24.5**	**36.0**	**45.6**	**52.0**	**58.1**	**63.8**	**69.8**	**77.1**	**88.1**	**101.3**	**118.4**	
Grey water used toilets, Plants)	4.5	4.1	4.5	4.4	4.5	4.4	4.5	4.5	4.4	4.5	4.4	4.5	For the interior alone
To be reused (Dish washing, basins)	5.6	5.0	5.6	5.4	5.6	5.4	5.6	5.6	5.4	5.6	5.4	5.6	For the interior alone

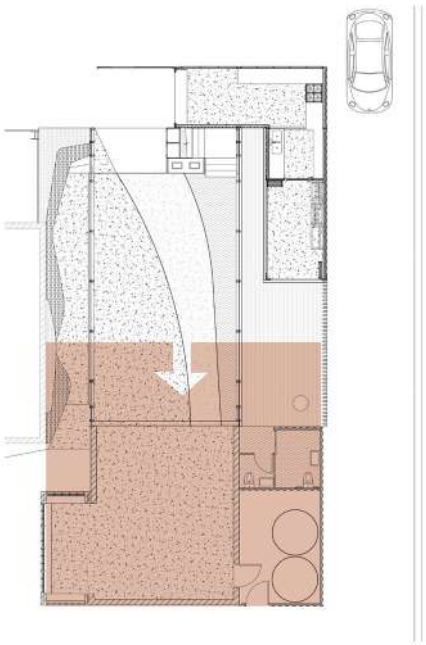
Quantit	Appliance/Loads	Watts	Hours per week	Watt-hours per week		Total watt usage per annum	
2	Pressure pump	600	12	14400.00		748800	
20	LED General lighting	11	96	21120.00		1098240	
8	Spot Lights	12	96	9216.00		479232	
13	Strip light, 1500mm	35	36	16380.00		851760	
3	cash register	40	96	11520.00		599040	
1	Computer	100	64	6400.00		332800	
1	Dishwasher	500	12	6000.00		312000	
8	Door motor	375	0.09	270.00		14040	
1	Fridge	22	96	2064.00		107328	
1	router/modem	30	64	1920.00		99840	
1	alarm system	30	104	3120.00		162240	
1	coffee machine	200	30	6000.00		312000	
Highest power used at one time:				98410.00	**Wh/w**	5117320	**Wh/Annum**

Building:

Roof area (m²)	W/m² (solar panels	Avarage hours sun/week (6hrs/day	Wh/week		Total annual capacity	
45	150	62	418500		21762000	
					16644680	surplus annu capacity

Figure 117 Bottom; Graphic illustrating ventilation throughout the space (Author, 2019)

Figure 118 Right; Key plan to indicate direction of section (Author, 2019)



8.16) Ventilation diagram

There were two methods used for solar control, the first was using solar control Palram sheets as detailed in part 8.8. The second method was to ensure that there is good natural ventilation throughout the space. This was one of the main drivers for the large opening doors.

As noted in the graphic below, Figure 117, the doors allow air to move quickly through the lower level of the building (blue arrows = Fresh air). The ventilation windows towards the top allow for the hot air to escape(red arrows). The top windows are placed in that location as it is on the same level as the hanging planters, ensuring that they do not overheat.

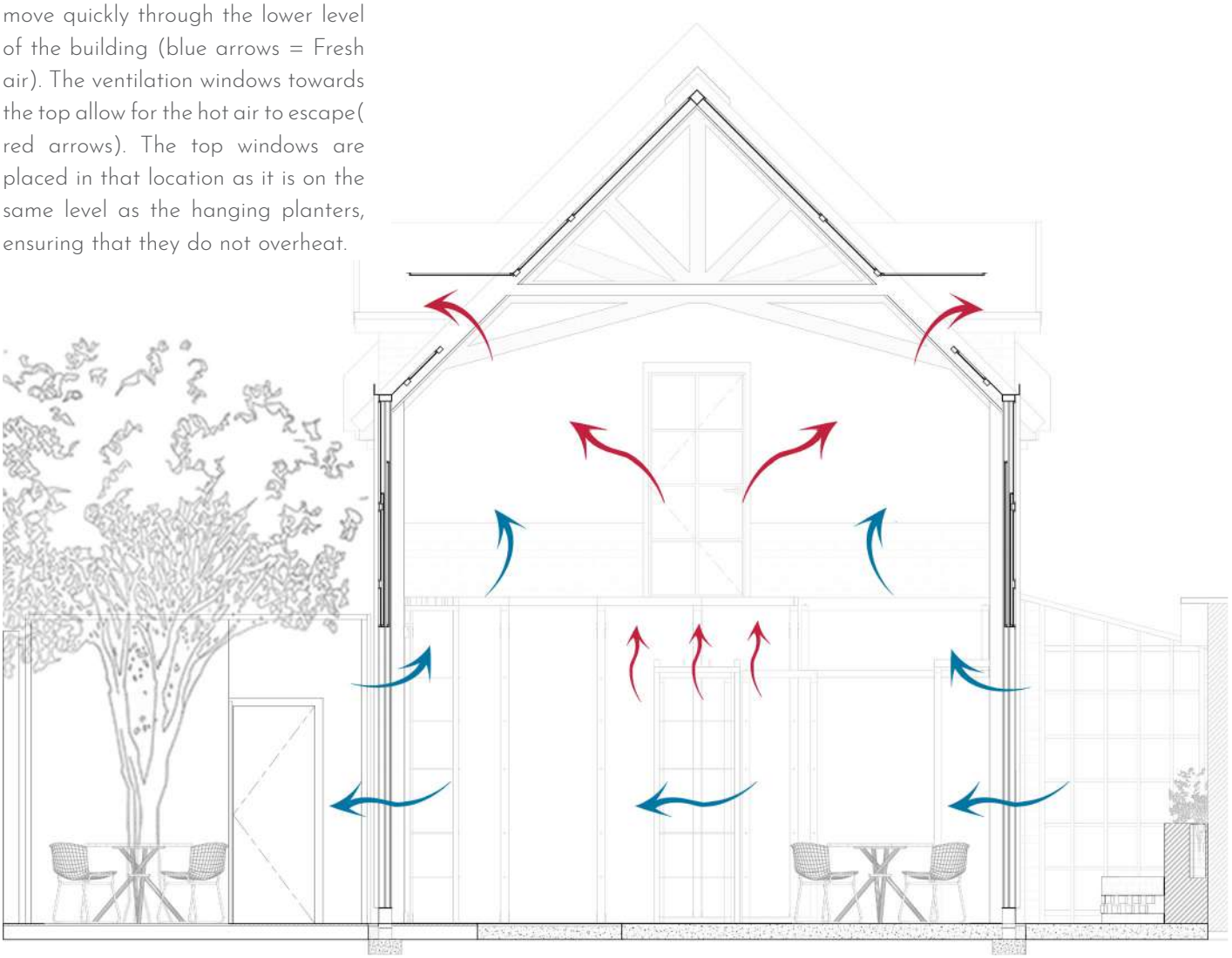


Figure 119 Right; Water collection system, on section (Author, 2019)

8.17) On site water use

As previously discusses in part 8.13, the on site water collection is a large component of the sustainability of the interior.

The diagram below illustrates the water collection process (see Figure 119). Rainwater is collected from the new glass roof structure, the water runs down the gutters that are connected to the main portal frame. The gutters lead into a flush floor drain which collected the rest of the water in and around the site.

The collected water is taken to a sand filtration system and then pumped into the jojo tank for storage.

From the Jojo tank the water moves to a daily collection "cistern" which acts as an informative device on daily water usage and saving. All water is transported from this point. The display "cistern" has a capacity of 450 l, enough for a days water usage for the site, that includes toilet usage, hand wash basins as well as the watering of the plants (a drip irrigation system).

The drip irrigation system was selected as it works well with the planting tray system, and it also uses minimal amount of water.

As noted in part 8.8 some parts of the site uses potable water due to restrictions, this water will also go through the filtration system and back into the Grey water usage.

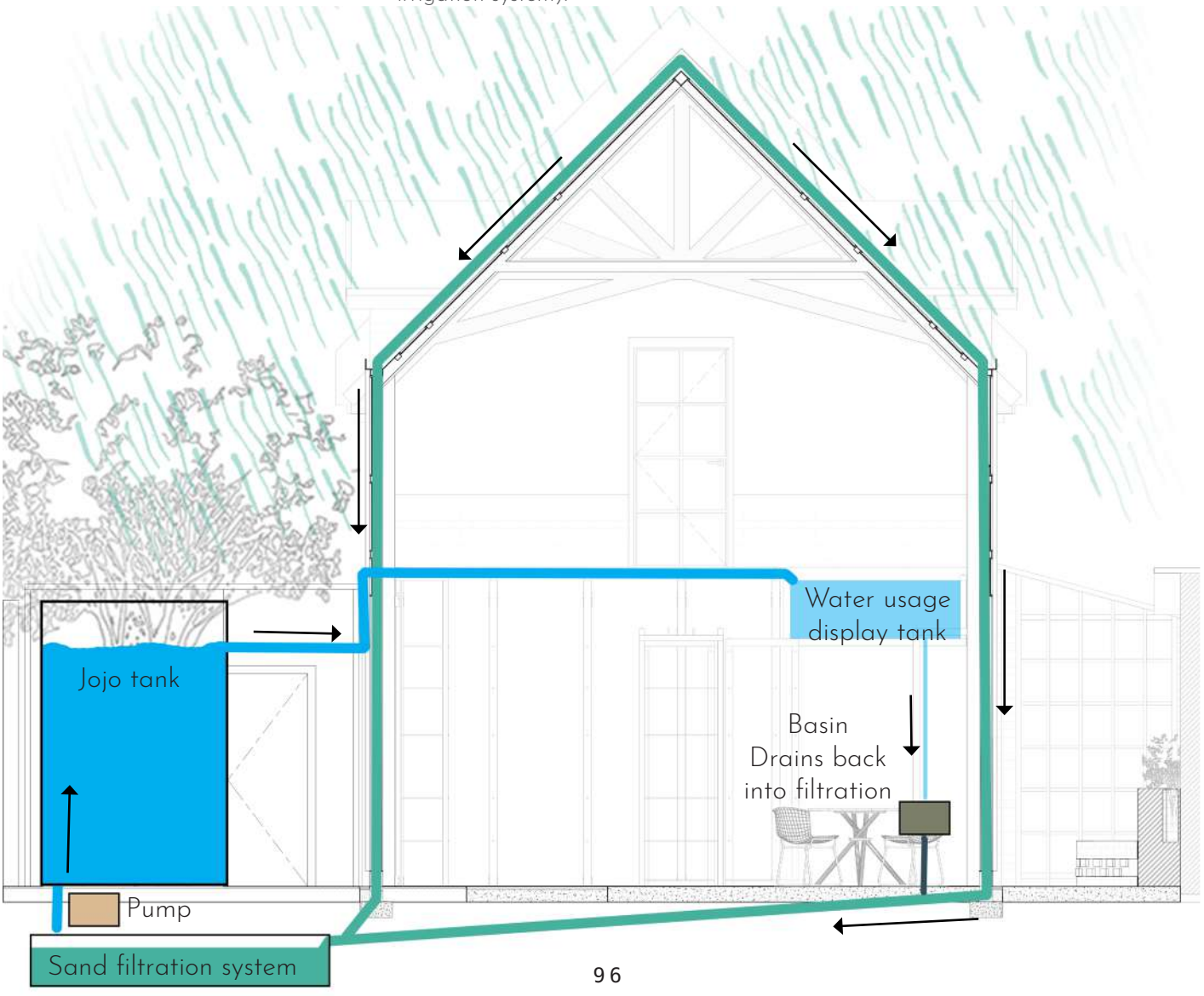


Figure 120 Left; Perspective view of interior upon approach, with the staircase intruding on the view towards the workshop area (Author, 2019)

8.18) Accessibility

Accessibility is an important consideration for any interior architectural project. Some large design considerations were based on creating an accessible space, while in other instances accessibility had to be subordinate. The aim for the interior design is that the floor space be as accessible as possible and that movement from one space to another be seamless, with only the various floor finishes to define the different zones. Two ramps were included at the crucial entrance points, which allowed for the rest of the interior to be levelled out and function on one level. With this inclusion into the design, the problem arose of water management. As detailed in part 8.13, the project aims to collect as much water as possible. Flush floor drains were included on the periphery of the interior zones to ensure minimal water runoff into the interior space and maximum collection of water.

The decision to include a staircase posed a challenge. With accessibility in mind, the project would want to rather include a lift of some sort; however, the inclusion of such a complex item, which would likely still have to be supported by a staircase, did not turn out to be worth it. The space that the staircase leads to is an auxiliary space that is used for convenience and temporary functions, all of which could also be done in the workshop space. For this reason, and given the need to use the retail floor space to its fullest potential, it was concluded that a staircase would be sufficient.

8.19) Staircase design

The design intention for the staircase was to create a striking object that blends into the space. The material selection was a challenge owing to the size of the object. An object as large and visually heavy as a staircase could create an isolating entrance to the project. This effect was especially difficult to overcome as the viewer is experiencing the staircase not from the side, but from below, as illustrated in Figure 120. To negate this effect, the staircase needed to appear lightweight and almost invisible. However, as it is a large object within the new section of the interior design, according to the material strategy, steel would be the material of choice. This lead to an investigation into the possibility of steel seeming lightweight, a technique often used by Belgian firm Philippe Samyn and Partners in their staircase designs (2017) (figures 80). Steel textures such as perforation and expanded metal seemed to be feasible solutions owing to their relative strength and permeability. It was found that the strength of steel increases when it is expanded because the material becomes denser (Magnus Steel n.d.). The material would blend well into the black steel pallet, and being permeable, it would feel lighter (visually) compared to a timber or full steel staircase.

Two projects were referenced for inspiration to understand the construction of an extruded steel staircase, and various elements were incorporated into the design to ensure that the staircase could carry the necessary loads. The first staircase design is from Philippe Samyn and Partners (2017) (see Figure 121). The second is by a small Malaysian firm called Small Projects (Low 2019; see Figure 122). Throughout the design process, the intention was to hide some of the structure within other functional objects. This was to create the illusion of the lightweight staircase, and although this is in contrast to the visible processes informant, the decision was made to keep it hidden, as visible structural elements would add visual weight to the staircase.

The structure is hidden in the casework

Figure 121 Left; Philippe SAMYN and PARTNERS, House for Alain Hubert, 2mm expanded sheet metal (Philippe SAMYN and PARTNERS, 2014)
Figure 122 Right; Stair supporting detail in combination with 2mm perforated steel folded staircase (Low, n.d)

of the recycling unit. There are also structural elements designed into the vertical panel that fills the gap between the two levels, and there is a supporting column at the edge of the landing to carry the weight of the landing itself and provide extra support for the balustrade.

8.20) GBCSA Tool

See appendix B for the results as filled in on the GBCSA spreadsheet. This section will discuss some of the managerial conditions that are applied to the concepts of the design but might not be explicitly visible in the drawings.

The interior includes various systems that are incorporated for a sustainable and educating indoor environment. The inclusion of water harvesting and solar harvesting, the careful re-use of all materials on the site, and the careful selection of certified or re-used materials were key considerations every step of the way, in line with the visible system informant identified in the design phase. The design also includes a visible water system that displays the daily use of water to encourage awareness of our water habits; however, the same was not done for the electrical system.

As discussed in part 8.14, Photovoltaic panels will be used to harvest solar energy. These are located on top of the workshop shipping container, as well as above the back room on the south-eastern corner of the site. To safely facilitate the required monthly maintenance, they are not placed higher than the first storey. Most of the lighting and window systems will run off the solar-powered supply; the batteries will be kept in the maintenance store on the south-eastern corner of the site. The kitchen appliances will run off gas to ensure they do not deplete the electrical store. All interior systems will also have a manual override as a precaution.

It is the intent that all rainwater be collected on site, as discussed in part 8.13. Water is gathered in the two JoJo tanks situated on the south-eastern corner of the site. The water will be used for the toilets, washing of fruit and veg, and watering the indoor plants. The kitchen will function off a municipal water line to ensure safe water usage.

All demolition waste is to be re-used on site. The concrete pad on which the shipping container currently rest is to be crushed up and used as infill rubble to level out the site. The demolished northern wall of the existing house will be re-used to build the seating intervention in the western courtyard space. The rest of the pavers used around the existing site will be used as flooring in the interior of the space, in the form of a terrazzo style floor. The first-floor mezzanine that was demolished will be used to build the outdoor timber deck, as it is Oregon pine, which is a very tough hardwood. The design intention is that all other waste be recycled to the necessary streams.

It is also proposed that the deli kitchen, being a visible workspace, be fitted with standard stainless steel kitchen equipment, all of which should be on a lending scheme, rather than purchased, to ensure proper maintenance and re-use of the equipment afterwards.

8.21) Acoustics

For a good social and retail space, a good acoustic environment is critical. This is always an important consideration in a comprehensive interior design. An online Echphon tool was used to determine the acoustic properties of the interior, and it was found that with some absorptive materials placed onto the planters, and some furnishing to soften the space, the acoustic comfort level falls well within a comfortable range, with a reverberation time of less than 0,5 s. See appendix C for more information regarding the calculations

Part 9

DRAWNGS

The following part deals with the drawings nd final design and tech stages of the project, illustrating the site and detailing of various objects

SITE PLAN 1:100

A rendered site plan illustrating the final site design

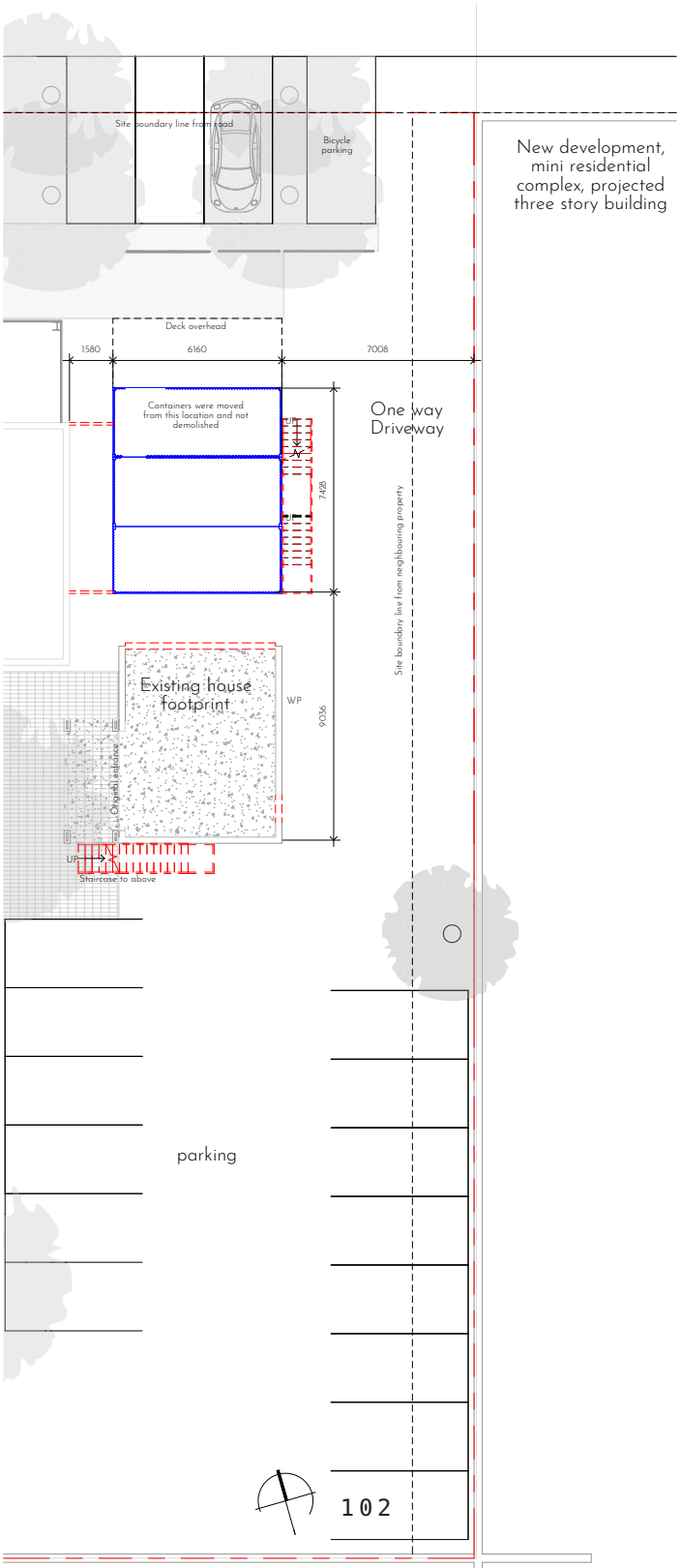
Existing three story office building

DEMOLITION PLAN 1:100

Illustrates objects to be demolished

Illustrates objects to be moved and reused

New development, mini residential complex, projected three storey building

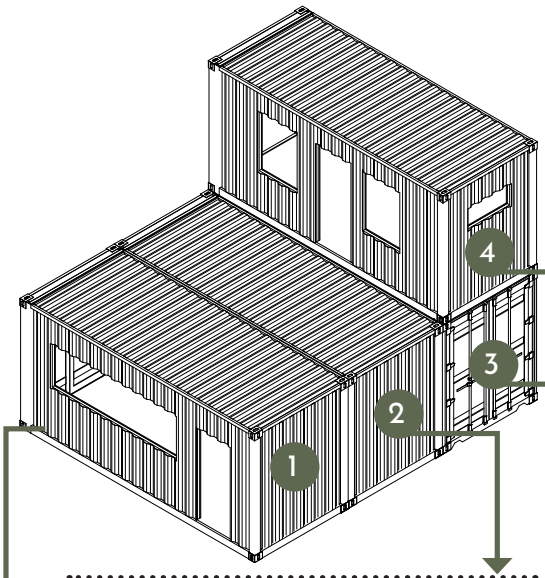


New development, mini residential complex, projected three story building

REUSE OF THE SHIPPING CONTAINERS

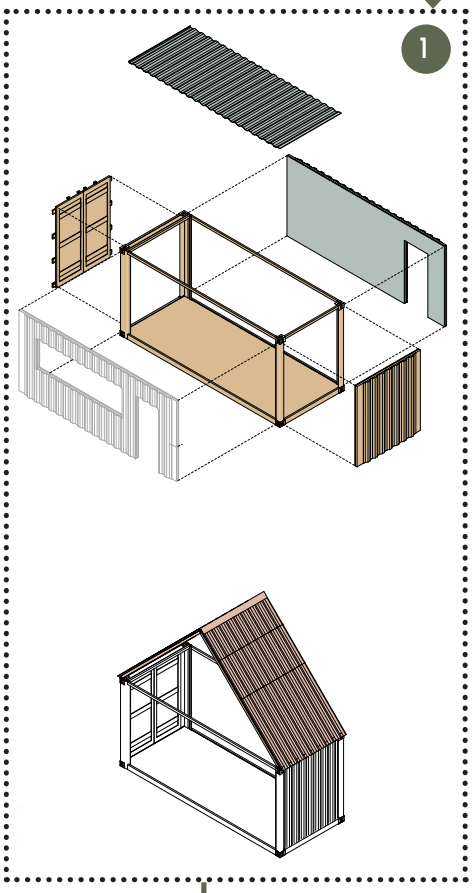
The existing shipping containers will be relocated on the site to the new position as noted on the floor plan.

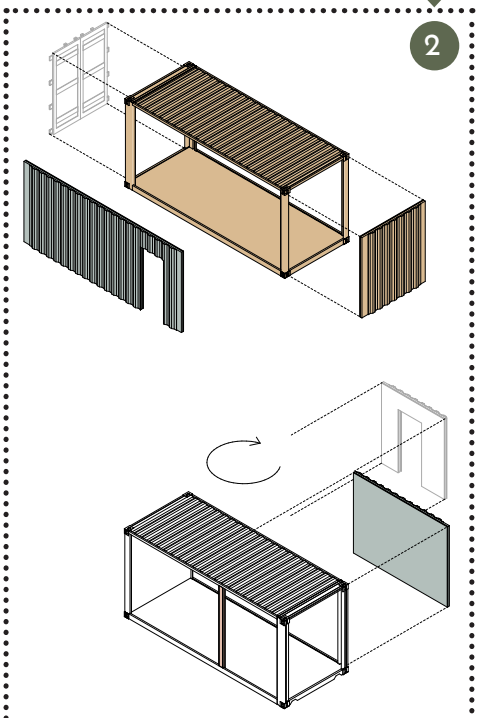
Each container will be reused and adapted as noted in the graphic below.

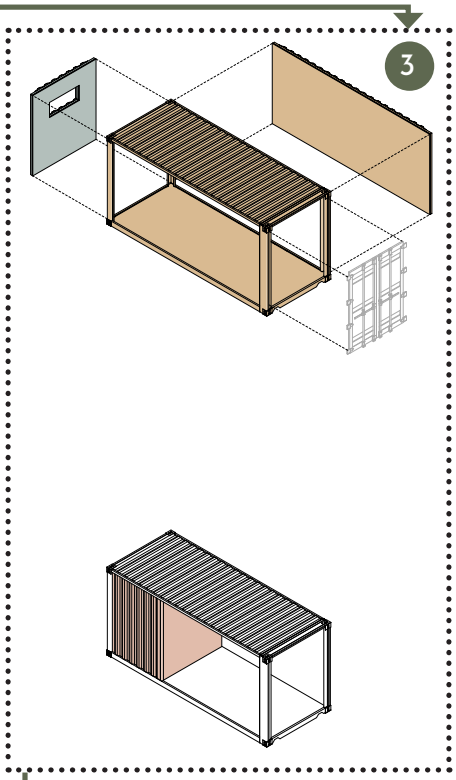


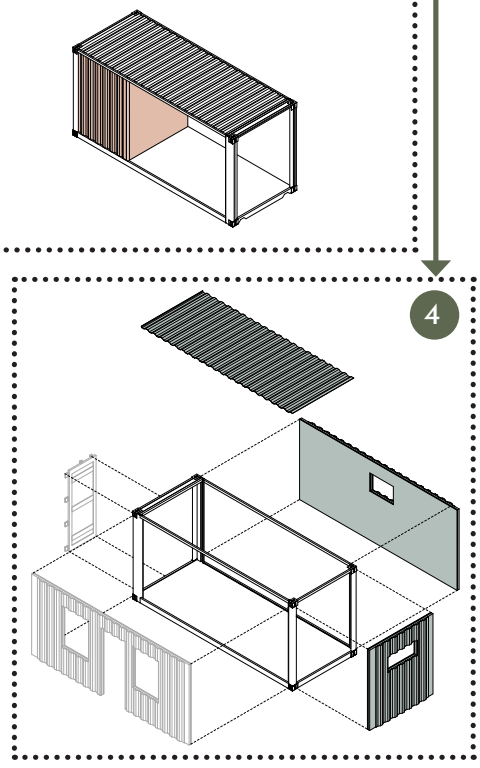
Key:

- Grey = Demolished
- Blue = To be re-used
- Beige = Existing re-used as is
- Pink = New (from reused parts)

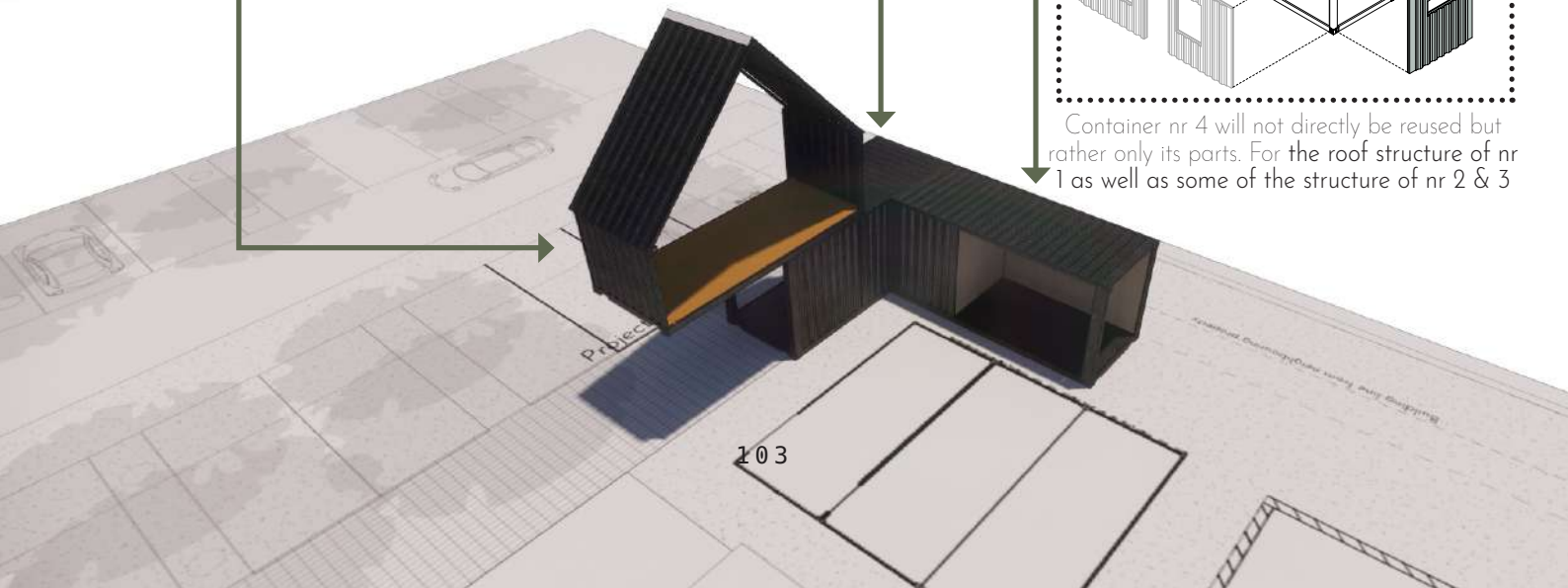








Container nr 4 will not directly be reused but rather only its parts. For the roof structure of nr 1 as well as some of the structure of nr 2 & 3



Front approach

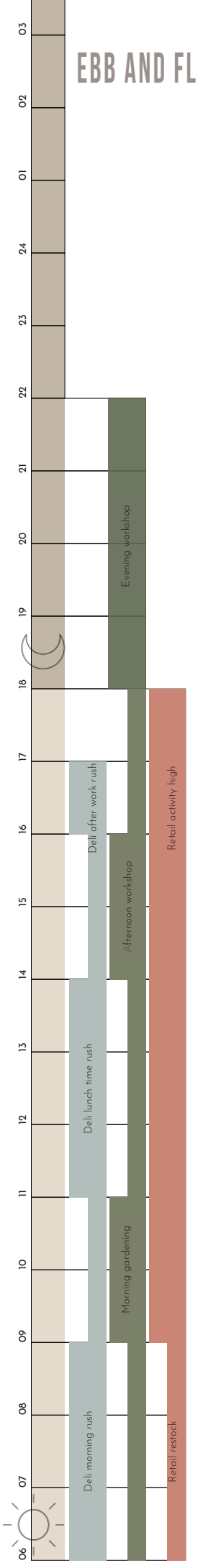
Interior approach

GENERAL FLOOR PLAN


Workshop room
Outdoor deck seating
Recycling unit
Interior multi functional social space
Packaging free retail area
Outdoor social area

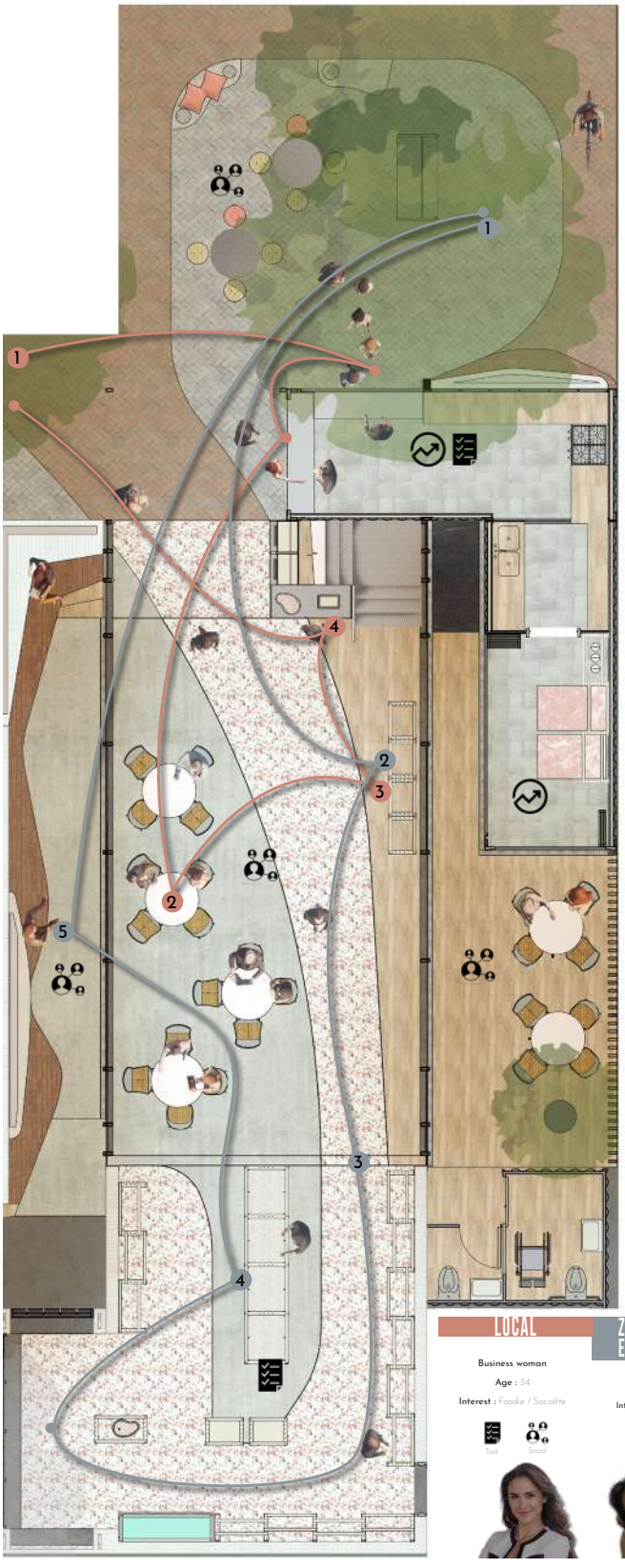

Packaging free retail area
Restroom
Storage room, for product delivery and services
Solar battery bank
Solar battery bank
Water pump
9000
5710
3480

EBB AND FLOW OF THE INTERIOR



Morning rush scenario

Focal active space



1 She arrives at livable early in the morning before work.

2 to quickly have a healthy breakfast and catching up with another local user.

3 A new stainless steel lunchbox is on sale and catches her eye on her way out.

4 She disposed of her left over food in the composting bin.

1 She arrives at livable by bicycle after her kids leave for school.

2 Notices an advert for a workshop later the afternoon on making your own all purpose cleaner.

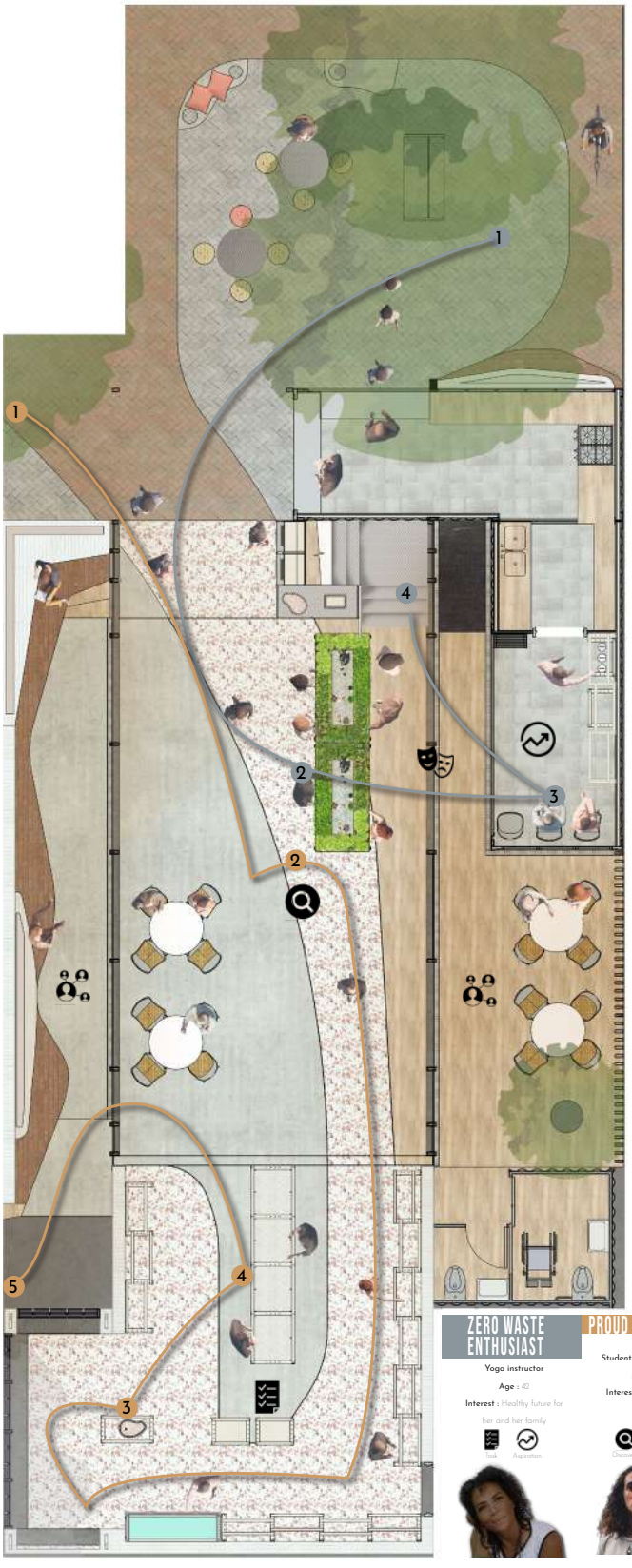
3 Starts her daily stock run with her own containers.

4 Weighs and pays without any assistance.

5 Greets a neighbourhood friend and heads back home.

Gardening workshop scenario

Focal active space



1. She arrives by bike later the afternoon for the workshop.

2. Earns all about how plants can help clean your house.

3. afterwards compare notes with other people on different possible recipes.

4. Moves to the top room to quietly sit by herself and think about educating her family on sustainable cleaning.

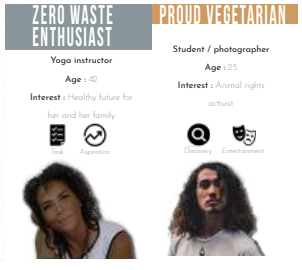
1. He arrives at livable to buy some fresh vegetables.

2. Becomes intrigued by the workshop and watches for a bit.

3. Picks up some vegetables and rinses them off before placing it in his linen bag.

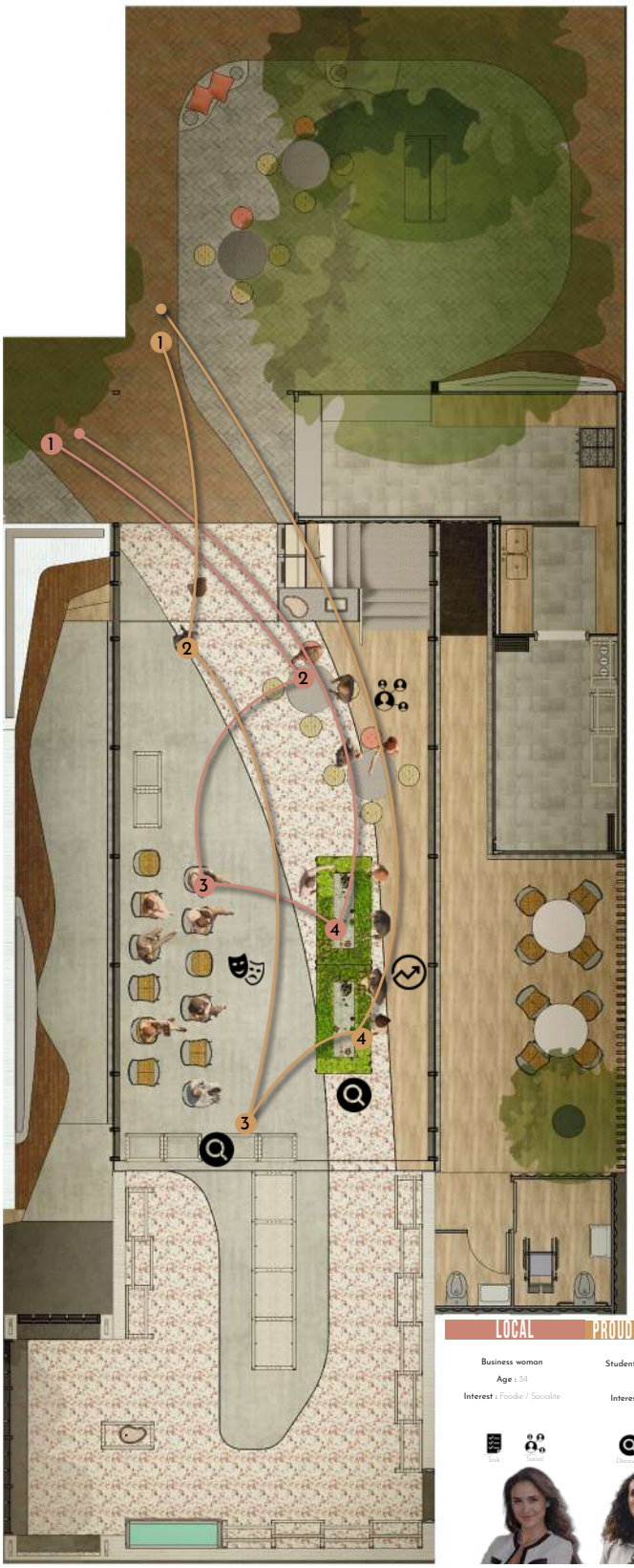
4. Weighs and pays without any needed assistance.

5. Leaves to go home.



Evening function scenario

Focal active space



1. She arrives in the evening to a function for the zero waste community

2. 2. Stops at some of the snack tables to socialise and meet everyone

3. Sits down to watch a short film spanned between the hanging planters

4. Moves to the table to inspect the information and display on plans for the neighbourhood

1. He arrives at livable for a function for local zero wasters

2. Takes some photos of the building at night as the lights are softly reflecting on the windows

3. Inspects some of the new on sale products displayed for the evening

4. Inspects the plants around the display table to understand how they are planted and grown indoors

Informative recycling unit

Gardening workshop

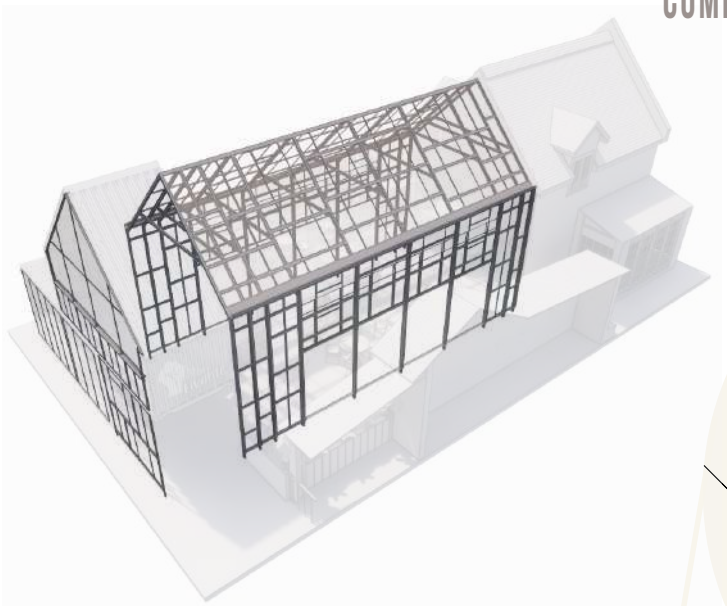
Water usage visualisation

LONG SECTION

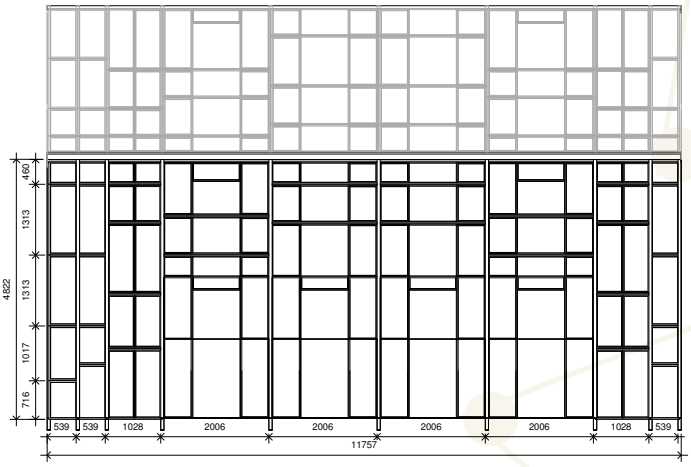

539
1028
2006
2006
2006
2006
1028
539
11757
60x120mm steel portal frame structure, in a black oxide finish, welded together, placed over a steel boot which is fixed onto a pillar foundation. Refer to detail component A
60x120mm steel portal frame structure, in a black oxide finish, welded together, placed over a steel boot which is fixed onto a pillar foundation. Refer to detail component A
12mm, Translucent polycarbonate panel with a Palram solar control finish, fitted into reclaimed steel frame windows
12mm, Translucent polycarbonate panel with a Palram solar control finish, fitted into reclaimed steel frame windows
40x120mm steel portal frame brace, in a black oxide finish, welded onto portal frame structure which is placed over a steel boot which is fixed onto a pillar foundation, refer to detail component A
40x120mm steel portal frame brace, in a black oxide finish, welded onto portal frame structure which is placed over a steel boot which is fixed onto a pillar foundation, refer to detail component A
Hanging panel connectors to structure, pulley system to lower objects to ground for access and usability
6mm, Translucent polycarbonate panel, with a Palram Bilbao breeze finish,fitted into reclaimed steel frame windows
Hanging planter with reusable planting inserts in a 2mm steel frame, Black oxide finish, hanging from Detail component A , assisting with a pulley mechanism.Refer to detail component C
steel frame window adjusted into a sliding object to open upwards along track
steel frame window adjusted into a sliding object to open upwards along track
steel frame window adjusted into a sliding object to open upwards along track
steel frame window adjusted into a sliding object to open upwards along track
Interior multi functional social space
Hanging planter with reusable planting inserted in a 2mm steel frame, in black oxide finish, hanging from the steel portal frame structure , ensuring with a pulley mechanism
Reclaimed pavers to be crushed to 20-30mm aggregate, mixed with reclaimed screed from the existing house. To cast terrazzo style floor, 10mm black shed maintain strip to be marked and the terrazzo finish
150mm cast in place concrete floor, with exposed aggregate


04 - TOP OF ROOF
8047
03 - LINE OF ROOF
4905
02 - FIRST
3120
00 - FFL
75
Packaging free
retail area
Pasta
Grains
Spices
Existing roof structure and finish to remain untouched
Location of demolished wall
900
633
400
451
599
422
418

STEEL STRUCTURE COMPONENT A



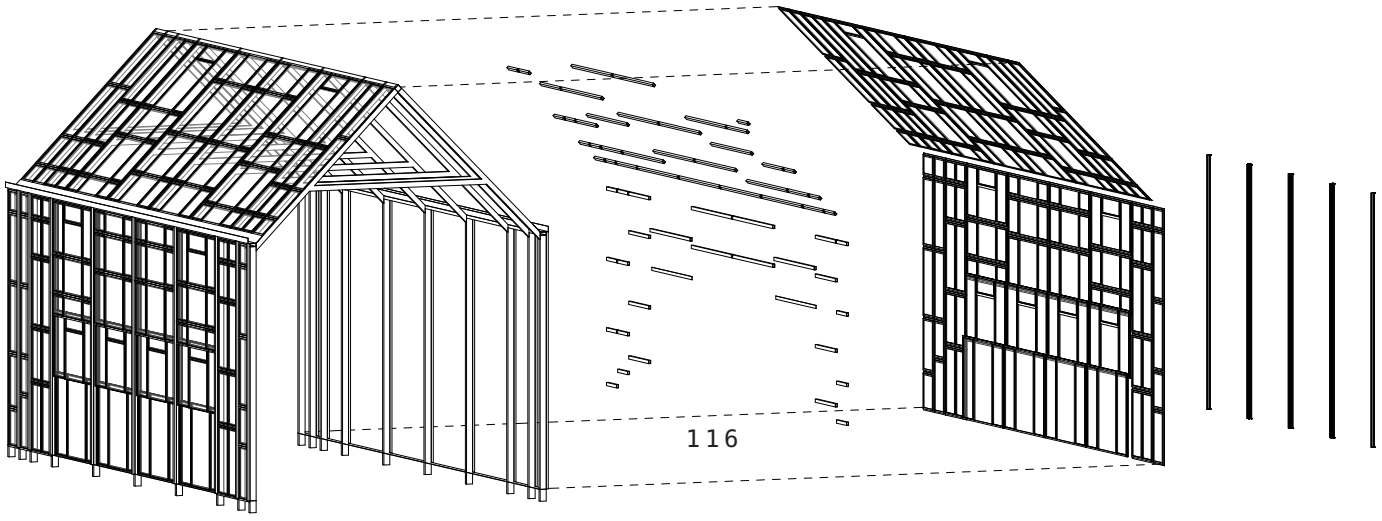
Elevation view, Scale 1:50 noting the steel member increments



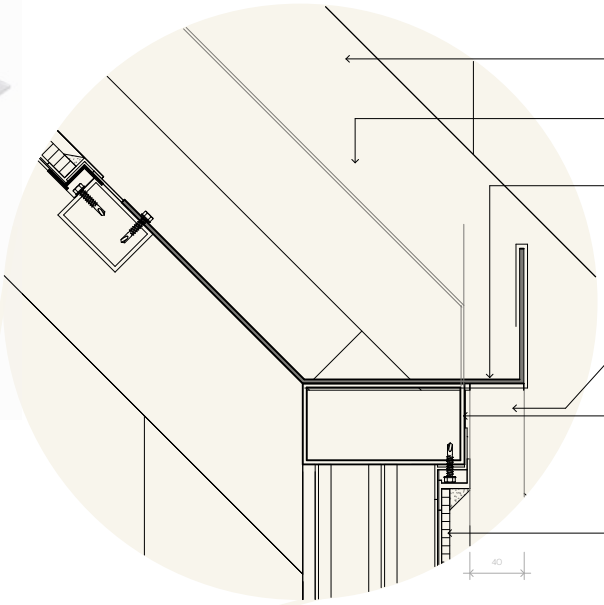
Glass comparison

Clear glass	VS	Double glazed	VS	Palram solar control
		Colour		
• Clear		• Clear		• Grey tint
		Solar heat gain coefficient		
• 0.87		• 0.69		• 0.45
		Light transmittance		
• 90%		• 78%		• 35%
		Haze		
• <1&		• <1%		• 52%
		Comments		
• Standard glass		• Improved but High solar gain		• Low light transmittance, but high haze balances it out

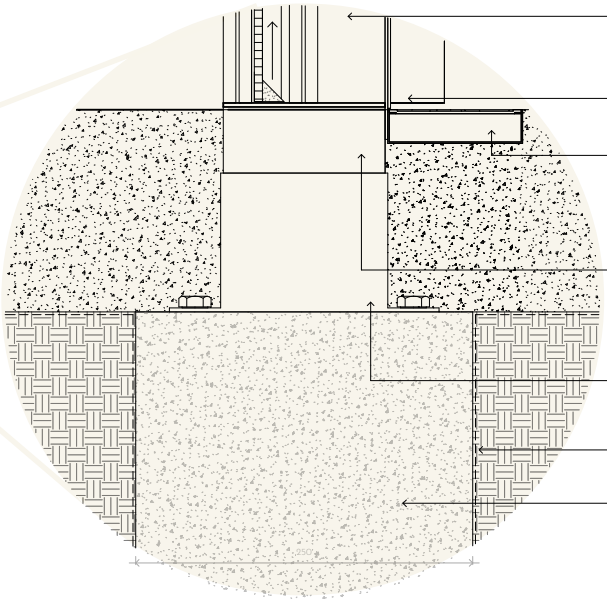
Exploded view, scale 1:50



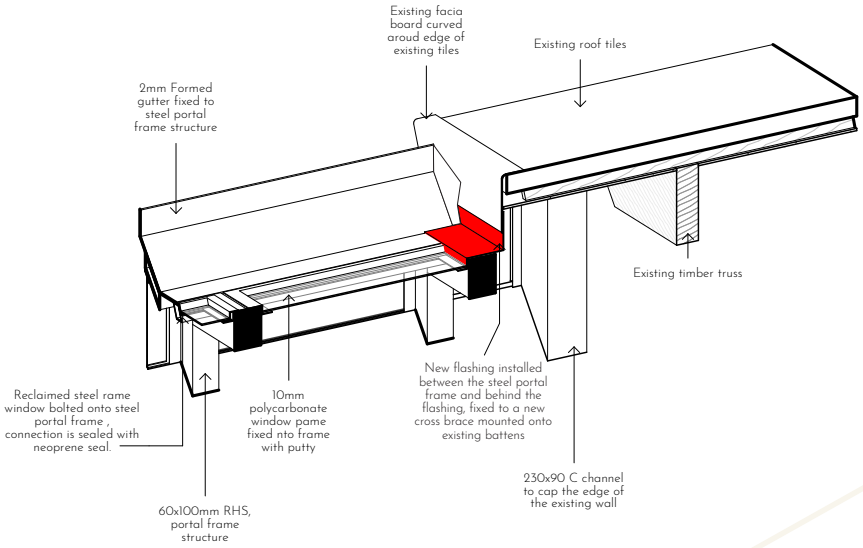
Detail A1 -Gutter Scale 1:2

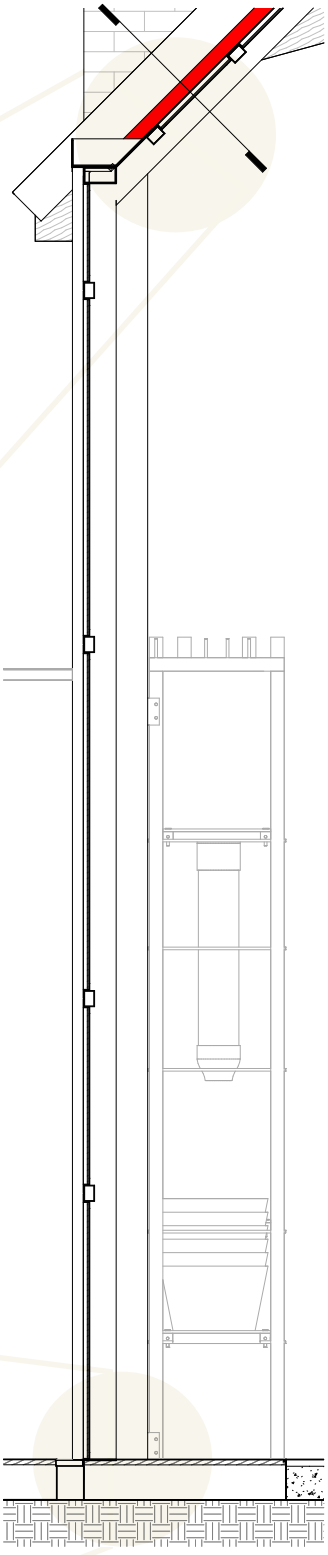


Detail A2 - Structural footing Scale 1:2

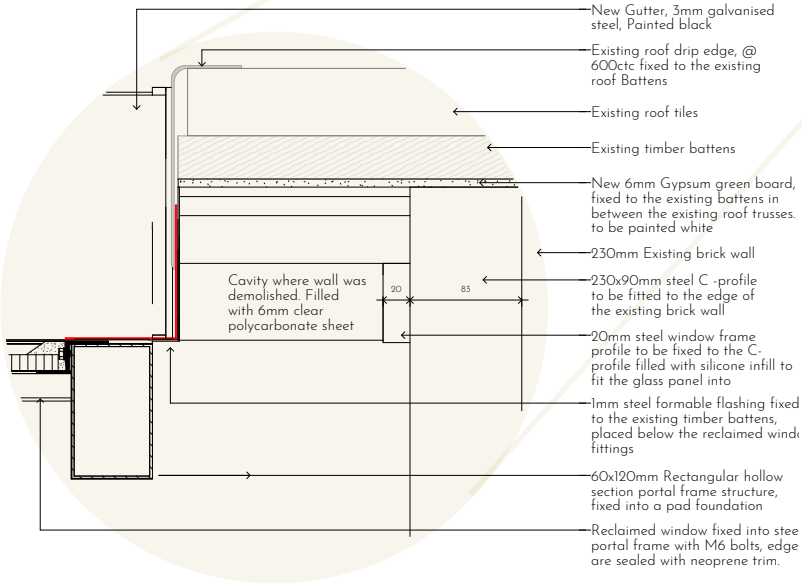


3D view of Portal frame meeting existing roof

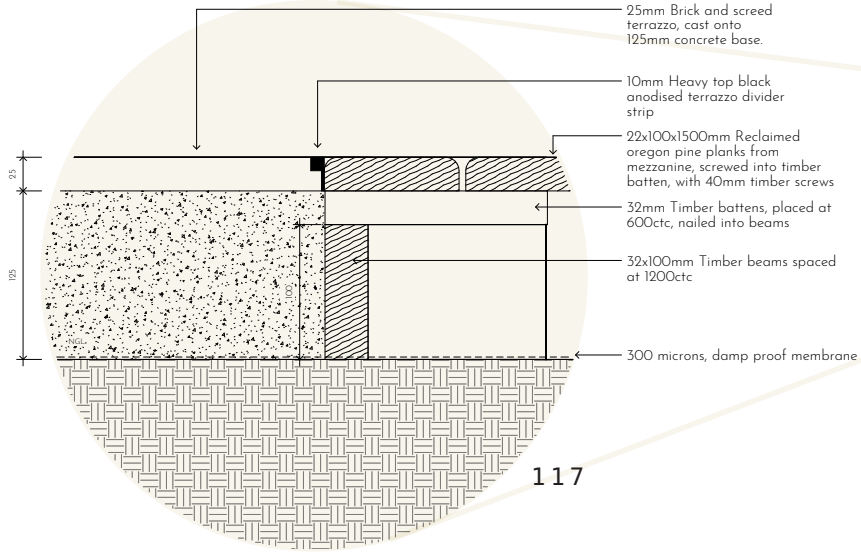


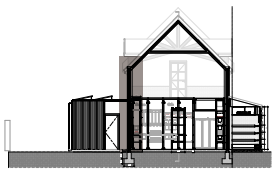


Detail A3 - Portal frame meets existing roof
Scale 1:2

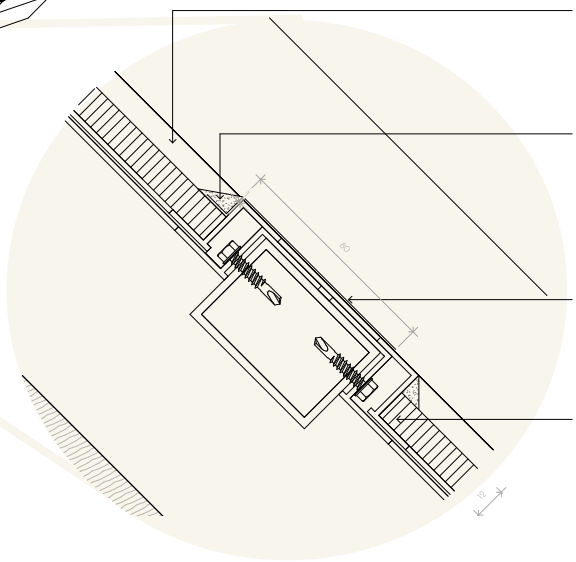


Detail A4 - Floor finish transition
Scale 1:2





Detail A5 - Window joint to roof frame
Scale 1:1



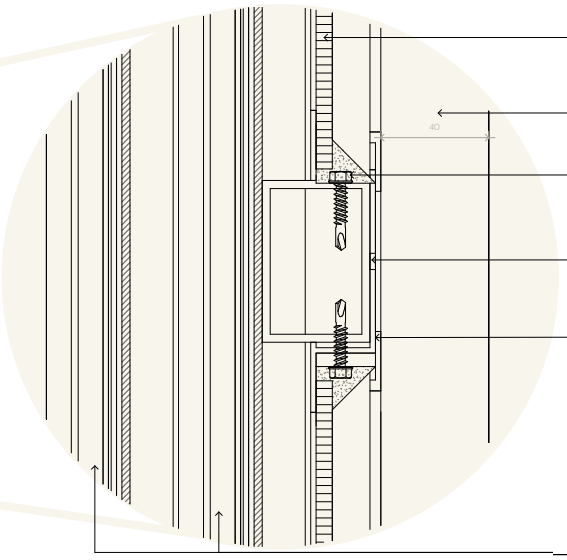
Reclaimed steel frame window in varrying sizes, finished with the original paint as found, fixed into steel portal frame structure with 8mm self tapping screw

Putty mixture at a minimum angle of 145° to allow for water runoff, used to fix 12mm polycarbonate window into the reclaimed steel frame window, putty is also used to disguise the screw fixing in some instances

1x100mm galvanized plate flashing folded and fitted before window putty is placed, treated with a black oxide finish

12mm polycarbonate palram sheet, with a solar control finish, fixed into reclaimed steelframe window with putty

Detail A6 - Window joint to steel frame
Scale 1:1



6mm polycarbonate palram sheet, with a solar control finish, fixed into reclaimed steelframe window with putty

40x60mm Downpipe, finished in a black oxide finish, welded into gutter plate

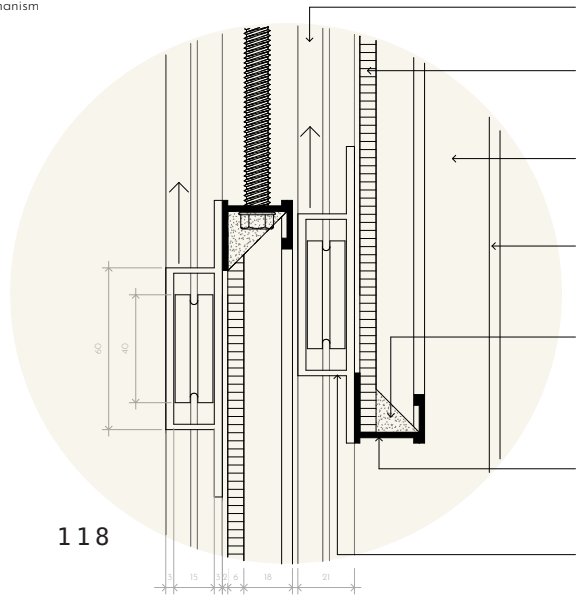
8mm self tapping screw, in a black oxide finish, used to screw the reclaimed steel window frames into the steel portal frame

40x120mm steel RHS brace, in a black oxide finish, welded to the steel portal frame structure

Reclaimed window base frame 2mm thick cast steel painted in varrying colors, fixed into steel portal prame structure with a 8mm self tapping screw

21mm aluminim track, screwed into portal frame column with 4mm self tapping screw

Detail A7 - Window track and wheels detail
Scale 1:1



21mm aluminim track, screwed into portal frame column with 4mm self tapping screw

6mm polycarbonate palram sheet, with a solar control finish, fixed into reclaimed steelframe window with putty

40x60mm Downpipe, finished in a black oxide finish, welded into gutter plate

60x120mm steel RHS frame, in a black oxide finish, welded to the steel portal frame tructure , fixed into a pillar foundation

Putty mixture at a minimum angle of 145° to allow for water runoff, used to fix 12mm polycarbonate window into the reclaimed steel frame window, putty is also used to disguise the screw fixing in some instances

Reclaimed window frame with edges trimed off, cast steel painted in varrying colors, fixed into steel portal prame structure with a 8mm self tapping screw

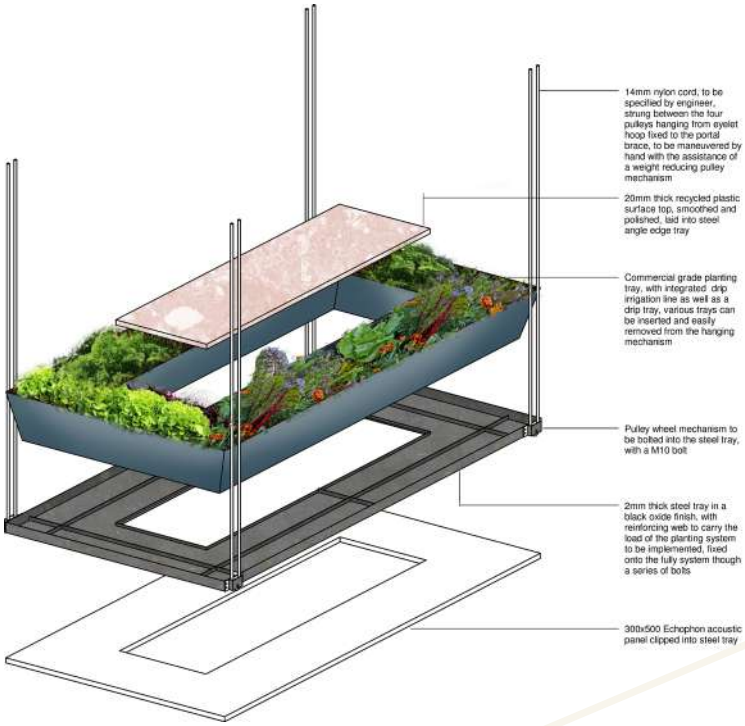
Side fixed wheel, running along a 21mm aluminium track driven by a small engine fixed at the top of the portal frame structure

CROSS SECTION LOOKING NORTH

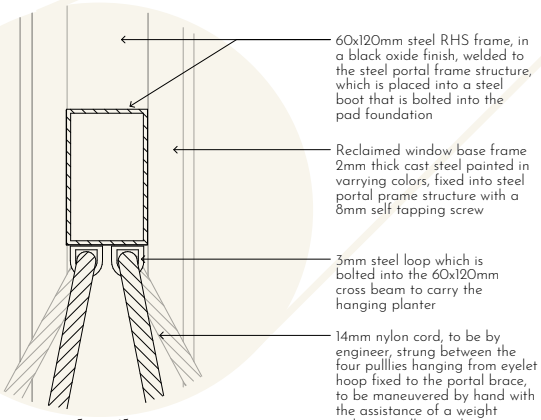
CROSS SECTION LOOKING SOUTH

HANGING PLANTER DETAIL
COMPONENT B

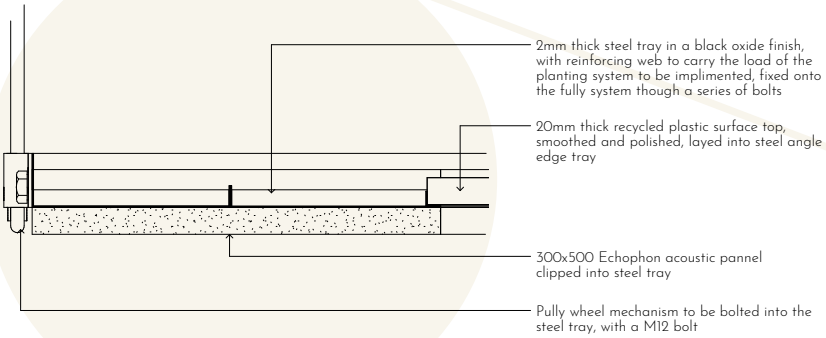
Exploded 3D of the hanging planter



Detail B1 - Planter hook detail
Scale 1:2

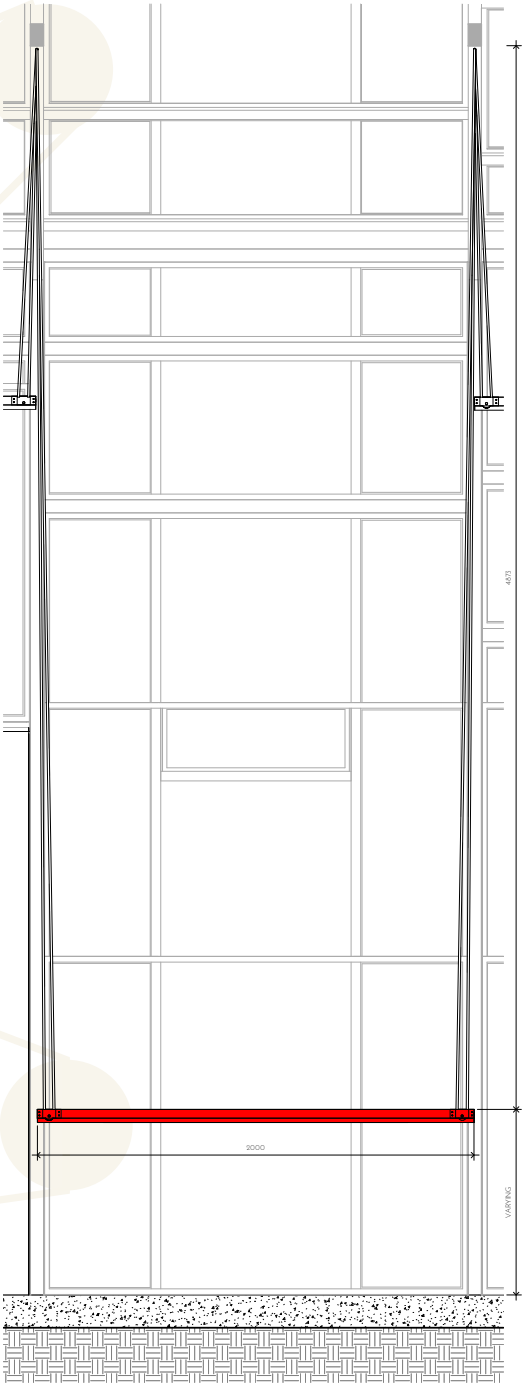


Detail B2 - Planter tray detail
Scale 1:2



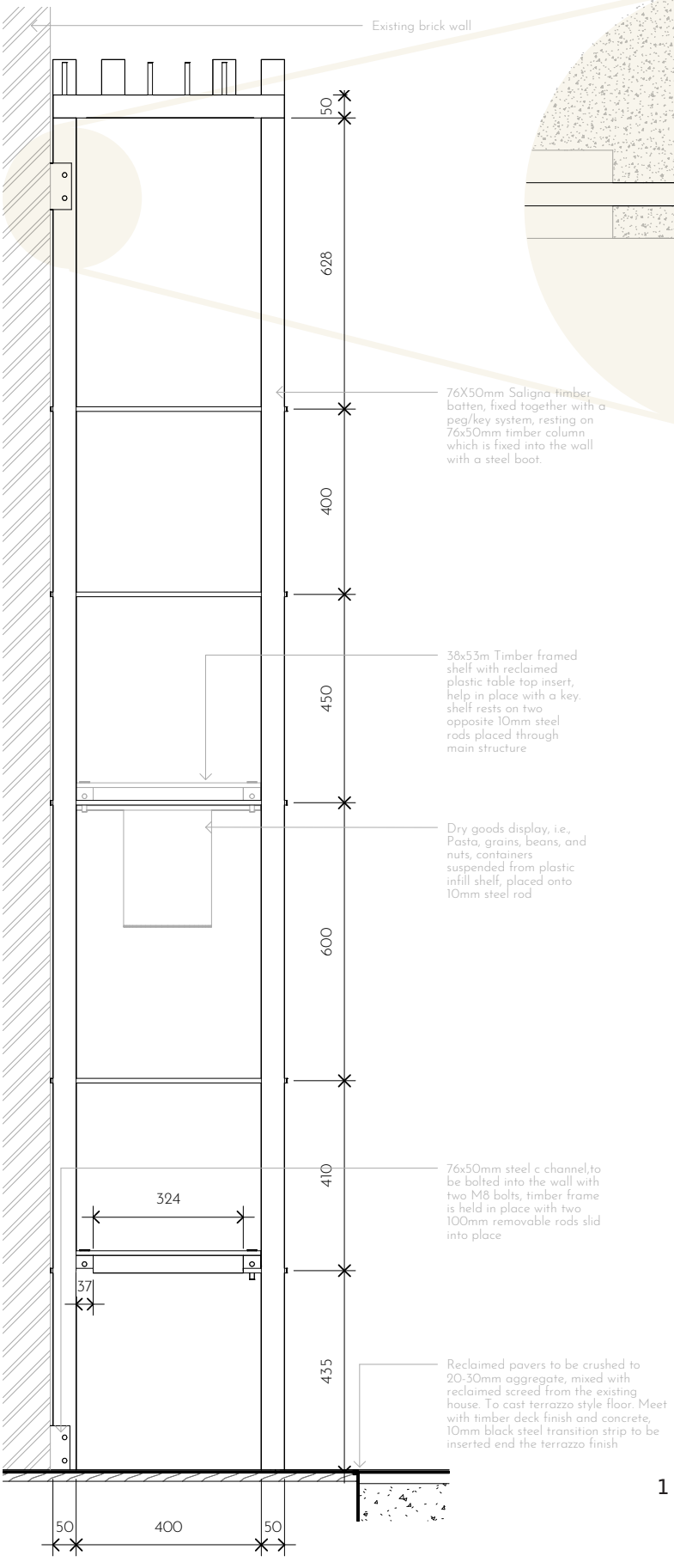
Planting range

B3 - Elevation of hanging planter
Scale 1:10

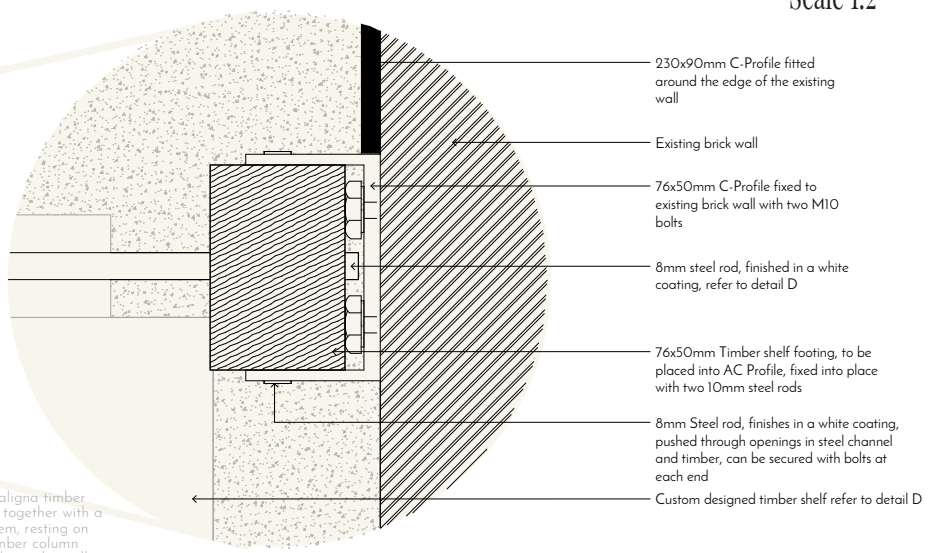


TIMBER SHELF STRUCTURE
COMPONENT C

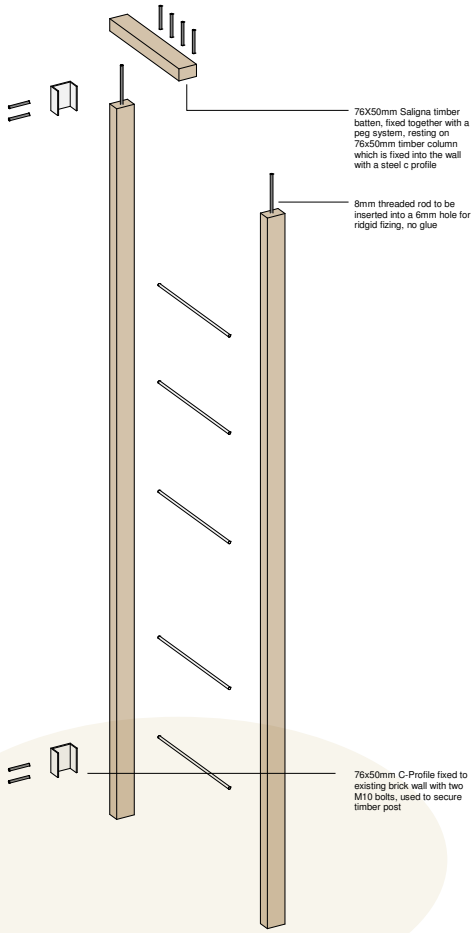
Detail C1 - Side view of shelf
Scale 1:5



Detail C2 - Wall bracket detail
Scale 1:2

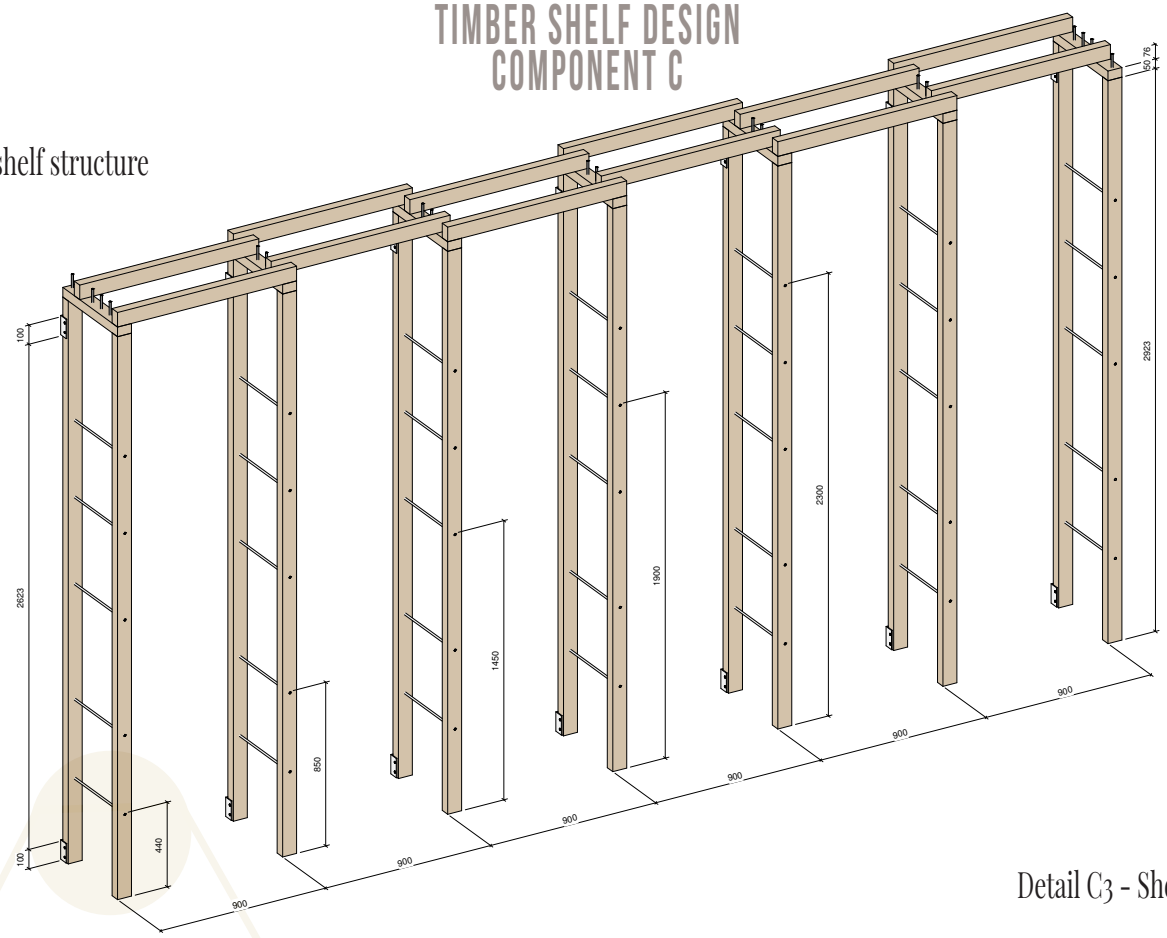


Exploded 3D of the shelf frame
Scale 1:10

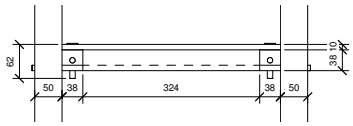


TIMBER SHELF DESIGN
COMPONENT C

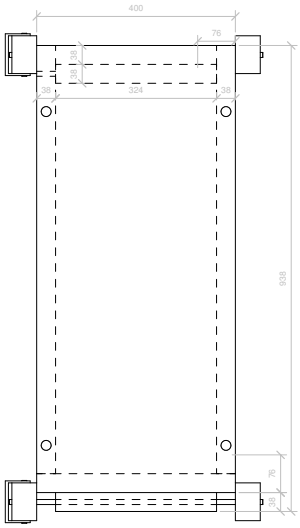
3D view of shelf structure
Scale 1:10



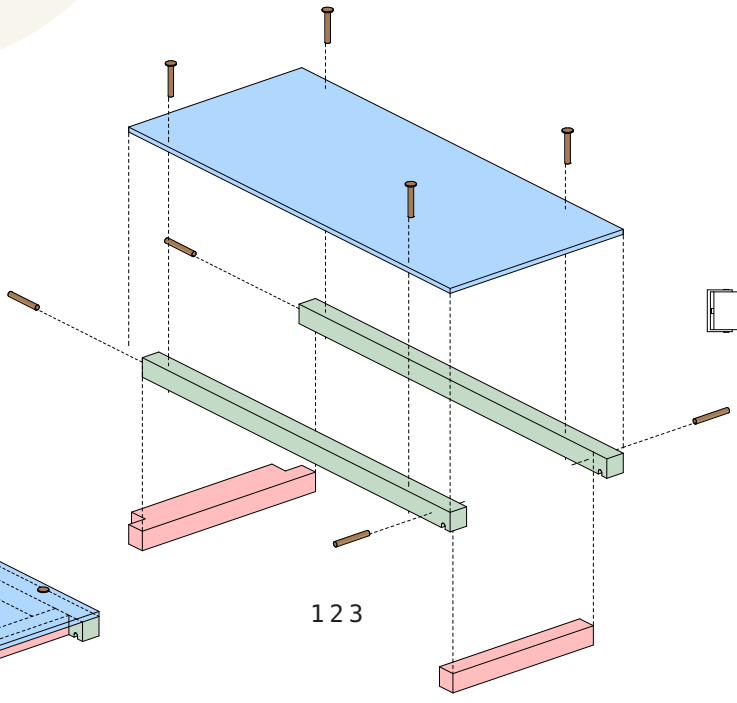
Detail C3 - Shelf side view
Scale 1:5

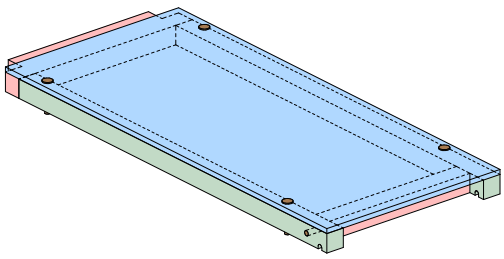


Detail C4 - Shelf top view
Scale 1:5



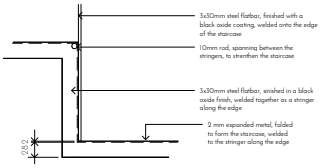
Exploded 3D of shelf



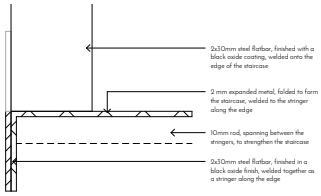


STAIRCASE DESIGN COMPONENT D

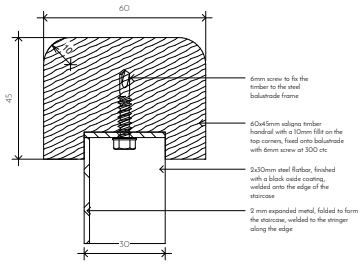
Detail D1 - Side detail of staircase
Scale 1:2



Detail D2 - front detail of staircase
Scale 1:1



Detail D3 - front detail of handrail
Scale 1:1



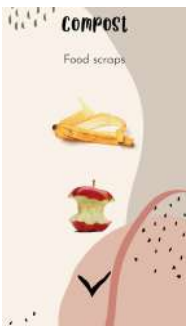
Examples of bin graphics

Bin design informed by concept tested at Washington university, an interactive recycle experience that informs users as they recycle, also illustrating moving graphics of what should be placed in

One of the landfill bin graphics

Notification user receives when recycling something

Illustration of graphic moving to the next example



Part 10

CONCLUSION

10.1) Contribution

The design for 13 Firwood, sits on a relevant site that deals with problems of sustainability in the current context of South Africa.

- The design branches away from the expected realm of sustainable interior design focusing around recycling hubs, and instead into a realm of retail design.
- The project illustrates how retail can be approached in a sustainable manner.
- The design of the retail space illustrates how interior design can attempt to drive social change in terms of a lifestyle-driven design.
- The project expands the limits of interior design by dealing with complex steel structures.
- The investigation of timber joinery is also valuable, as it is a craft that is under-appreciated, and an ideal solution for disassemblable structures.

Instead of the project dealing solely with one research field, it situates itself in the field of Environmental Potential however he other two fields are often considered, Human settlements and urbanism (lifestyle driven by social interaction), as well as Heritage and cultural landscapes (heritage building).

10.2) Recommendations

- Prototyping of the timber joinery structure, to test in real life the durability of the joints and the wear and tear.
- Further investigation into the creation of plastic objects, testing the strength, chemical resistance and overall hardness.
- Further investigation into the terrazzo materials making, in terms of the ratio of rubble, and relative colouring.
- An investigation into the economic feasibility of a venture of this scale.
- Understanding how a sustainable retailer can be successful in other social contexts not explored in this project. Including the centre of town, and farm areas, and small towns.
- Further design into the mechanics of the hanging planter.
- A more comprehensive approach to the brand design

10.3) Conclusion

The dissertation set out to investigate how Experiential retail can become a catalyst to encourage sustainable habits.

The theoretical investigation found that the global problem of overconsumption can be dealt with at a human scale in the form of sustainable retail. It was discovered that through designing a space that supplies certain core functions, sustainable living becomes a legitimate target.

It was then discovered that the use of experiential retail links firmly into the intentions of a green economy, through creating interesting spaces with multiple functions, and reused sites one can satisfy both topics. The use of experiential design allowed the space to be saturated with rich programs that add to the intentions of a sustainable retailer. It was also found that experiential retail works well with the design of a green star rated building as their aims overlap. Through the inclusion of multiple experiential devices, the design was able to visualise sustainable endeavours and methods towards sustainability.

With the technification and design component, the investigation illustrated that the basic sustainable methods could be satisfied, such as water collection. The design illustrated how sustainability could be engrained into every facet of a project, from inception through to demolition, design and technification. The reuse of all demolition material and other common materials was done in a manner to improve the quality of the materials and with that created a design that relates to the community it is situated in. Furthermore, embodies sustainability in every aspect.

An ideal starting point for a sustainable retailer aiming to change the lifestyle of its community.

Part 11a

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Part 11b

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Part 12a

APPENDIX A - PRECEDENT CODING

Name and nr code

BIO&BIO ECO 01

The intention of this image is to give a good overall idea of the interior context, this image is selected from available images as the image that has the most design value

A secondary image is selected to display important elements that might be missing from the First image

This paragraph is written instinctively, before reading the article, however after viewing the images available and checking if it meets the inclusion criteria

Selection criteria

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Reference data

bio&bio eco; Retail - Products(grocer); Brandoctor & Bruketa&Zinic OM & Brigada; Croatia
…biobio-eco-products-store-by-brandoctor-bruketazinic-om-brigada-croatia; 25 March 2019

The coding is done to highlight specific criteria elements that would be of use in order to extract data from the interior design project

Conclusion

Overall conclusions

The interior sends a clear message of a green initiative, with natural materials and simple design.

Brand design:
The interior makes use of various different Intypes, the most prominent being colourbrand which speaks clearly to the feeling intended for the space of being natural warm and welcoming.

The brand strives to improve access to better more sustainable products and markets the taste and health benefits of green food through the design character and language

- Arc - archetype
  From the Cornell university study on Intypes, in order to understand the parts that make the interior
- Col - Interior colour scheme, to identify trends
- Mat - Material pallet, to identify material trends
- Prod - Visible products, a broad idea of what is sold
- Disp - Types of displays used, which leads to the retail archetype

Further connotations

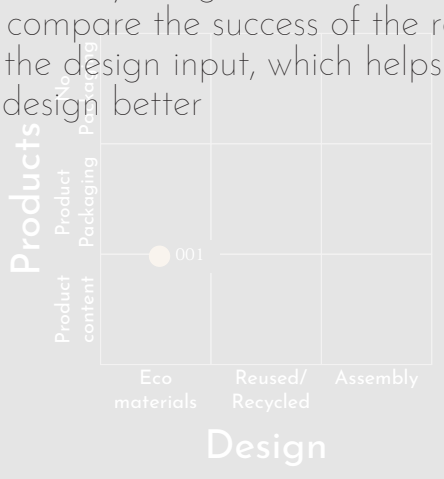
Other considerations

Other elements that are expected (personal opinion)

Brand archetype form Theory put together by brand specialist Kaye Putnam.

Which groups brands aesthetic to the type of client it attracts

A visual graphic comparing the brand product(who they are) to how they design the interior, this leads me to be able to compare the success of the retail brand compared to the design input, which helps to analyze how one can design better



2. Name and nr code

BIOBIO ECO 001

3a. Overall interior visual

3b. Other interior context image

5. First visual (instinctive) analysis

The warm ones of bamboo and light wood gives the interior a natural earthy feel. The designed objects seem simple but is cluttered by products of various brands and design. The playful graphics allude to a certain personality that people could be drawn towards.

4. Selection criteria

Inclusion criteria

1. Interior design
2.
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products / Sustainable design / Sustainable ethos
9. Intervention / Insertion / Installation
10. Local / Other / Design center / Alpha city
11. New / Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

1. Reference data

bio&bio eco; Retail - Products(grocer); Brandoctor & Bruketa&Zinic OM & Brigada; Croatia
https://retaildesignblog.net/2014/03/03/biobio-eco-products-store-by-brandoctor-bruketazinic-om-brigada-croatia; 25 March 2019

6a. Coding of interior

10. Overall conclusions

Conclusion

Interior design:
The interior communicates a message of a green initiative, with natural materials and simple design.

Brand design:
The interior makes use of various different Intypes, the most prominent being a colourbrand which speaks clearly to the feeling intended for the space of being natural warm and welcoming.

The brand strives to improve access to better more sustainable products and markets the taste and health benefits of green food through the design character and language

6b. Summary of codes

Denotation

Arc - 1	Colourbrand
Arc - 2	Dual desk
Arc - 3	Line up
Arc - 4	Billboard
Col - 1	Neutral pallet
Mat - 1	Light wood
Mat - 2	Bamboo
Mat - 3	Concrete floor
Prod - 1	Beauty
Prod - 2	Grocery
Disp - 1	Gondola
Disp - 2	Shelf wall

6c. Further connotations

Connotation

Speaks to playful brand image

Indicates towards a type of display

The interior colour scheme speaks directly to the brand

The pallet speaks to grounded natural feeling in the interior

Raw materiality encourages the natural feeling of the design

Whilst promoting green materials (sourced sustainably)

7. Other elements that are expected (personal opinion)

Other considerations

Indoor plants

Clear brand message

Educational

Community initiatives

Wide spread influence

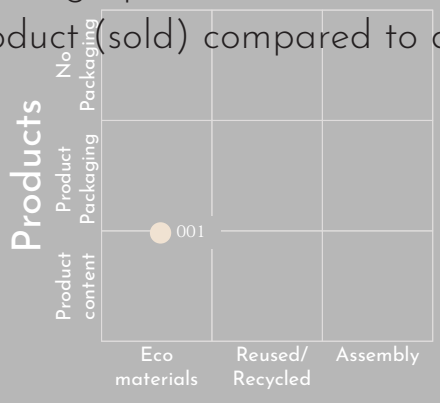
8. Summary of noticeable brand archetype

Brand archetype

Caregiver - Focused on helping

Written on the overhead informative graphic

9. Visual graphic of sustainability of the product (sold) compared to design



The warm ones of bamboo and light wood gives the interior a natural earthy feel. The designed objects seem simple but is cluttered by products of various brands and design. The playful graphics allude to a certain personality that people could be drawn towards.

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Conclusion

Interior design:
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Denotation

Arc - 1	Colourbrand
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Connotation

Speaks to playful brand image
Indicates towards a type of display
The interior colour scheme speaks directly to the brand
The pallet speaks to grounded natural feeling in the interior
Raw materiality encourages the natural feeling of the design
Whilst promoting green materials (sourced sustainably)

Other considerations

Indoor plants

Clear brand message

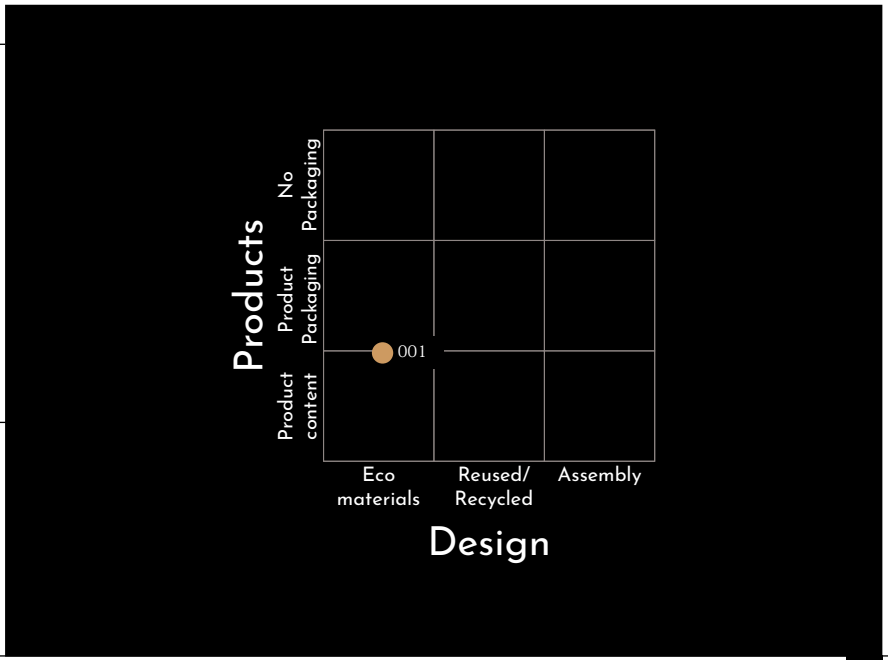
Educational

Community initiatives

Wide spread influence

Brand archetype

Caregiver - Focused on helping
Noted on the over head informative graphic



The interior gies off a fresh and healthy feeling, the exposed soffit and plain floors make it feel more like a typical green grocer. The brand is noticable through the colouring and of course the large ligo light display. Overall the interior speaks to eco shoppong but does not give the feeling of a welcoming/inviting space.

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

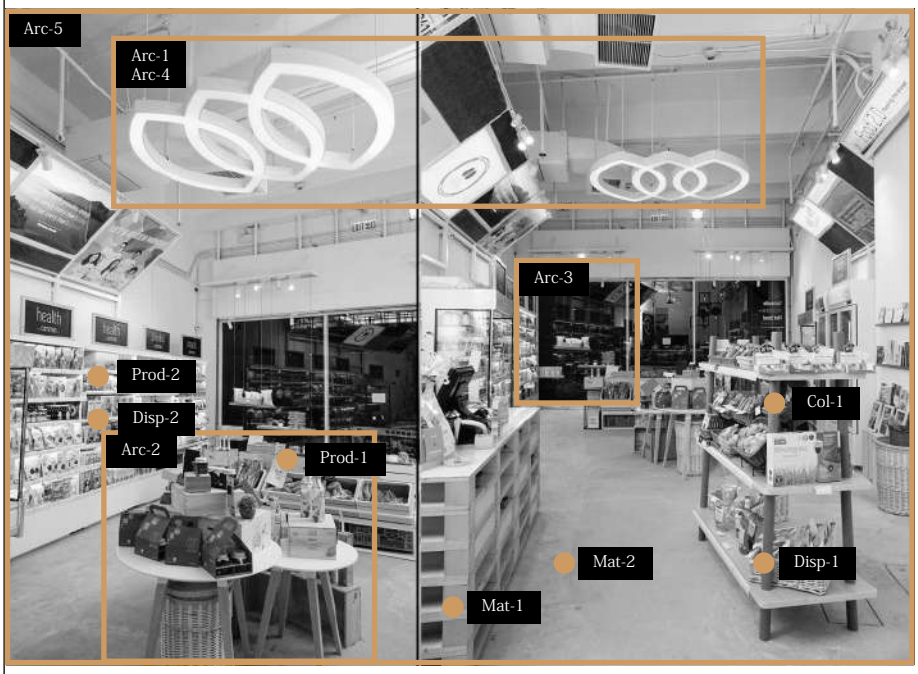
Alignment criteria

8. Sustainable products / Sustainable design / Sustainable ethos
9. Intervention / Insertion / Installation
10. Local / Other / Design center / Alpha city
11. New / Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Green common concept; Retail - Products(grocer); Greentrooper design studio; Hong kong; China
https://retaildesignblog.net/2015/06/30/green-common-concept-store-by-greentrooper-design-studio-hong-kong-china/; 25 March 2019



Conclusion

Interior design:
The interior design ins simple and easy to achieve, with possibility of low cost installations and various reuse and recycle opportunities

Brand design:
The brand design seems to be visible mostly through the pops of colour and the exaggerated logo, the brand dissipates between all products

Overall the interior speaks to a certain health food client, the fresh look interior wold draw the necessary attention, but doesn’ t spark interest and excitement.

Denotation

Arc - 1	Understated
Arc - 2	Vitrine - Object (implied)
Arc - 3	Vitrine - Store
Arc - 4	Exaggerate
Arc - 5	White box
Col - 1	Green pop
Mat - 1	Reused pallets
Mat - 2	Epoxy floor
Prod - 1	Plant based grocery
Prod - 2	Grocery
Disp - 1	Gondola
Disp - 2	Shelf wall

Connotation

Focus is placed on products

Objects and store facade is displayed as something special, with unique focus areas

The logo draws first attention inside and outside

Brand insertion onto space, can easily be removed

Materials speak to the earthy fresh brand message

Other considerations

Indoor plants

Clear brand message

Educational

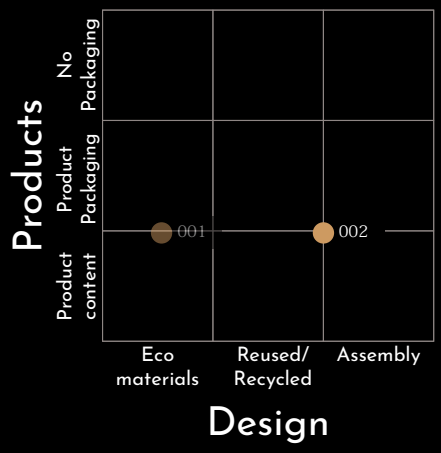
Community initiatives

Wide spread influence

Brand archetype

First response unclear brand type

Caregiver - Focused on good products
Wants to provide a healthier alternative



The interior feels welcoming with fun pops of colour and a warm pallet, the space is organized in a spacious way which gives visual access to various elements. The simple placement of made objects give it a sophisticated DIY feeling. The central community table indicates a place for workshops, which pulls the community into the interior.

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

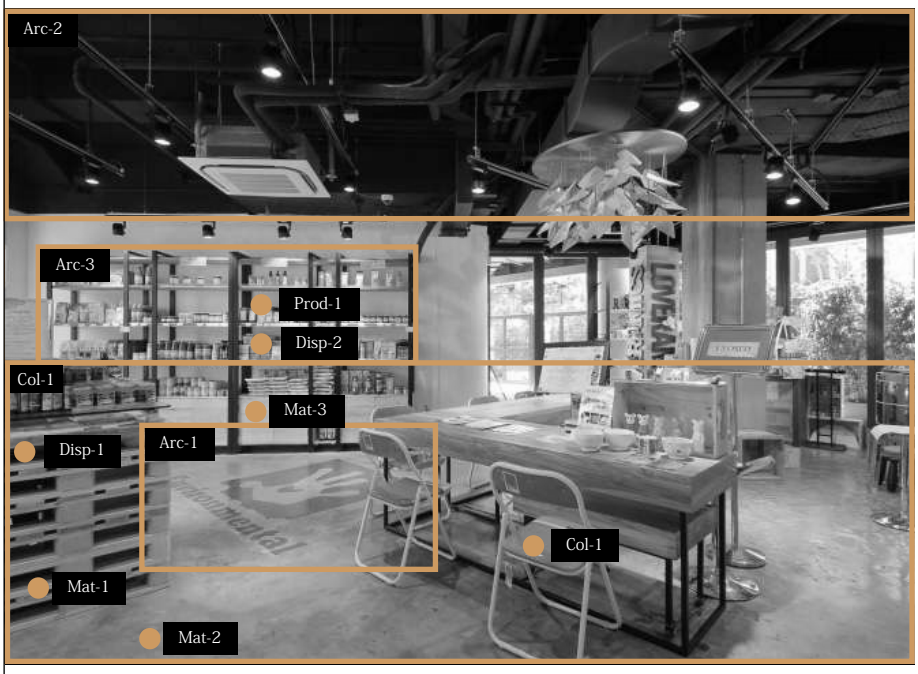
Alignment criteria

8. Sustainable products / Sustainable design / Sustainable ethos
9. Intervention / Insertion / Installation
10. Local / Other / Design center / Alpha city
11. New / Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

The Green Atrium Supermarket; Retail - Products (supermarket); MaS Studio; Hong Kong
https://retaildesignblog.net/2015/10/19/the-green-atrium-supermarket-by-mas-studio-hong-kong/; 26 March 2019



Conclusion

Interior design:
He interior design is made sophisticated by the workmanship and design details whilst still having a welcoming DIY feeling

Brand design:
The brand is understated however the material pallet is clear and the retail intent is visible, being that the interior is about conscious environmental decisions

The interior invites users in to participate (the group table) the warm tones contrast well with the simple dark pompidou effect and steel frame accents. Materials are used in a very conscious manner.

Denotation

Arc - 1	Understated
Arc - 2	Pompidou
Arc - 3	Line up
Col - 1	Neutral pallet
Col - 2	Colour pop (green)
Mat - 1	Pallets
Mat - 2	Concrete floor
Mat - 3	Recycled cardboard
Prod - 1	Grocery
Disp - 1	Table display
Disp - 2	Grid wall display

Connotation

Keeps volume of interior and speaks to the simplicity of the design

Woods, pallets and a neutral tone floor all speak to the earthy nature of the interior
The green is the colour for health and Eco environment

Recycled material, easy to be reused again

Indicated clear drive for using sustainable and Eco products

Other considerations

Indoor plants

Clear brand message

Educational

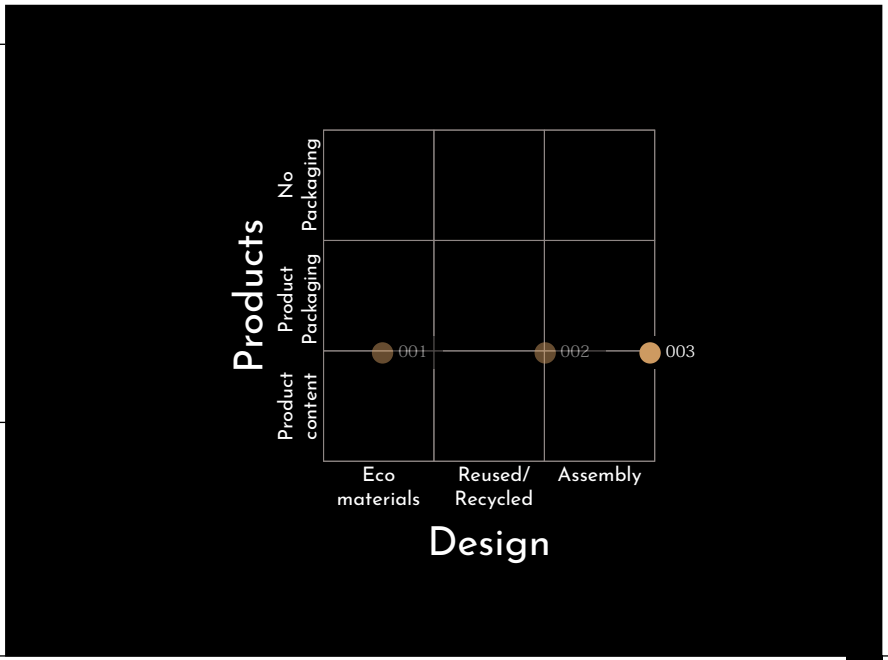
Community initiatives

Wide spread influence

Brand archetype

Caregiver - Focused on providing
Noted by the community invitation

Hero - Focused on spreading the message
Notable through careful materials selection as well as environmental messages on the floorscape



The interior is spacious and seems well planned, which would make for a pleasant shopping experience, the natural woo against the white walls give it a natural warm feeling which would serve well as an invitation into the store, the displays are well organized and clutter is avoided which distinguishes it from a typical grocer. It is also noted that the interior caters for community initiatives with regular workshops.

Inclusion criteria

1. Interior design ■
2. Commercial ■
3. Public access ■
4. Physical context ■
5. Contemporary ■
6. Conceived/ Intentional ■
7. Small scale production ■

Alignment criteria

8. Sustainable products ■
   Sustainable design ■
   Sustainable ethos ■
9. Intervention □
   Insertion ■
   Installation □
10. Local □
    Other ■
    Design center □
    Alpha city □
11. New ■
    Renovation □

Considerations

12. Sophisticated ■
13. Value judgment □
14. Utility □

Conclusion

Interior design:
The interior sends a clear organic message with only one material of wood as its pallet, this makes the design language simple an easy to read

Brand design:
The brand seems to speak through its actions rather than branding design, the material pallet sends a big message and that together with the few hand written notations speaks to care for the clients

The brand is very conscious of the environment and speak a language well known to people who recognize sustainable retail, the interior is simple and logical to use

Denotation		Connotation
Arc - 1	Understated	The brand is not visible other than the visual coloring of the interior
Arc - 2	Line up	The organized dry products, create rhythm and simplicity
Col - 1	Neutral pallet	The neutrality speaks to the natural nature of the retail interior
Mat - 1	Light wood (reused planed pallets)	
Prod - 1	Fresh produce	
Prod - 2	Dry products	
Prod - 3	Wet products	
Disp - 1	Gondola	The glass containers continue the sustainable message
Disp - 2	Dispensers	

Other considerations

Indoor plants

Clear brand message

Educational

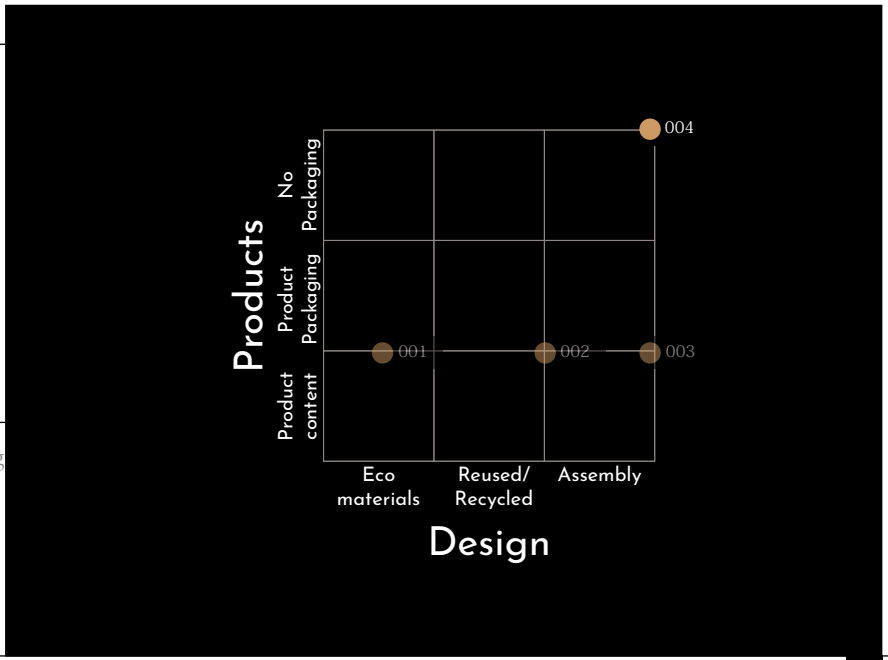
Community initiatives

Wide spread influence

Brand archetype

Caregiver - Focused on helping and teaching As seen with the hand written notations as well as care for community inclusion

Regular Guy/girl - by providing everyday products. The brand speaks to variety of users who all care for the environment



The interior has a sophisticated feel with rich materiality. The products are inviting and the design identity is clear and concise, although there is a lot going on in the interior the elements are all well defines and differentiated. The interior has an elitist feel

Inclusion criteria

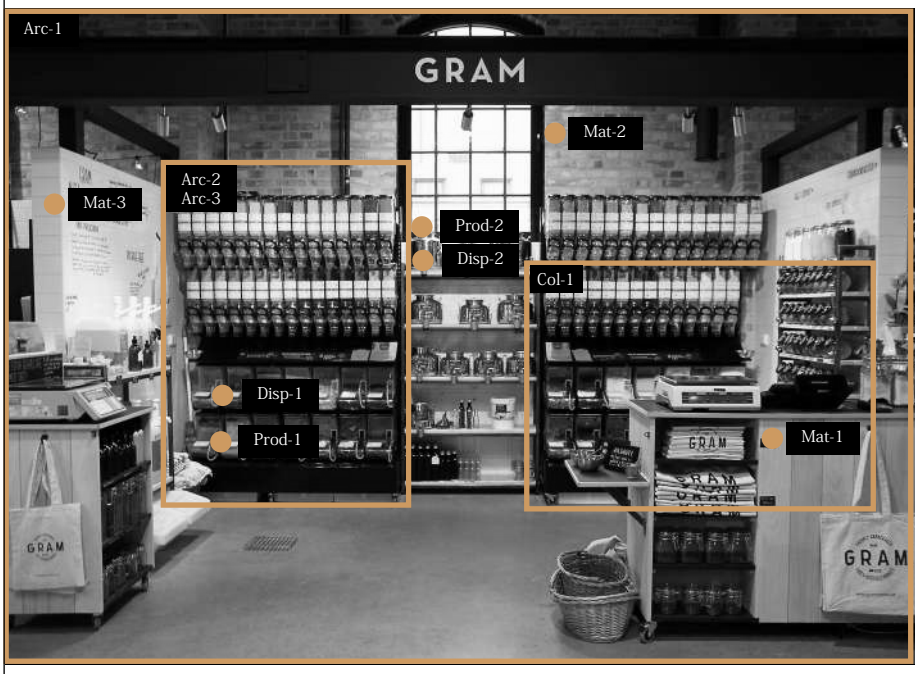
1. Interior design ■
2. Commercial ■
3. Public access ■
4. Physical context ■
5. Contemporary ■
6. Conceived/ Intentional ■
7. Small scale production ■

Alignment criteria

8. Sustainable products ■
   Sustainable design ■
   Sustainable ethos ■
9. Intervention □
   Insertion ■
   Installation □
10. Local □
    Other ■
    Design center □
    Alpha city □
11. New ■
    Renovation □

Considerations

12. Sophisticated ■
13. Value judgment □
14. Utility □



Conclusion

Interior design:
The interior design in logical and easy to read the sophistication speaks to a more elite client and the design makes the experience logical

Brand design:
The brand uses very little natural materials other than the products themselves and some timber highlight, this speaks to the shift in brand direction towards selling a lifestyle

The brand doesnt strive to save the world only to reduce packaging, this is noticeable in the playful nostalgic interior design whilst including elements that are not natural (the steel and the plastic

Denotation		Connotation
Arc - 1	Activate	The brand name is featured throughout strengthening the identity
Arc - 2	Specimen	This form of display helps keep the design organized and easy to read
Arc - 3	Line up	
Col - 1	Black accents	This colour accent helps with the sophisticated feel of the interior
Mat - 1	Light timber	A nod towards nature, without it being the only language
Mat - 2	Red facebrick	Speaks to the past, the steel and brick have a feeling of a bygone time
Mat - 3	White tiles	The tiles with the text seem playful and practical at the same time
Prod - 1	Dry Products	
Prod - 2	Wet products	
Disp - 1	Dispensers	These dispensers are made from enduring plastic
Disp - 2	Shelf wall	

Other considerations

Indoor plants

Clear brand message

Educational

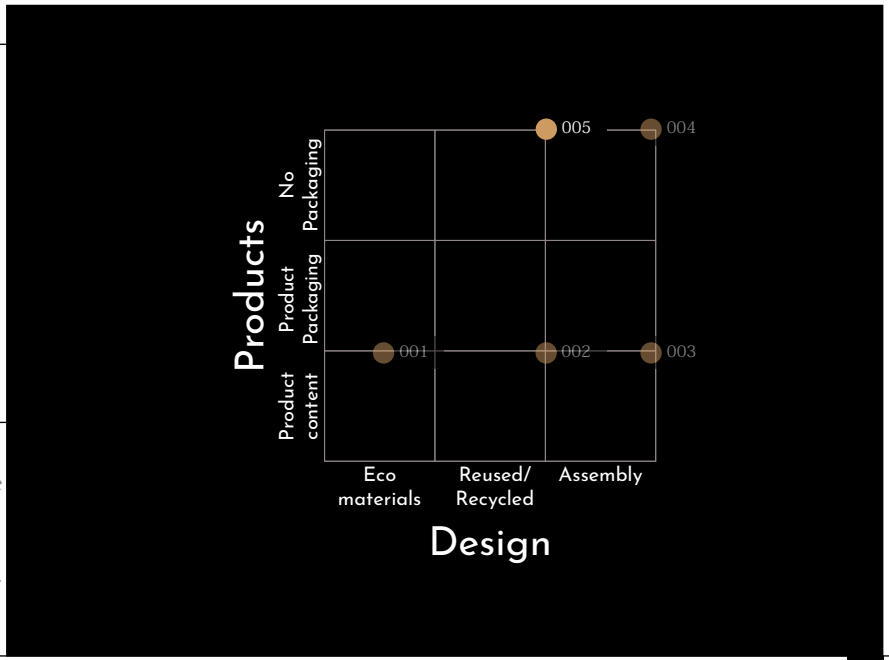
Community initiatives

Wide spread influence

Brand archetype

Outlaw - wants to be different
noticeable in the way the interior speaks more to a lifestyle rather than just being green

The ruler - exclusivity
The interior to be drawing in a certain type of client, one that wants to feel special for being different



The interior has a very clean cut look, its well put together with clever design elements. The well constructed fit out finished off to the finest detail, the displays are well organized and inviting as well as easy to access(physically and visually). the material pallet of the black pressed wood with possibly some lighter timber is well contrasted with colorful perforated steel sheets throughout which is all grounded by the black.

Inclusion criteria

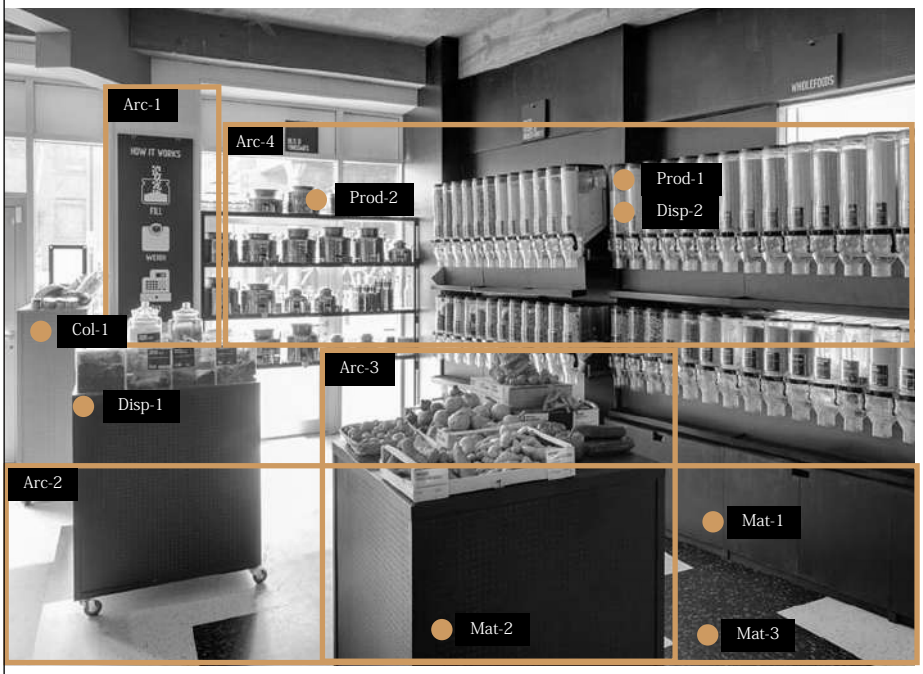
1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility



Conclusion

Interior design:
The interior is well put together with a clear spatial plan the walls are mostly utilized for displays and the floorspace kept clear

Brand design:
The brand coloring has a large effect on the message the bran sends and although its not natural it still draws interest and excitement

A packaging free retail interior that is not focused on materiality but also creating a distinct brand, the colorful contrasting to the black makes them different whilst still keeping some connection to natural with the painted pressed wood

Denotation

Arc - 1	Understated
Arc - 2	Harlequin
Arc - 3	Vitrine-object (implied)
Arc - 4	line -up
Col - 1	Colour pops, 50s inspired
Mat - 1	Black painted pressed wood
Mat - 2	Perforated steel sheet
Mat - 3	Marmoleum
Prod - 1	Dry products
Prod - 2	Wet products
Disp - 1	Table display
Disp - 2	Dispensers

Connotation

The logo type displays add brand character
This together with the colour notes towards a playful aspect
Gives clear and logical display of products
The colours add playfulness and excitement to the interior
The timber speaks to the natural aspect of a packaging free shop
where the black and steel talk towards a certain sophistication
Playfulness in the brand

Other considerations

Indoor plants

Clear brand message

Educational

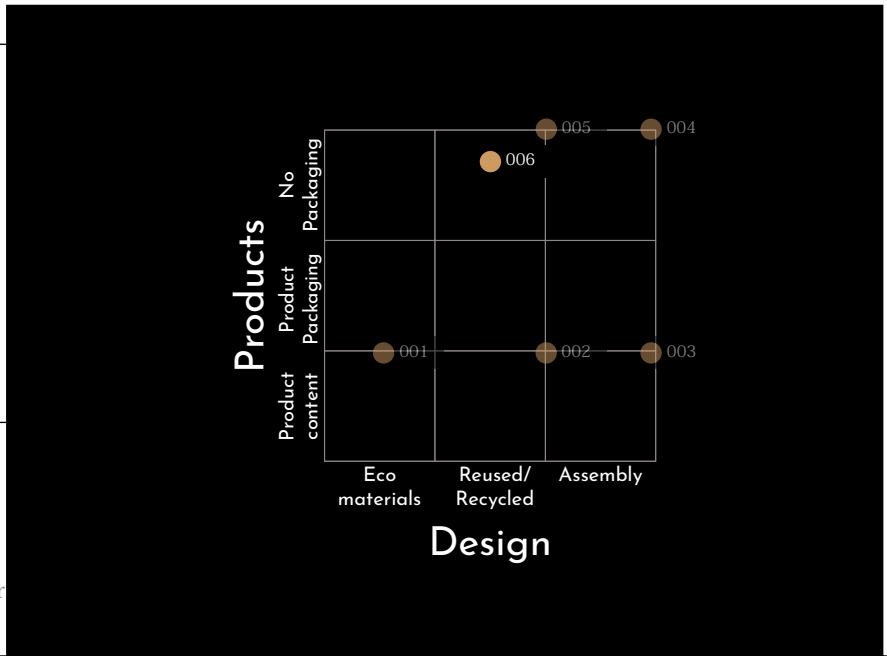
Community initiatives

Wide spread influence

Brand archetype

The Entertainer - wants to draw people in This is seen through various colour and design details but also the activities such as a bar

The guy/girl next door - the simplicity of their products talk to something every one needs, but giving it in a different way



The design feels fresh clean and warm, te carpet makes it feel like home especially considering all the greenery, overall the design is very simple and well read, with all the elements well defined and identifyalble. Theres a lot of carefull detailing that shows care and attention in the designed product, the whole stand dissassembles into two flat pack pallet. The products are using plastic as ther packinging however it is a sustainable recyclable sugercane plastic.

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Eco store, stand; Retail - Products(no food); Moth; Australia
https://www.mothdesign.com.au/event-activation/ecostore/ecostore-stand; 26 March 2019

Conclusion

Interior design:
The interior is very simple and well designed to get the products noticed, the design is well complimented by the natural and warm elements which pulls the character of the space together

Brand design:
The brand is very clear and simple, this blends well with the white and is easy to identify, especially with the product branding

The focus of this installation is not to be the most Eco friendly stand but rather to sell the most Eco friendly products in a well considered sales environment, the materials are made to last.

Denotation		Connotation
Arc - 1	Repeat repeat	The branding of the store is on every product, and all over the design
Arc - 2	Plinth	
Arc - 3	Line up	This makes the products easy to find and organize
Col - 1	White combined with natural elements	The coloring is very fresh and bright
Col - 2	Colour pop	
Mat - 1	Duco Supawood, Timber look HPL	
Mat - 2	Straw carpet	This together with the detailing adds warmth and character to the
Mat - 3	Detailing: steel, leather, brass	design
Prod - 1	Personal use	
Prod - 2	Cleaning	
Disp - 1	Grid Wall display	A very logical easy to assemble display unit

Other considerations

Indoor plants

Clear brand message

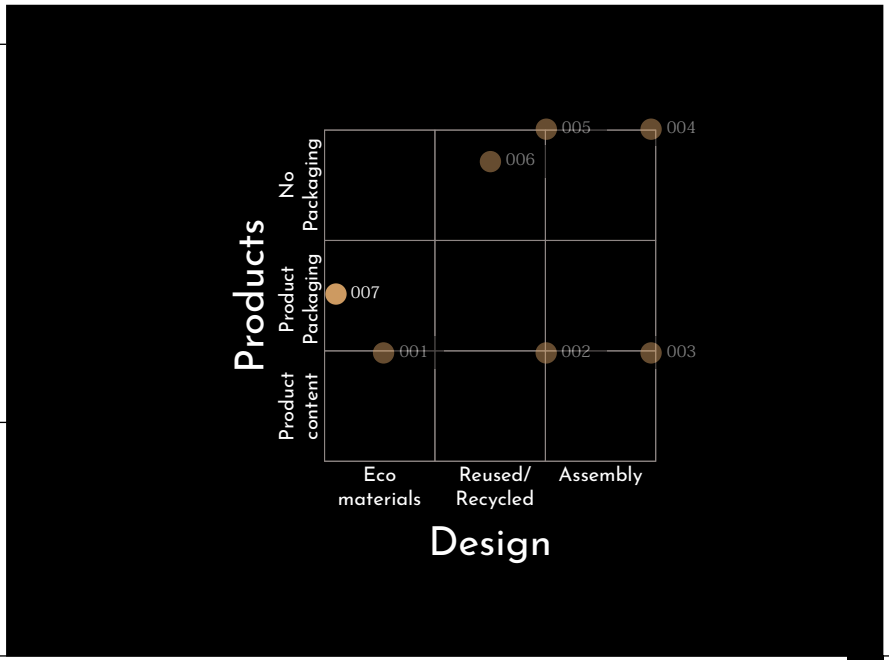
Educational

Community initiatives

Wide spread influence

Brand archetype

Caregiver - Focused using safe products
His is not only in your house but on yourself and also on your children



The interior is designed in a very contemporary style with strong stylistic elements. There is a wide variety of materials some speaking to sustainability and others more practical, product displays seem to occupy the whole interior and displayed n the center pulling the focus to certain sections of the store as you move through

Inclusion criteria

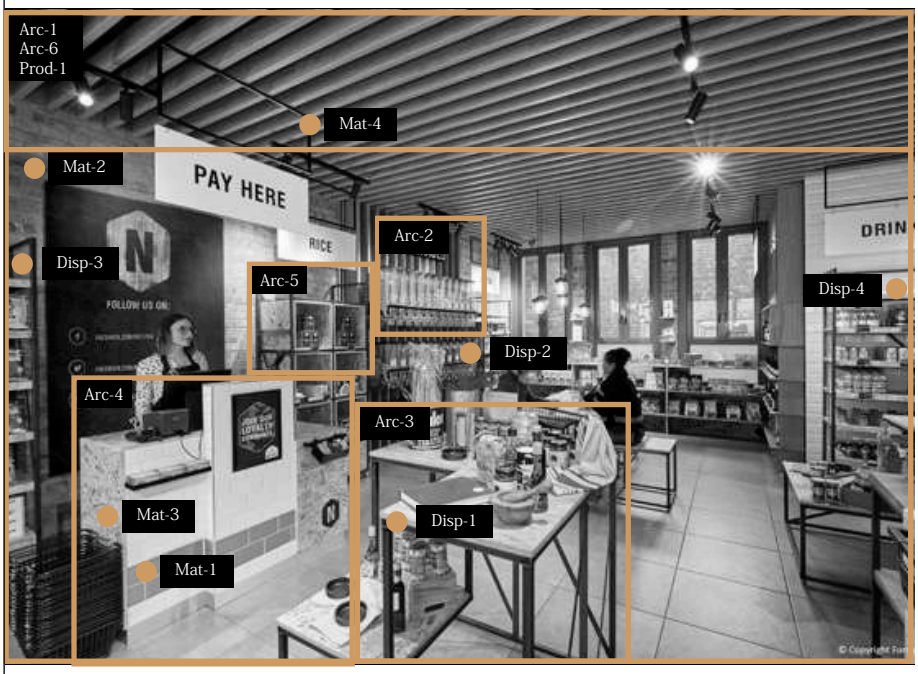
1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility



Conclusion

Interior design:
The interior space is well designed on a visual and spatial ground, the spaced flow into one and other and guide the user through all the different areas

Brand design:
He brand is clear and well rounded especially through clever use of materials and using simple element s i various forms to give them new function(various types of display)

The brand intent seems to be more towards an elite/unique shopping experience rather than just sending a green/Eco message, the overall feeling is new and accessible, a very inviting interior

Denotation

Arc - 1	Activated
Arc - 2	Line up
Arc - 3	Vitrine-Object (implied)
Arc - 4	Duel desk
Arc - 5	Specimen
Arc - 6	Slats/Dressed ceiling
Mat - 1	Subway tiles
Mat - 2	Red face brick
Mat - 3	OSB
Mat - 4	Steel and wood detailing
Prod - 1	Grocery
Disp - 1	Table display
Disp - 2	Dispensers
Disp - 3	Grid wall display
Disp - 4	Shelf wall display

Connotation

Noticeable through the brand logo name and font used throughout

Most of the displays are in this raised podium display style

This organizes the products well
Slats give good rhythm to the interior, it also adds design intent of directionality

The materials are very industrial but also hint towards Eco considerations

Various different display methods are used possibly to display the wide variety of product types and functions

Other considerations

Indoor plants

Clear brand message

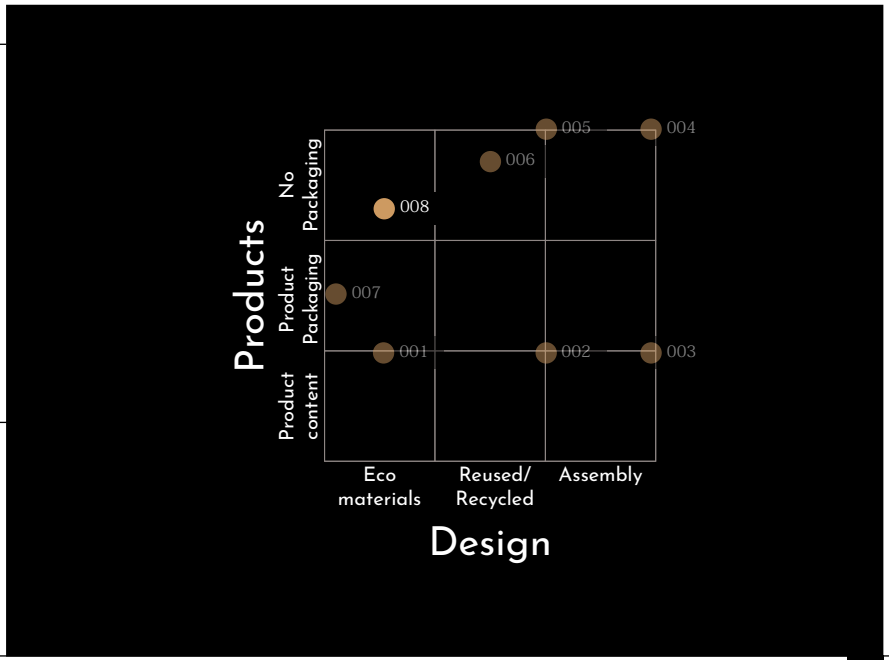
Educational

Community initiatives

Wide spread influence

Brand archetype

The guy/girl next door - wants you to see them just like the rest,
With good simple products the brand sells reliable products in a new way



The interior feels fresh alive and exciting the red colour pop has connotations to an increased appetite, and the pattens together with the bold lettering is very playful and fun. There is ample greenery throughout the interior and a very simple flow through the interior, the focus of the designs on the brand and containers rather than the actual products Nada does regular community events and workshops to entertain and teach the community about zero waste

Inclusion criteria

1. Interior design ■
2. Commercial ■
3. Public access ■
4. Physical context ■
5. Contemporary ■
6. Conceived/ Intentional ■
7. Small scale production ■

Alignment criteria

8. Sustainable products ■
   Sustainable design
   Sustainable ethos
9. Intervention ■
   Insertion □
   Installation □
10. Local □
    Other ■
    Design center □
    Alpha city □
11. New ■
    Renovation □

Considerations

12. Sophisticated ■
13. Value judgment □
14. Utility □

Nada; Retail - Products(grocer); Beki Chan and ZAS architects; Canada; Vancouver
https://www.nadagrocery.com/about-nada/; 26 March 2019

Conclusion

Interior design:
The spatiality is simple and flexible with very little build in elements, this gives the interior freedom to move and change as it needs , the materials and construction of the shelving is simple and easy to dissemble

Brand design:
He brand image is very strong and exciting, the colour and greenery draws attention and gives the interior a unique look

The brand talks more about being sustainable ad them helping you than it raves about its products, the message is the most important thing, that and building a community.

Denotation

Arc - 1	Repeat repeat
Arc - 2	Billboard
Arc - 3	Specimen
Col - 1	Colour pop
Mat - 1	Light Timber
Mat - 2	Steel frame
Prod - 1	Dry products
Prod - 2	Bakery
Disp - 1	Shelf wall
Disp - 2	Gondola
Disp - 3	Grid wall display

Connotation

The brand image is made clear by the wall design as well as branding throughout

Products are understated, the activities and message of the store is more important

Natural materials are used to highlight the eco, but thats not all its about

Other considerations

Indoor plants

Clear brand message

Educational

Community initiatives

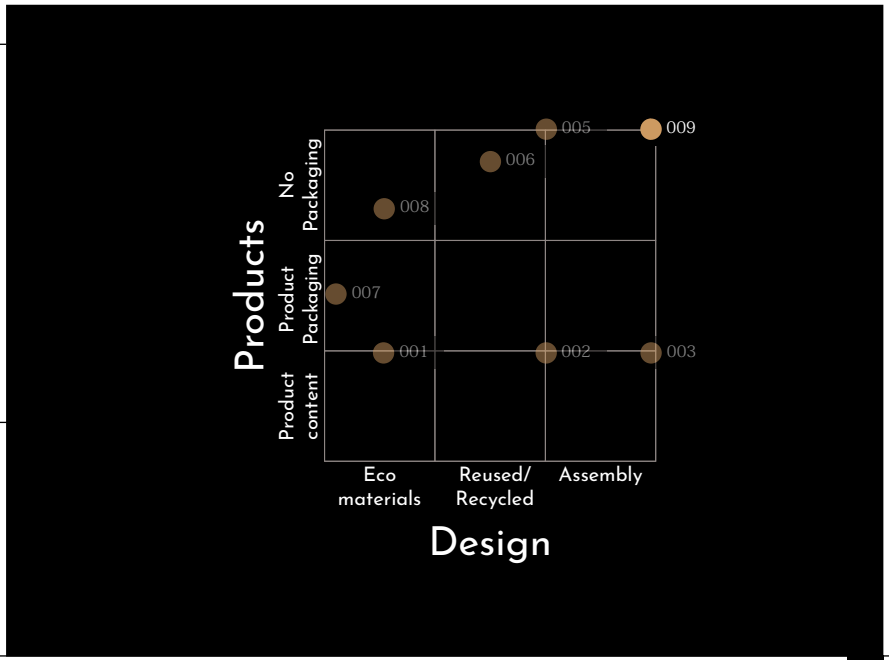
Wide spread influence

Brand archetype

The outlaw - breaking away from the usual Eco look, the interior is loud and exciting

The entertainer - quirky patterns and quotes are included throughout the interior

The Caregiver - wants to teach the community, conversation starter



The interior looks calm and inviting, it gives the feeling of a safe space, th warm oranges and timber combined with the plants gives makes it look organic. The pendant play and creative display stands however are more fun exciting and different, it makes the space unique and allows it to stand out in a crowd of Eco interiors

Inclusion criteria

1. Interior design ■
2. Commercial ■
3. Public access ■
4. Physical context ■
5. Contemporary ■
6. Conceived/ Intentional ■
7. Small scale production ■

Alignment criteria

8. Sustainable products ■
   Sustainable design
   Sustainable ethos
9. Intervention ■
   Insertion □
   Installation □
10. Local □
    Other ■
    Design center □
    Alpha city □
11. New ■
    Renovation □

Considerations

12. Sophisticated ■
13. Value judgment □
14. Utility □

Conclusion

Interior design:
The interior design is unique and inviting with a very interactive experience as art of the design, users are invited to flow through the space rather than just move from shelf to shelf

Brand design:
He brand is visible and strongly represented by the overall feeling of the interior a warm friendly yet exciting new space

The interior is unique in all ways from its layout to the brand, the message is clear, come in have fun and feel comfortable.

Denotation		Connotation
Arc - 1	Repeat repeat	
Arc - 2	Line up	
Arc - 3	Pendant play	The pendants ad spatiality to the top of the store taking the design up
Arc - 4	Specimen (adapted to circular)	Products are displayed in a different way, (inverted Vitrine-Object)
Col - 1	Light Blue	The colour is calming
Col - 2	Colour pop orange	The orange is exciting and inviting
Mat - 1	Light timber	The colors are brought together and neutralized by the timber
Mat - 2	Glass display containers	
Prod - 1	Dry products	
Prod - 2	Wet products	
Disp - 1	Containers	Reusable glass containers rather than dispensers are used
Disp - 2	Table Display	

Other considerations

Indoor plants

Clear brand message

Educational

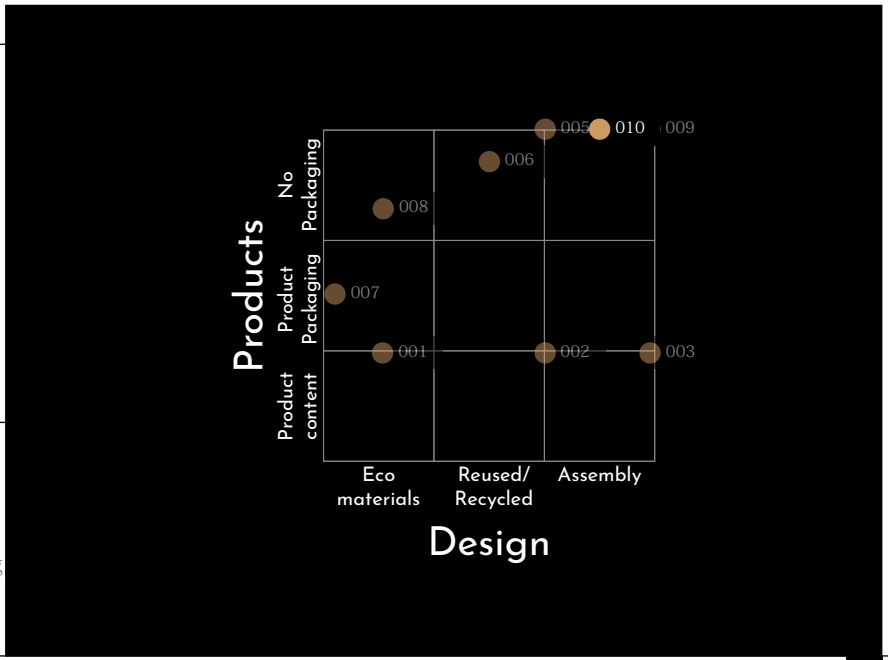
Community initiatives

Wide spread influence

Brand archetype

Caregiver - The inviting feeling
The warm interior and care for the products

The innocent - Pure and honest
The cool blue and clean design, hides nothing from the client, raw honesty in design



The interior space is intriguing, and could draw people in merely by the visual construction of the space, the warm timbers speak to an earthy warm space, but that is contrasted by the crisp white plinths and the neon lights, which is very fun and exciting, the space is easy to navigate, however there is a lot going on without a very clear guide. They are marketed as a package free shop, the reality is, the packaging is semi responsible, by making the user aware of the exact components therefore easily be recyclable and processed.

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Package free; Retail - Products(Misc); c; New York; Brooklyn
https://packagefreeshop.com/pages/about; 27 March 2019

Conclusion

Interior design:
The interior design is mostly located vertically onto the wall the symmetry of the interior pulls the user through to the back but the plinths act as distraction throughout which fills the space up a lot

Brand design:
The brand image speaks to the Eco consideration as well as trendy New York design, the pallet is clear and fresh with the pink showing playfulness

From the brand website, it is noted that the brand identity is focused on caring for people and the environment, with a lot less punch.

Denotation

Arc - 1	Understated
Arc - 2	Vitrine - Object (implied)
Arc - 3	Line up
Col - 1	Pink neon light
Col - 2	Neutral
Mat - 1	Light timber
Mat - 2	Concrete floor
Mat - 3	White duco plinth
Prod - 1	Beauty
Prod - 2	Other (cleaning and misc)
Disp - 1	Shelf wall
Disp - 2	Table Display

Connotation

The neon pink indicate a playful trendy brand

The material pallet is very simple and understated, the natural wood brings in the Eco material, and the white duco plinth has a contemporary feel

The products in this store is everything you will need for a zero waste life, excluding the food, which could be attained at a farmers market

Other considerations

Indoor plants

Clear brand message

Educational

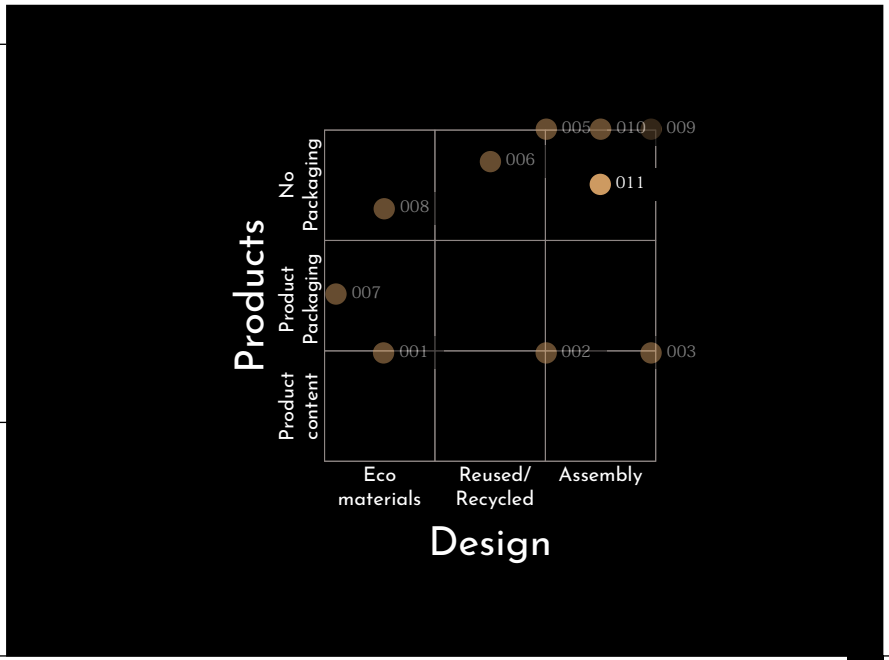
Community initiatives

Wide spread influence

Brand archetype

Caregiver - Focused on using healthy products, for you and the environment
As seen with the types of products they sell

The innocent - A pure and raw image,
They are who they are and their products are raw and true to the environment



The interior seems warm and earthy, the red face brick and steel has an industrial feeling but the white steel neutralizes this effect and makes the interior feel more fresh and welcoming. The spatial layout is simple and uncluttered with rows of gondola stands. This makes the products easy to access and fine.

Inclusion criteria

1. Interior design ■
2. Commercial ■
3. Public access ■
4. Physical context ■
5. Contemporary ■
6. Conceived/ Intentional ■
7. Small scale production ■

Alignment criteria

8. Sustainable products ■
   Sustainable design ■
   Sustainable ethos ■
9. Intervention □
   Insertion ■
   Installation □
10. Local □
    Other ■
    Design center □
    Alpha city □
11. New ■
    Renovation □

Considerations

12. Sophisticated ■
13. Value judgment □
14. Utility □

Good for; Retail - Products(grocer); c; New Zealand, Auckland
https://theregister.co.nz/news/2017/03/packaging-free-grocery-store-goodfor-opens-auckland; 27 March 2019

Conclusion

Interior design:
The interior space guides the user well and the objects arnt cluttering the space, overall the design is simple but sophisticated

Brand design:
The brand is a bit lost between the displays and the products, overall its not clear what brand it is only that it is for packaging free retail

The brand message seems to be more focused on the products and allowing the identity to stand back and have the products do the talking, this is strengthened by the well designed displays and shelving that highlights the products

Denotation

Arc - 1	Understated
Arc - 2	Specimen
Arc - 3	Line up
Mat - 1	Light wood
Mat - 2	White steel frames
Mat - 3	Concrete floor
Mat - 4	Red face brick
Prod - 1	Wet products
Prod - 2	Dry products
Disp - 1	Gondola/Containers
Disp - 2	Grid wall display

Connotation

This form of display makes to products stand out and easy to find

The materiality has an industrial feel but the white steel frame dampens this making the Eco fresh atmosphere more prominent this combined with the greenery works well as an Eco store that stands out

The gondola display stand is integrated with containers for better access

Other considerations

Indoor plants

Clear brand message

Educational

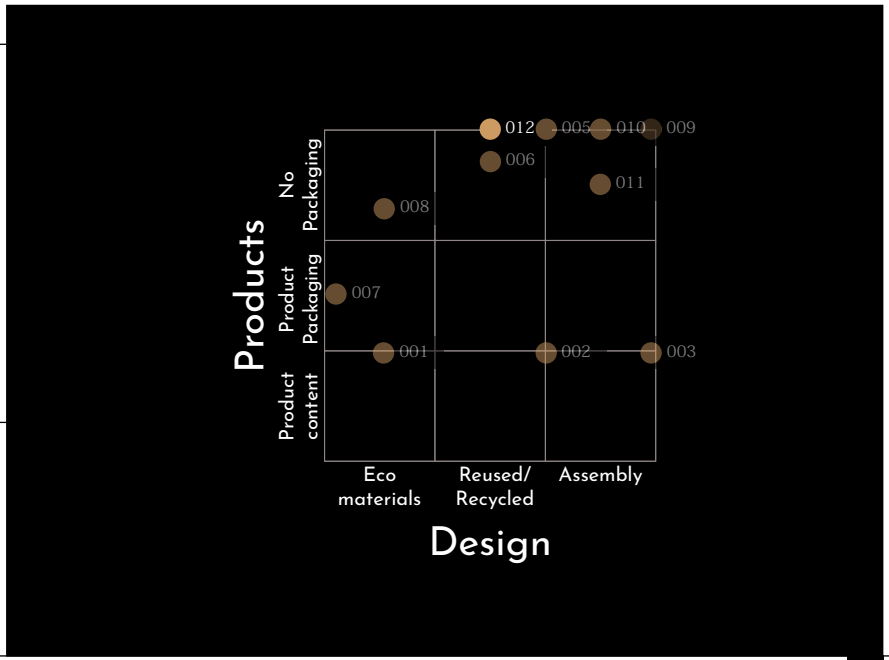
Community initiatives

Wide spread influence

Brand archetype

Caregiver - Focused on sustainability
Noted through only the products sold

The guy/girl next door - Blends in
Through the use of simple regularly used materials, in a new and innovative way



The interior is very warm and inviting, almost feels like you're walking into someones living room, this could be due to the warm lighting and soft natural colour pallet accompanied by homey plants and some other raw materials. The layout seems easy to read and move through with most of the clutter centralized onto one table.

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Bulk market; Retail - Products(grocer); c; London
https://www.bulkmarket.uk/our-store; 27 March 2019

Conclusion

Interior design:
The interior space is has a very easy to read layout with few obstacles, most of the design happens on the wall displays but the central table and the focal plants above it help to centralize the space

Brand design:
The brand design is not clear other than the use of a definitive material pallet, the interior does however still say something about a warm hearty experience which is emphasized by the earthy textures

The brand speaks to the heartiness of its community and welcomes others to join, this is strengthened by a spatial design

Denotation

Arc - 1	Understated
Arc - 2	Bottoms up
Arc - 3	Line up
Mat - 1	Light wood / textures (OSB, Reclaimed pallets, straw, cork)
Mat - 2	Steel frame
Prod - 1	Dry products
Prod - 2	Wet products
Disp - 1	Dispensers
Disp - 2	Table Display

Connotation

This spatial device helps create a focal point to move around

The products are logical and easy to visualize

The natural materials all forms of timber, help create the warm earthy tone, together with the warm lighting

Other considerations

Indoor plants

Clear brand message

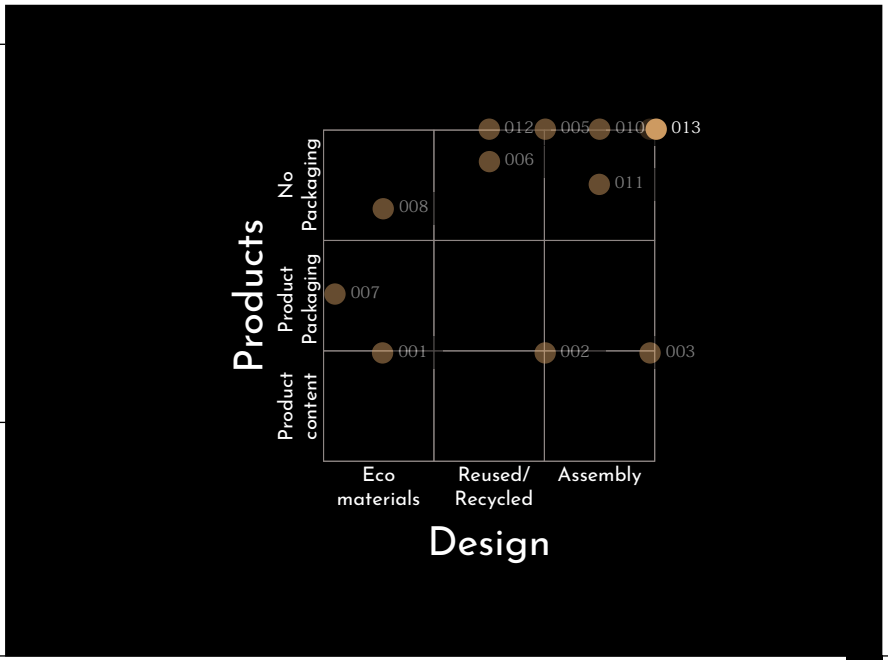
Educational

Community initiatives

Wide spread influence

Brand archetype

Caregiver - Focused on helping
Noted on the over head informative graphic



The interior feels fun and friendly and homely, not a designed space, but in fact created from necessity and made with wheat was available. The blue colour pop and grouped shelving gives the space a very unique look. Looking at both images the interior makes me feel like they are an Eco island, fresh and health with a splash of fun

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Seed; Retail - Products(grocer); Owner and family; Hong Kong
https://www.greenqueen.com.hk/introducing-seed-sai-kungs-new-bulk-grocery-zero-waste-lifestyle-shop/; 27 March 2019

Conclusion

Interior design:
The interior space is a tiny shop, the majority of the products are placed onto the walls for visibility, the interior is visually cluttered but still has a welcoming feel to it

Brand design:
The brand is not clearly visible, although the blue wall is unique to this typology, the brand is what it is, not designed but just what the store needed laid out in a creative way

The interior truly is a wunderkammer, you wont know what you will find, the space is exciting and new to discover every time, the colour and the textures are inviting

Denotation

Arc - 1	Colourbrand
Arc - 2	Wunderkammer
Arc - 3	Line up
Col - 1	Cobalt blue
Mat - 1	Planed pallet wood
Mat - 2	OSB
Mat - 3	Straw
Prod - 1	Dry products
Prod - 2	Miscellaneous
Disp - 1	Grid wall display

Connotation

The blue wall is one of the most prominent elements in the design

This method of display is playful whilst still organizing the products in a logical manner, an exiting discovery to find things

This colour is fun and lively, a goo contrast to the warm materials

The textural pallet is very warm of tone, with mostly raw natural products

Other considerations

Indoor plants

Clear brand message

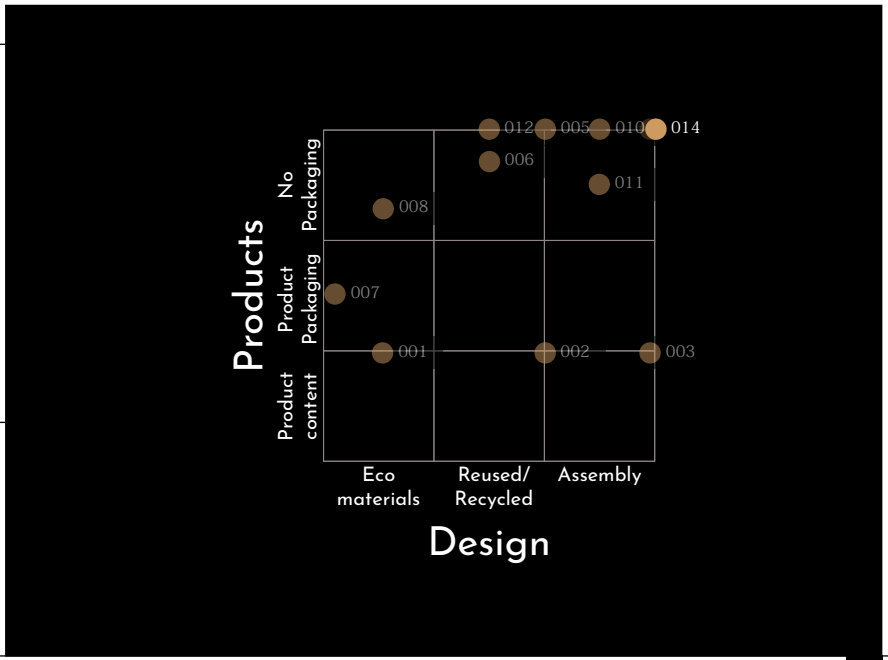
Educational

Community initiatives

Wide spread influence

Brand archetype

The innocent - a fresh new perspective
He cobalt blue is loud but works well with the pure raw materials, which allowed the products to just be



The interior space is very clean and un-cluttered, everything seems in its place and perfectly organized, the flow of the store is logical and precise with everything built in there is no room for flexibility or change. It seems as if everything was planed out to the t, the repetition and preciseness is uncanny, does not necessarily read as a food shop but rather a rare gem boutique.

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

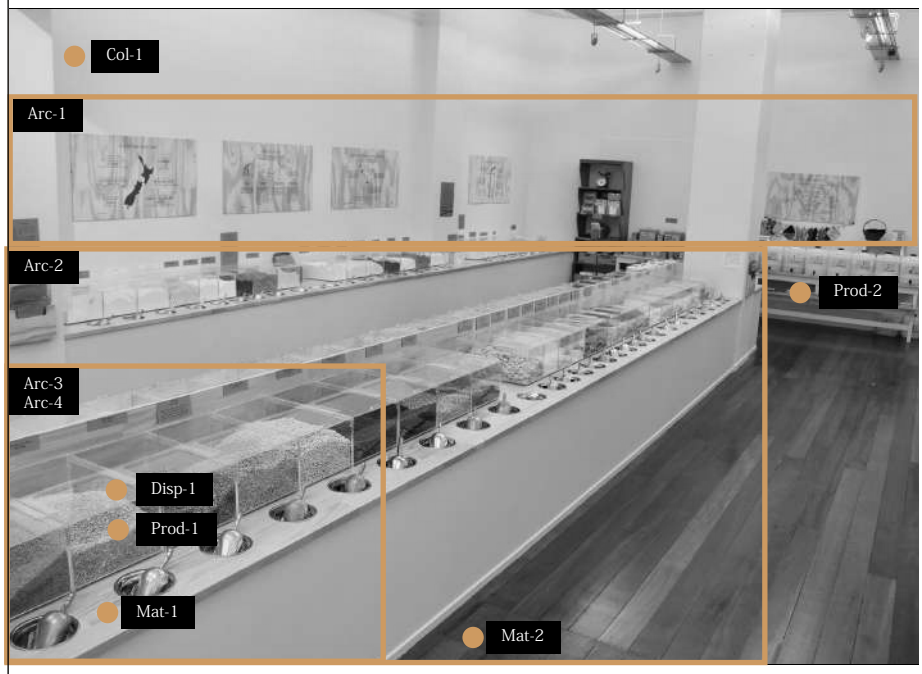
Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Be free; Retail - Products(grocer); c; New Zealand, Palmerston North
https://www.stuff.co.nz/business/small-business/109171782/palmerston-north-family-opens-plasticfree-greengrocers; 27 March 2019



Conclusion

Interior design:
The space feels intimidating and pure, there is no room for flexibility a everything is built in, it is a very precise design.

Brand design:
The brand is present through the information boards and graphics, however with one look one cant be sure what the store is selling

The brans message is unclear, with knowledge of it being a Eco store, one expects more flexibility and less perfection, the clean lines and colour pallet is refreshing but it does not say much

Denotation

Arc - 1	Activate
Arc - 2	Down the line
Arc - 3	Line up
Arc - 4	Vitrine- Object
Col - 1	White
Mat - 1	Light wood
Mat - 2	Hard wood floors
Prod - 1	Dry products
Prod - 2	Wet products
Disp - 1	Containers/Table display

Connotation

The linear flow seems very overwhelming

The products are displayed in perfect plastic squares

The pure colour and natural accents speaks to a purist design

Other considerations

Indoor plants

Clear brand message

Educational

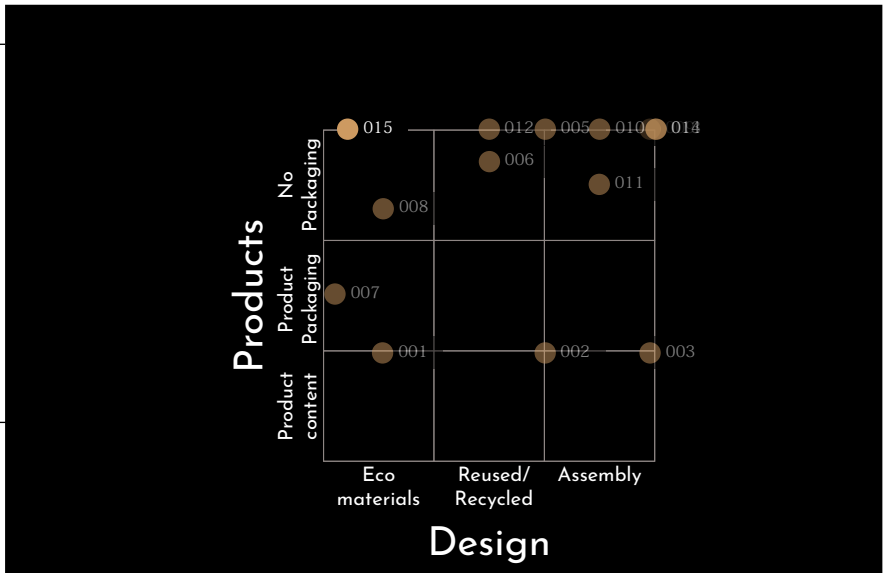
Community initiatives

Wide spread influence

Brand archetype

First response unclear brand type

The creator - ants perfection
Noticeable though the purist organization



The interior space has an intriguing vibe, the decorative elements are intent-full but the displays are much more by chance, there is a message of zero waste but it is unclear what the brand direction is, the fresh fruit and greenery is refreshing but its being drowned out by the loud red and incredible hight of the space, there is nothing grounding the interior. The natural wood old farm vibe comes though in the barrels but other than that the intent is lost.
After browsing their website the Online brans is much more clear than the n store brand, with use of colorful colors and bold texts to draw attention,

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

The fillery; Retail - Products(grocer); c; New York, Brooklyn
https://www.thefillery.com/our-journey; 27 March 2019

Conclusion

Interior design:
The spatial design is what it is, very simple, each wall is occupied by products and so are the tables in the center, the space is easy to read and move through

Brand design:
The in store brand is confusing and lacking,one distinct voice does not come from the interior, it is a mix of industrial and farm chic with a few quirky elements

The brand uses strong iconography to get a message across, but the full image disappears through all the fixed messages int her interior.

Denotation

Arc - 1	Understated
Arc - 2	Vitrine - Object
Arc - 3	Line up
Col - 1	Red colour pop
Mat - 1	Concrete floor
Mat - 2	Timber bushel basket
Mat - 3	Steel frame
Prod - 1	Dry goods
Prod - 2	Wet goods
Prod - 3	Fresh produce
Disp - 1	Table Display/Container
Disp - 2	Dispensers
Disp - 3	Shelf wall

Connotation

Red is associated with passion on hunger

The materiality is basic and easy to obtain, the majority of materials are left as found

Majority of the elements are easy to disassemble excluding the large tables

Other considerations

Indoor plants

Clear brand message

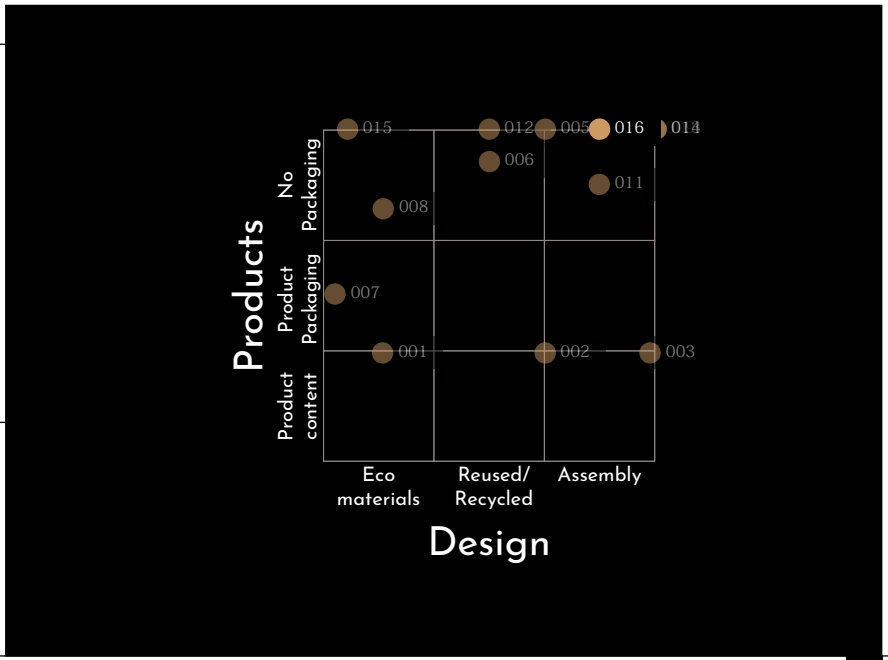
Educational

Community initiatives

Wide spread influence

Brand archetype

Caregiver - Focused on providing
Noted on the effort to provide a new service in the area.



The high concentration of timber not only gives warmth to the space but also gives it a sort of sophistication, the space seems well designed and for an upper class market but the design does send mixed signals, from the outside it seems like a local grocer and upon closer inspection you notice how cheep methods were used to get results, such as using trashcans for grain containers. The rich timber tones combined with the pops of vegetation gives the interior a very earthy feel, not homely but still inciting. Also intuiting is that majority of the fresh fruit and veg are kept outside, which nods to the past way of selling on the streets.

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Robuust!; Retail - Products(grocer); c; Belgium
https://www.loudcloud.nl/food/robuust-zero-waste-shop/; 27 March 2019

Conclusion

Interior design:
The interior design is well rounded with clear spatiality, the objects direct the movement and the vertical is well countered with the high shelving and some pendants

Brand design:
The brand image seems clear until further inspection, as the exterior and design details do not speak the language of a sophisticated design but rather DIY

The brand intent seems to want upper class shopper but also cater for the local clientele. The warm hearty interior does good to invite people in and the overall design has a sense of allure

Denotation

Arc - 1	Understate
Arc - 2	Down the line
Arc - 3	Line up
Arc - 4	Quarry
Col - 1	Neutral pallet
Mat - 1	Reclaimed timber
Mat - 2	Timber look tiles
Prod - 1	Dry products
Prod - 2	Wet products
Prod - 3	Perishables
Disp - 1	Shelf wall
Disp - 2	Dispensers

Connotation

The only mention of the brand is the oversizes moss feature

The whole space is surrounded and filled with timber and timber detailing, with nothing else breaking the texture

Other considerations

Indoor plants

Clear brand message

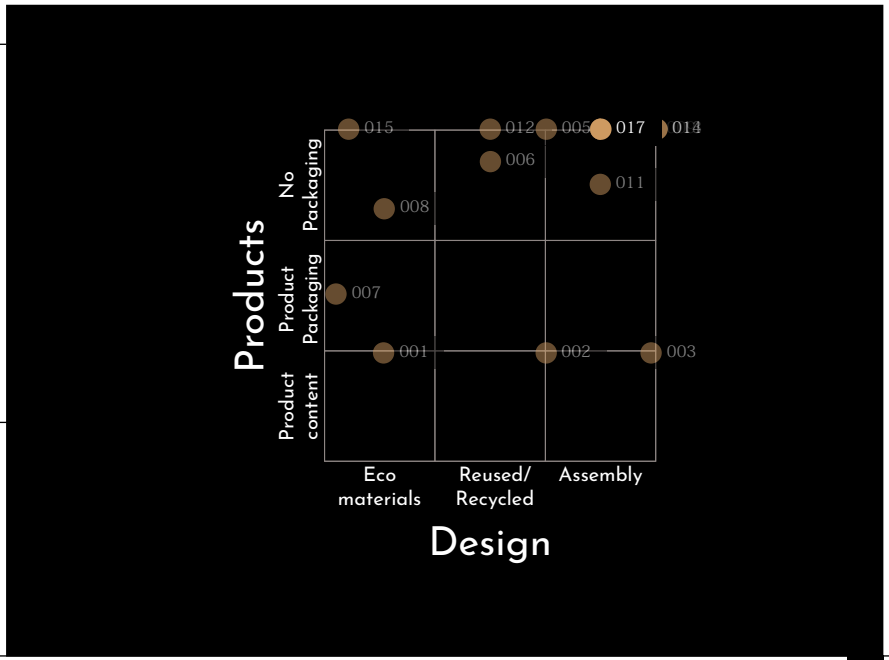
Educational

Community initiatives

Wide spread influence

Brand archetype

The guy/girl next door - the typical grocer
Not out to nurture and guide you but rather just give you a great product that you can trust



The interior is open and spatial, with the majority of the products displayed on the walls, the space feels clean and fresh with a few plants and fresh colors to encourage that feeling, the white polished floors distinguish it from a typical grocer the objects are constructed in a conscious way to be disassembled and recycles materials were used throughout. The clean interior does not surprise or entice users to enter as it is very simple and to the point

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

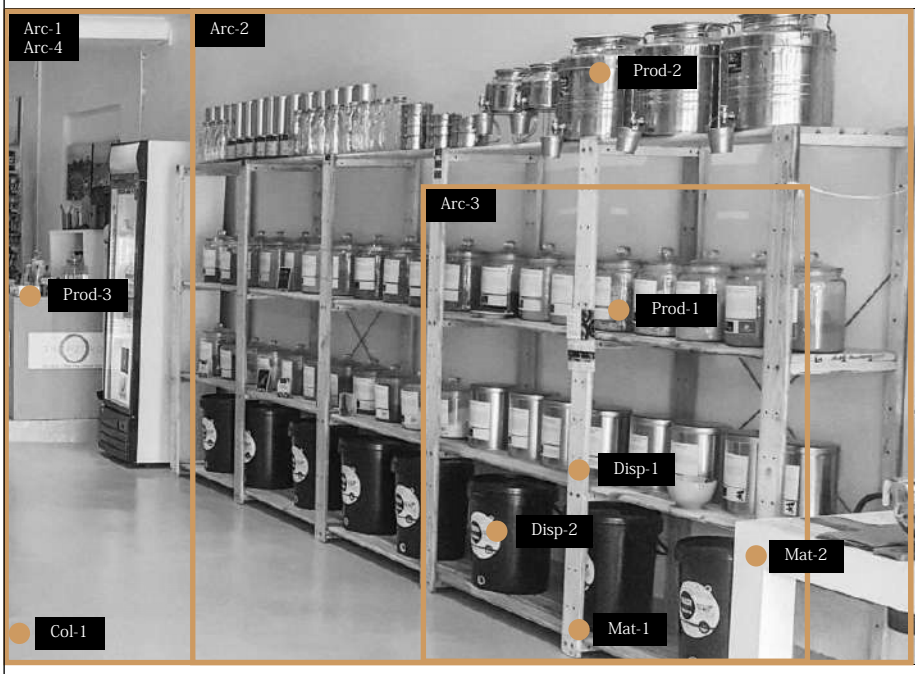
Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Shop zero; Retail - Products(grocer); c; South africa, Capetown
https://shopzero.co.za/; 27 March 2019



Conclusion

Interior design:
There is very little design involved in this interior, the objects seem to have been placed against the wall and packed full of products, the only intriguing detailing visible is the shelf designs that are disassemblable

Brand design:
The fresh coloring and neutral pallet are the only hints towards an Eco driven retailer

The brands intention is lost, there is just simply not enough information, the labeling on the containers speak to some intent but other than that the timber is the last clue towards sustainability the rest is drowned out in a white box interior

Denotation

Arc - 1	Understated
Arc - 2	Down the line
Arc - 3	Line up
Arc - 4	White box
Col - 1	White floors/walls/ceiling
Mat - 1	Reused pallets
Mat - 2	Duco supawood
Prod - 1	Dry products
Prod - 2	Wet Products
Prod - 3	Miscellaneous
Disp - 1	Grid wall display
Disp - 2	Containers

Connotation

The interior objects are mostly loose fittings, easy to remove

The white box effect emphasizes the light touch the retail insertion has

Other considerations

Indoor plants

Clear brand message

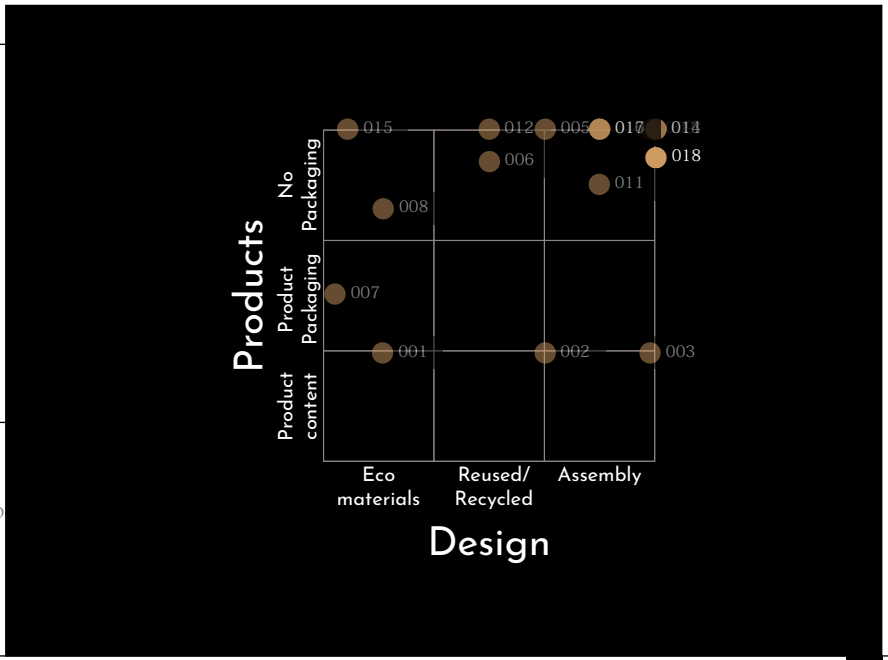
Educational

Community initiatives

Wide spread influence

Brand archetype

Caregiver - Focused on Spreading the news From their website it s clear that there is focus on the community and helping to het the zero waste message out.



The interior uses a combination of warm inviting timbers colorful products and dark metals to create an exciting inviting and sophisticated space, the products are the main show and everything is focused around them to make them stand out even more. The spatiality is designed to be open and exploitative, the user is allowed to wonder around and discover the contents of the store at their own pace. Lush has a clear brand message visible throughout their stores on posters and packaging

Inclusion criteria

1. Interior design ■
2. Commercial ■
3. Public access ■
4. Physical context ■
5. Contemporary ■
6. Conceived/ Intentional ■
7. Small scale production ■

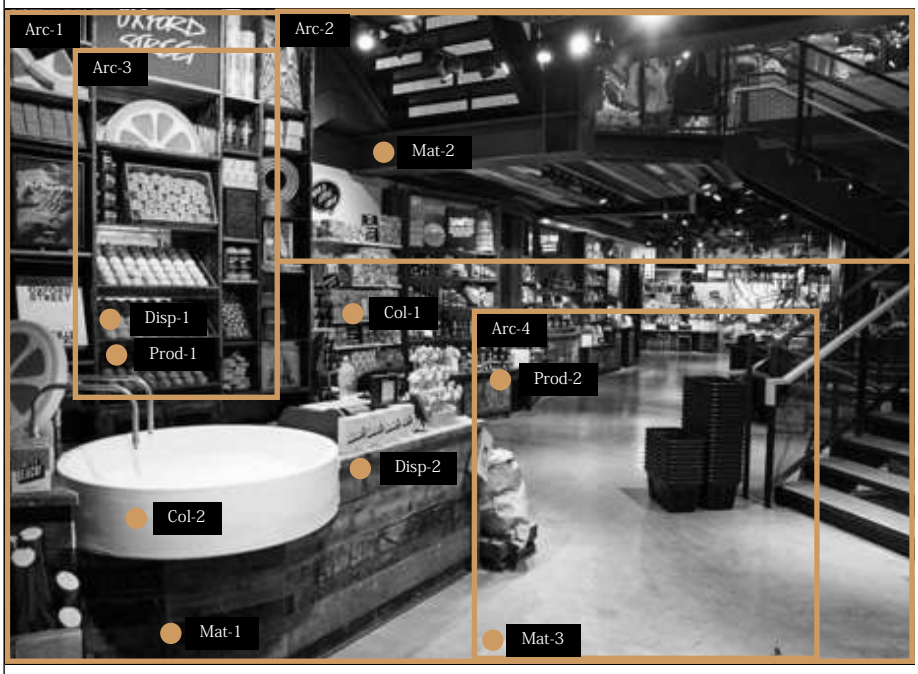
Alignment criteria

8. Sustainable products ■
   Sustainable design ■
   Sustainable ethos ■
9. Intervention ■
   Insertion □
   Installation □
10. Local □
    Other ■
    Design center □
    Alpha city □
11. New ■
    Renovation □

Considerations

12. Sophisticated ■
13. Value judgment ■
14. Utility □

Lush; Retail - Products(beauty); Inhouse and Design Time; London
www.retail-focus.co.uk/projects/1424-project-lush; 27 March 2019



Conclusion

Interior design:
The interior space is well organized and leads the user through the space, the elements work together well to create a unique experience

Brand design:
The brand presence is very strong, on most products and on every shelf you can read a lit of lush into it, its fun and colorful, but still serious about the causes they stand for

Although this brand is only focused on beauty a lot can be learned on how you can stand p for what you believe in whilst keeping good design in mind, overall the space sends a clear message that welcomes people in and convinces them to explore

Denotation

Arc - 1	Repeat repeat
Arc - 2	Bottoms up
Arc - 3	Wunderkammer
Arc - 4	Follow me
Col - 1	Bright and fun colour pops
Col - 2	White accents (porcelain/ tiles)
Mat - 1	Dark stained reclaimed timber
Mat - 2	Raw steel
Mat - 3	Concrete floor
Prod - 1	Unpackaged beauty
Prod - 2	Bottled beauty(recycled and recyclable)
Disp - 1	Shelf wall
Disp - 2	Table display

Connotation

The brand specific font, iconography and overall design language

This speaks to the fun and exciting exploration of the space

Used as a subtle guide for the users to navigate the better lit areas

Nod towards the pure clean beauty products, a sterile space

Other considerations

Indoor plants

Clear brand message

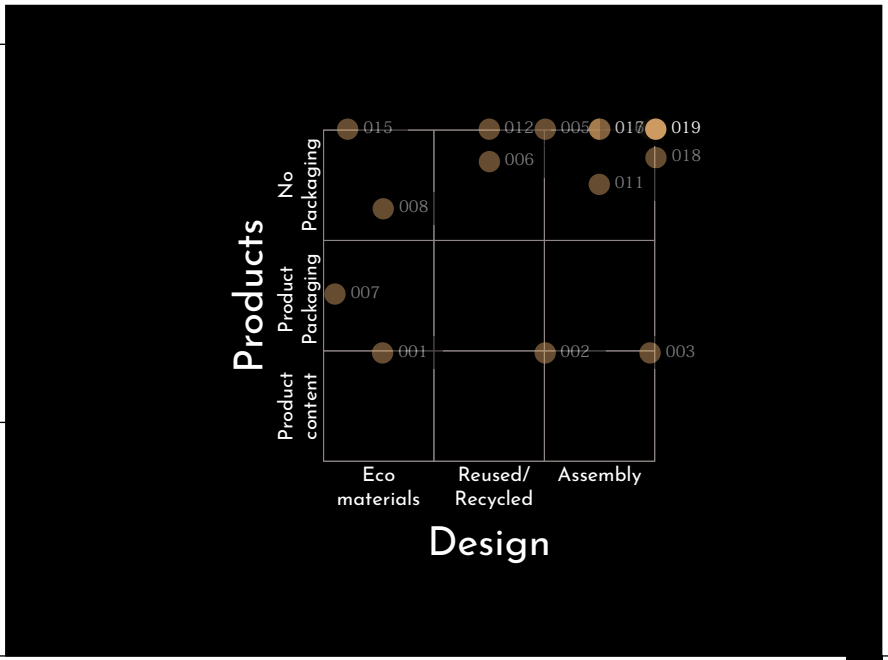
Educational

Community initiatives

Wide spread influence

Brand archetype

The outlaw - breaks the rules
Noticeable in their stand for doing what is right at any cost and not creating a space that is expected but rather one that works



The space is airy and fresh, the light timber ceiling reminds you of the underside of a boat, the materiality all speaks to a fresh by the sea Eco space. The reuse of old window screens as a facade is innovative and works well with the tropical island look especially with their fresh blue and yellow coloring and tropical trees.

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

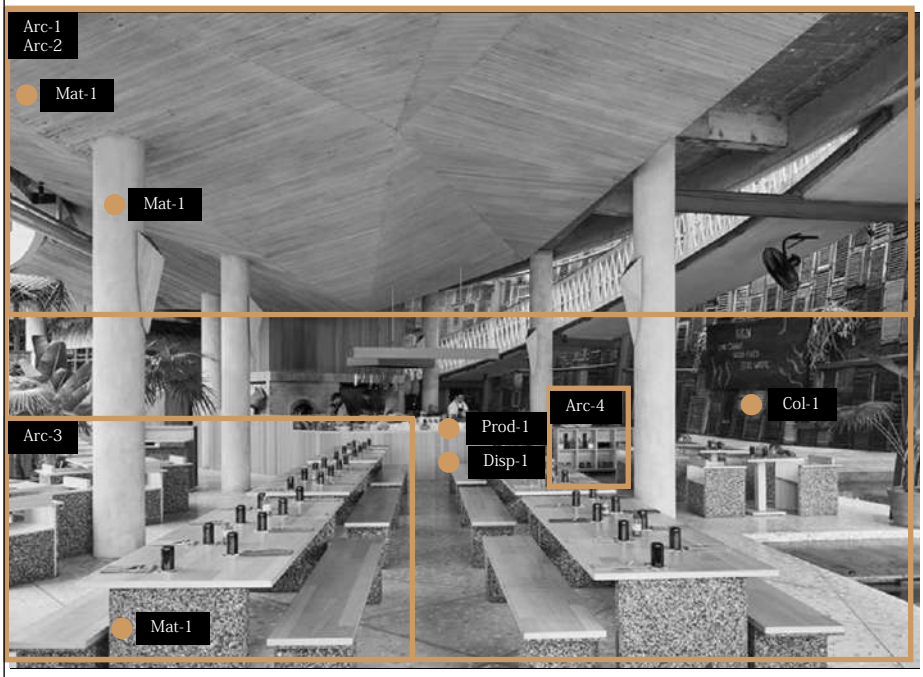
Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Ijen; Resturaunt; Potato heads in house design team; Bali, Indonesia
https://www.designboom.com/design/andra-matin-ijen-first-zero-waste-restaurant-bali-indonesia-12-03-2018/; 27 March 2019



Conclusion

Interior design:
The high ceiling and lifted space gives it grandeur and a fresh lifted feeling the space is well organized with a clear reading of its function

Brand design:
The brand is not clear in terms of branding but it is noticeable in the signature reused plastic tables, plates and other elements used through

The brand message is clear in saying this is a fresh different type of place, the zero waste message is not as clear though.

Denotation

Arc - 1	Colourbrand
Arc - 2	Dressed ceiling
Arc - 3	Line up
Arc - 4	Specimen
Col - 1	Blue brown patterns
Mat - 1	Light wood
Mat - 2	Concrete
Mat - 3	Recycled ocean plastic
Prod - 1	Fish
Disp - 1	Table display

Connotation

The coloring helps the user understand the context of the interior space, tropical and natural

The reused windows speak to a certain sustainable stance

This in conjunction with the other materials which are all long lasting and enduring to an outdoor space.

This is giving waste a permanent function

Other considerations

Indoor plants

Clear brand message

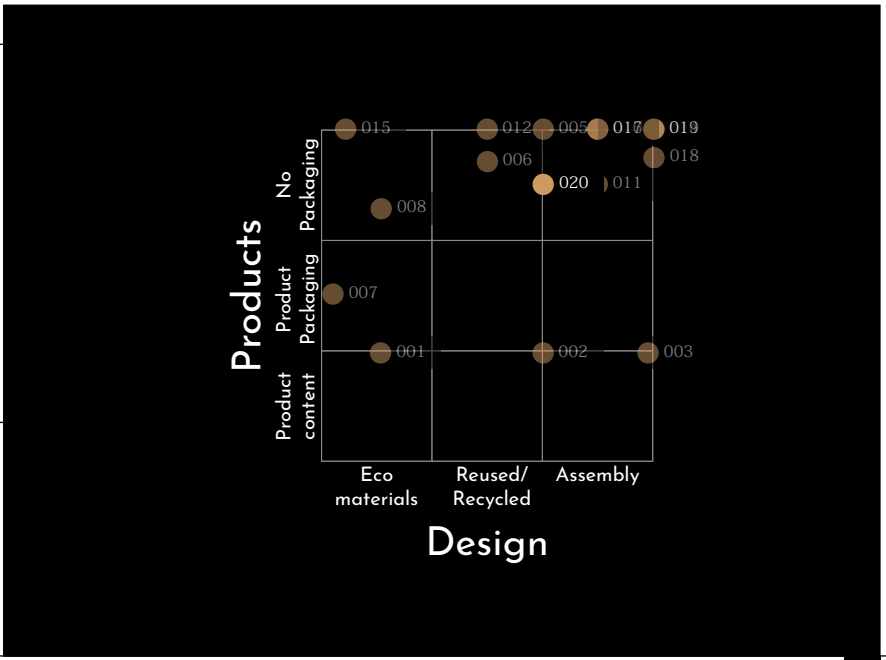
Educational

Community initiatives

Wide spread influence

Brand archetype

The creator - wants to give a great product
The interior space so grandeur, and yet sustainable made,detail and attention is put into every aspect o this design to make it as perfect and good as it can be



The design is raw and welcoming, there is a warmth that can be felt in the use of materials and hap hazard design elements, even though it is very well designed and put together, the public DIY effect is still visible, which makes it seem like a place for the community. The value of this interior lies within its adaptive reuse, and community design

Inclusion criteria

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production

Alignment criteria

8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation

Considerations

12. Sophisticated
13. Value judgment
14. Utility

Kamikatz public house; Brewery; Hiroshi nakamura & NAP; Bali, Japan
https://www.archdaily.com/892767/kamikatz-public-house-hiroshi-nakamura-and-nap; 24 April 2019

Conclusion

Interior design:
The busy interior space is expected for a multi functional community design, the reuse of various different sourced items is cleverly applied to create a wholesome inspiring interior, which is improved by the soft natural material pallet

Brand design:
The brand of this design is not noticeable in the space, however the reuse of items speaks to a certain ideal, and that is carried out very well, through found items, raw materials and up-cycled items

There is a clear message of community in the space, together with sustainability

Denotation

Arc - 1	Understated
Arc - 2	Pendant play
Arc - 3	Wunderkamer
Arc - 4	Pompidou
Col - 1	Natural
Mat - 1	Timber
Mat - 2	Glass
Prod - 1	Beer
Prod - 2	Wet products
Prod - 3	Dry products
Disp - 1	Shelf wall
Disp - 2	Table display

Connotation

The associated bran is not visible in the retail interior

The clever reuse of recycled items(bottles and windows) associations to sustainable reuse

Visible systems, refer to educational side of sustainability

A selection of natural materials, give the space a warm feeling

Other considerations

Indoor plants

Clear brand message

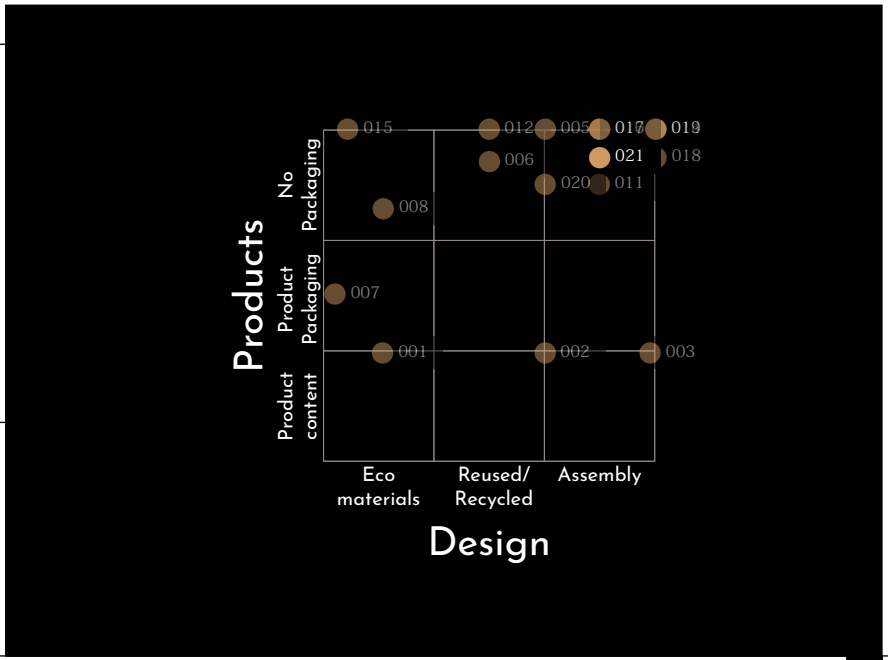
Educational

Community initiatives

Wide spread influence

Brand archetype

The guy/girl next door - the typical community hub
Made prominent through the designs use of found objects from the community, a brand for the people, just being true to who they are there for



Part 12b

APPENDIX B - GBCSA TOOL

Score Sheet
Green Star SA - Interiors v1

Credit	Credit Name	Aim of Credit	Points Available	Points Targeted
Management Category				
Int-Man-1	Green Star SA Accredited Professional	To encourage and recognise the engagement of professionals who can assist the project team with the integration of Green Star SA aims and processes throughout all stages of a fitout's design and construction phases.	1	1
Int-Man-2	Commissioning & Tuning	To recognise effective commissioning and tuning processes during a project's design and construction phase that ensure all services and installations can operate to their optimal design potential.	2	1
Int-Man-3	Occupant Users' Guide	To encourage and recognise the provision of information to fitout owners and users that helps them understand a project's systems, environmental attributes, and maintenance requirements.	1	1
Int-Man-4	Environmental Management	To encourage and recognise the adoption of a formal environmental management system in line with established guidelines during construction.	1.5	0
Int-Man-5	Construction Waste Management	To recognise and encourage management practises that minimise the amount of demolition and construction waste going to disposal.	2	2
Int-Man-6	Work space efficiency	To recognise the design of workspaces that provide spatial efficiency and improve productivity and occupant performance.	2	2
Int-Man-7	Green Lease	To recognise and encourage collaboration between the building owner and tenants in order to manage and operate the building along environmentally sustainable principles whilst realising mutual benefit.	2	1
Int-Man-8	Learning Resources	To encourage and recognise sustainability initiatives implemented in the development as learning resources for building users and visitors	1	0
Management credits			**12.5**	**8**
Indoor Environmental Quality Category				
Int-IEQ-1	Quality of Internal Air	To encourage and recognise projects that provide high quality air to occupants.	4	3
Int-IEQ-2	Thermal Comfort	To encourage and recognise fitouts that achieve a high level of thermal comfort.	2	1
Int-IEQ-3	Lighting Comfort	To encourage, recognise and reward well-lit spaces that provide appropriate levels of lighting comfort to occupants.	3	3
Int-IEQ-4	Visual Comfort	To recognise the delivery of well daylit spaces that provide high levels of visual comfort and views to fit-out occupants.	3	3
Int-IEQ-5	Acoustic Quality	To encourage and recognise buildings that are designed to provide appropriate acoustic qualities to enable the functionality of the space.	2	2
Int-IEQ-6	Reduced Exposure to Air Pollutants	To recognise projects that safeguard occupant health through the reduction in internal air pollutant levels.	5	4
Int-IEQ-7	Mould Prevention	To encourage and recognise the design of services that eliminates the risk of mould growth and its associated detrimental impact on occupant health.	0.5	0.5
Int-IEQ-8	Ergonomics	To recognise the choice of equipment and design of spaces that promotes wellbeing, efficiency and effectiveness	2	2
Int-IEQ-9	Indoor Plants	To encourage and recognise the installation of indoor plants that improve indoor environment quality and also provides occupants with a connection to nature.	1.5	1.5
Indoor Environmental Quality credits			**23**	**20**
Energy Category				
Int-Ene-1	Greenhouse Gas Emissions	To encourage and recognise projects that minimise the greenhouse gas emissions associated with tenant fit outs.	12	7
Int-Ene-2	Electrical Sub-metering	To encourage and recognise the installation of electrical energy sub-metering to facilitate on-going management of electrical energy consumption.	2	2
Energy credits			**14**	**9**
Transport Category				
Int-Tra-1	Commuting Mass Transport	To encourage and recognise developments that select a site near public transport and facilitate the use of mass transport.	1	1

Int-Tra-2	Local connectivity	To encourage and recognise projects that are located within walking distance of high quality amenities such as shops and parks, thus reducing private vehicle use and the associated negative environmental impacts.	1	1
Int-Tra-3	Alternative Transport	To encourage and recognise projects that promote and facilitate the use of alternative modes of transport over the use of private cars.	2	1
Transport credits			**4**	**3**
Water Category				
Int-Wat-1	Potable Water	To recognise projects that minimise potable water consumption	6	6
Int-Wat-2	Water Sub-metering	To encourage and recognise the installation of sub-metering to facilitate on-going management of water consumption	2	2
Water credits			**8**	**8**
Materials Category				
Int-Mat-1	Operational Waste Management	To encourage and recognise developments which include space and an operational waste management plan that facilitates the recovery of resources used within the developments to reduce waste going to disposal.	2	2
Int-Mat-2	Furniture	To recognise the selection of fit-out furniture that has a reduced environmental impact when compared to available alternatives.	8	6
Int-Mat-3	Assemblies	To recognise the selection of fit-out assemblies that have a reduced environmental impact when compared to available alternatives.	8	6
Int-Mat-4	Flooring	To recognise the selection of flooring that has a reduced environmental impact when compared to available alternatives.	6	5
Int-Mat-5	Wall coverings	To recognise the selection of wall coverings that have a reduced environmental impact when compared to available alternatives.	3	3
Int-Mat-6	Local Sourcing	To encourage and recognise the environmental advantages gained, in the form of reduced transportation emissions, by using materials and products that are sourced within close proximity to the site.	2	2
Int-Mat-7	Sundries Materials Sourcing	To recognise the selection of fitout finishes that have a reduced environmental impact when compared to available alternatives through responsible manufacturing, product stewardship and resource efficient design.	1	0
Materials credits			**30**	**24**
Land Use and Ecology Category				
Int-Eco-1	Site selection	To recognise and reward a tenant for selecting their space in a building that reduces their environmental impact due to the building's base building design attributes.	4	0
Land use and Ecology credits			**4**	**0**
Emissions Category				
Int-Emi-1	Impacts from refrigerants and insulants	To encourage and recognise developments that minimise light pollution into the night sky.	3	3
Int-Emi-2	Light Pollution	To encourage and recognise the avoidance of substances that contribute to the deterioration and long-term alteration of the Earth's atmosphere.	1.5	1.5
Emissions credits			**4.5**	**4.5**
Innovation Category				
Int-Inn-1	Innovative Strategies & Technologies	To encourage and recognise pioneering initiatives in sustainable design, process or advocacy.		
Int-Inn-2	Exceeding Green Star SA Benchmarks	To encourage and recognise projects that achieve environmental benefits in excess of the current Green Star SA benchmarks.		
Int-Inn-3	Environmental Design Initiatives	To encourage and recognise sustainable building initiatives that are currently outside of the scope of this Green Star SA rating tool but which have a substantial or significant environmental benefit.		
Innovation credits			**10**	**0**

TOTAL POINTS AVAILABLE	100	76.5

NOTE:

1. Please note that the above score sheet does not take into account Not Applicable credits, and should not be used to calculate the actual submission score - this is done by the certification engine.
2. This sheet should not be completed by projects submitting for certification because the certification engine

Part 12c

APPENDIX C - ACOUSTIC TOOL

Your calculation (8/27/2019)

Results and Ecophon recommendation

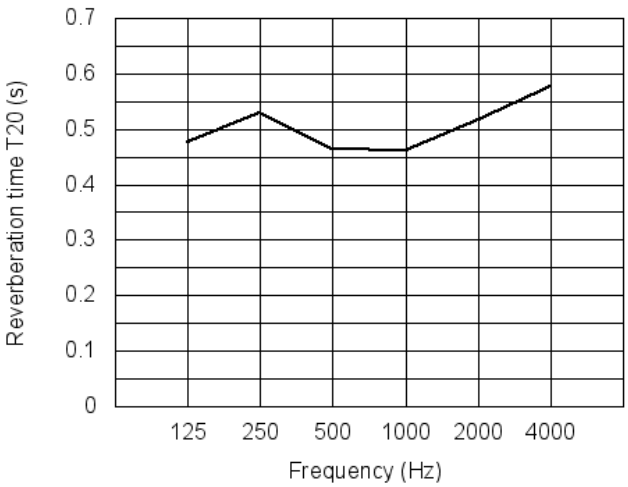
Reverberation time T20 (s)	Speech clarity C50 (dB)	Strength G (dB)
Sabine calculation 0.50 Ecophon recommendation ≤ 0.5	Sabine calculation 4.71 Ecophon recommendation ≥ 6	Sabine calculation 21.46 Ecophon recommendation ≤ 19

Note: Average bonds over octave bands 125 to 4000Hz.

Ecophon recommendations are based on our experience up until today and might be subject to change in the future.

Room Acoustic Comfort (RAC) calculations for rooms with absorbing ceilings. This calculation will give a better correspondence to measurements than Sabine formula.

Reverberation time T20 (s)

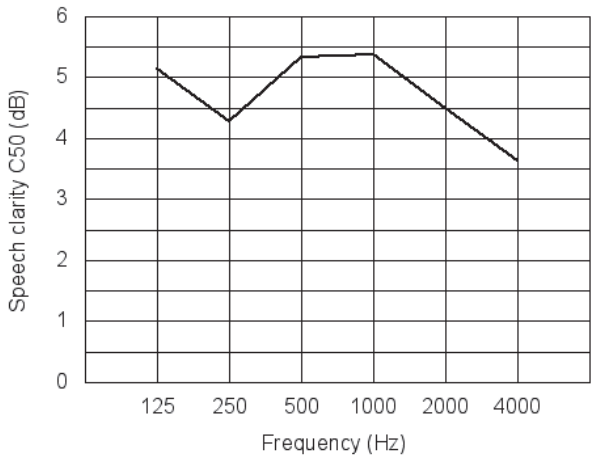


Sabine calculation

RAC calculation

125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
0.48	0.53	0.46	0.46	0.52	0.58

Speech clarity C50 (dB)

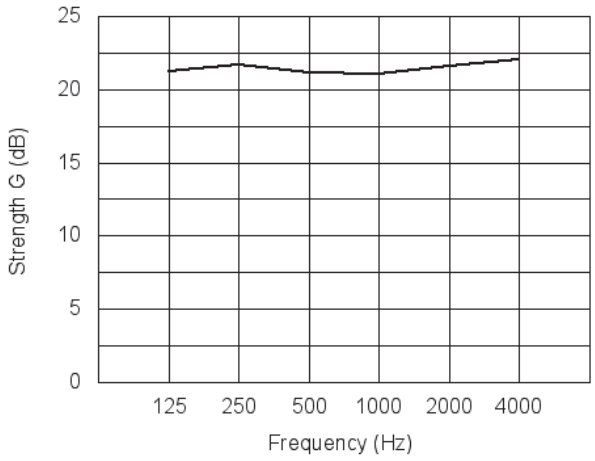


Sabine calculation

RAC calculation

125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
5.15	4.28	5.34	5.38	4.49	3.63

Strength G (dB)



Sabine calculation

RAC calculation

125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
21.22	21.69	21.11	21.09	21.57	22.06

Your input data

Room type	Hotels and restaurants; Restaurant
Furnishing	Sparse

Room dimensions

Length	19.00 m
Width	5.53 m
Height up to suspended ceiling	3.70 m
Volume	593.65 m^3

Total wall area	277.19 m^2
Floor area	105.07 m^2
Soffit area	107.26 m^2

Part 12d

APPENDIX D - EXAM PRESENTATION

EXPERIENTIAL RETAIL, A CATALYST TO ENCOURAGE SUSTAINABLE HABITS

-13 Firwood rd, Hazelwood, Pretoria -

Drawing by author(2019)

General problem

A global crisis of overconsumption is promoted through retail, and is causing **waste to collect** in landfills and in our natural environment.

The general consensus is that small steps of change by multiple people can change the course of this crisis and lead us into a more **sustainable positive future**

Research Questions

Theory - What role does **retail** play in the shift towards a **green economy?**

Context - How can a **green economy impact** the **lifestyle** of a neighbourhood?

Design - How is a **waste conscious** design **expressed in built form**?

Technical - Investigating the **intergration of upcycled/upcycle-able objects** into sustainable technologies to **encourage** opportunities for zero waste education.

Drawing by author(2019)

Project aim

The overall aim of this project is to investigate how two polar opposites, **sustainability and consumerism** can come together through lifestyle, and display how retail can **facilitate a lifestyle** by being sustainable in built form but also inspire lifestyle change within a case study area.

Key points to address

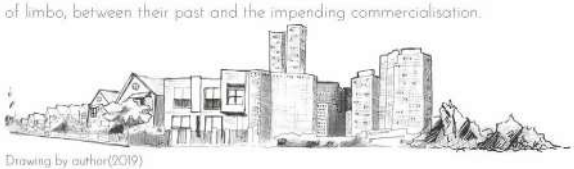
- **Reducing single use packaging**
- **Reusing as much as possible**
- **Supporting a community**
- **Educating people on the zero waste lifestyle**

Drawing by author(2019)

Background & problem statement

Hazelwood, Pretoria

The shift in zoning from residential 1 to business/residential is **encouraging the rapid economisation** of the area, leaving the residential community in a state of limbo, between their past and the impending commercialisation.



Drawing by author(2019)

This is **promoting unsustainable retail** which will only add to **the global waste problem**, and also threatening the **fabric of the residential community** as the residents are being alienated from their own area.

Figure list

References

RETAIL PARADIGM

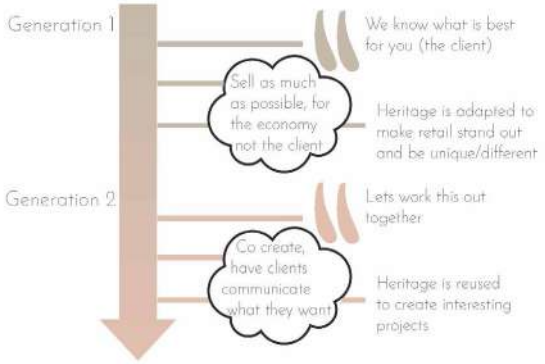
- the 3rd generation -

The intention of the project is first of all to deal with the global problem of waste, and secondly to do this in a sustainable manner whilst embracing the new retail paradigm

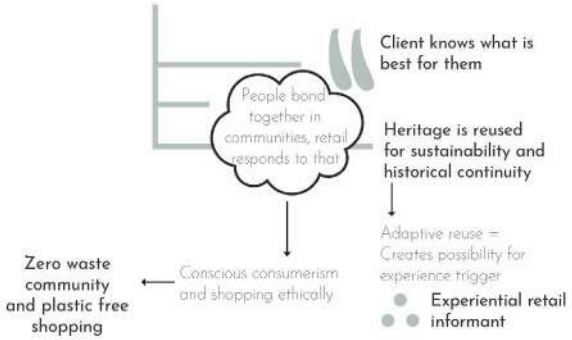
Argument for experiential design

Theory by (Petermans, Pieveets, Van Cleempoel, 2015)

The graphic illustrates the various generations that retail has gone through and their impact/intentions. Petermans(2015) also has a unique argument in this document as she highlight the use of adaptive reuse in line with these retail generations.



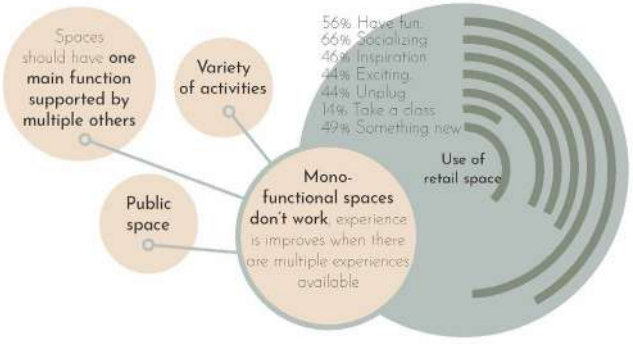
Currently in Generation 3



Experiential retail, what is it?

Theory by (Gensler research institute, 2017, 2018)

The bounds and scope of retail has changes a lot over the past 50 years, retail is not just about buying anymore, but **seek to offer a much richer experience.**



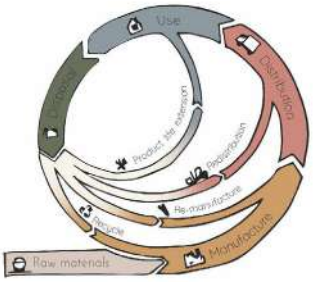
WHAT IS ZERO WASTE?

The concept originates from the drive towards a green economy, a circular system that aims to emulate the ecological cycle , where all discarded materials become resources for other use.

What is Zero waste?

It is a process to **systematically design waste out of our lives,** in order to improve the environmental quality for all living things and systems

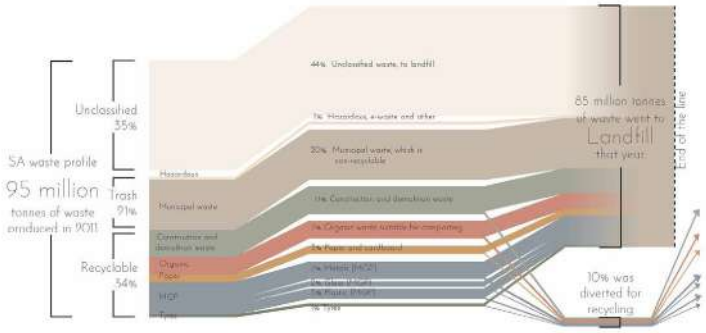
Drawing by author(2019)
Adapted from circular economy diagrams



1a The main goal is to divert as much waste away from landfill as possible → 1b Zero waste is not a target but rather a journey, currently defined as 90% diverted waste

1c 6 concepts that embody zero waste
Rethink > Refuse > Reduce > Reuse > Recover/Repair > Recycle > Landfill

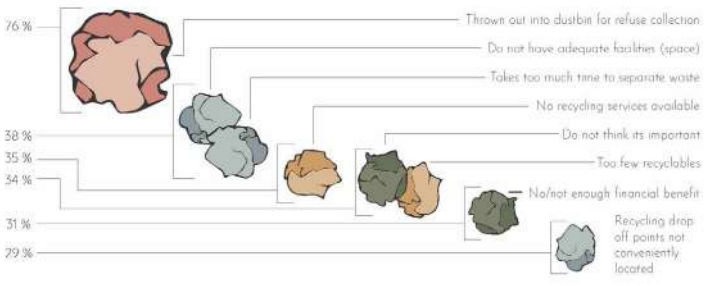
Why is waste important?



The problem of waste is **not just a global problem** but also in South Africa as well, the following graphic illustrates the recyclable waste compared to the eventual recycled content

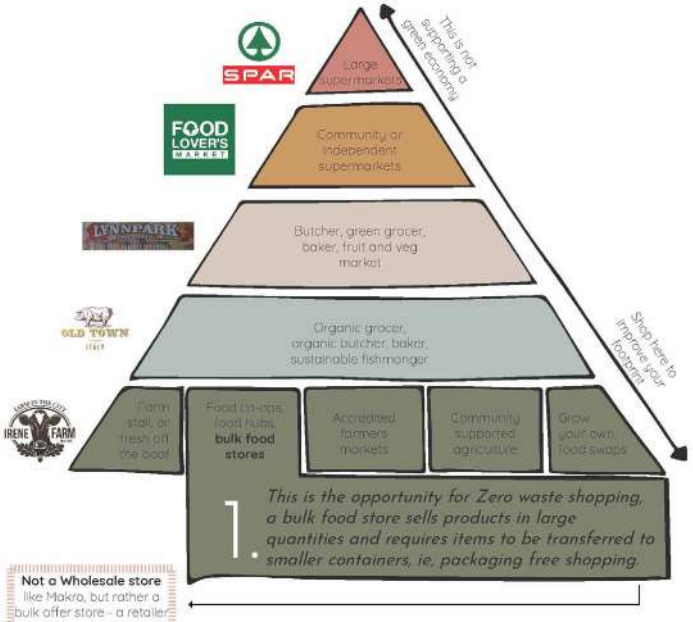
The majority of the waste in our homes and surrounds are **from product packaging**, this could be solved at a design level within **a retail brand, reducing packaging** could reduce the urgency of recycling, and **improve the circularity of our system**

Why don't South Africans recycle (specifically in urban areas)?



WHAT ROLE DOES RETAIL PLAY?

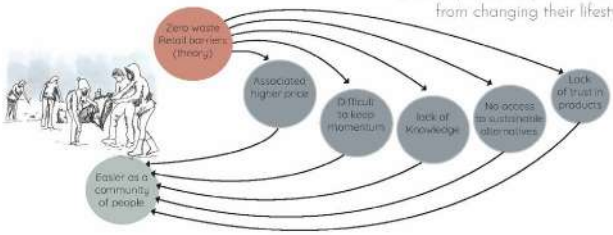
The type of retailer has a major impact on your ethical and ecological footprint. If we aim to have a green economy we must rethink the types of retailers that we support



Not a Wholesale store like Makro, but rather a bulk offer store - a retailer that offers products in large quantities and **allows the client to purchase by weight**

So what is stopping us?

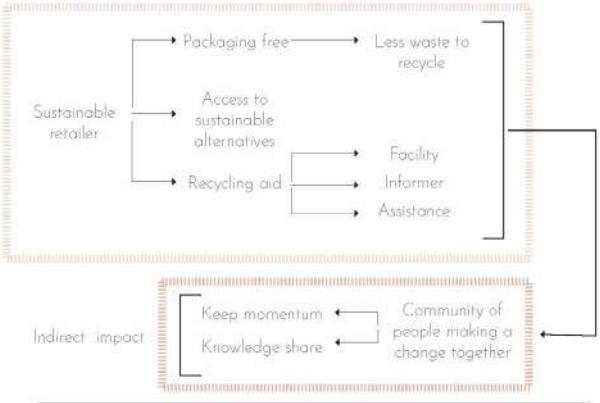
There are various barriers that prevent the every day user form living a more sustainable life. Based on theory this is a summary of the aspects that prevent people from changing their lifestyles



In conclusion...

In order for us to move towards a green economy we **must make the lifestyle changes** necessary. A buy in into sustainable retail is required. For that to happen **retail has the opportunity to enable people to make the change.**

A sustainable retailer can have the following impact:

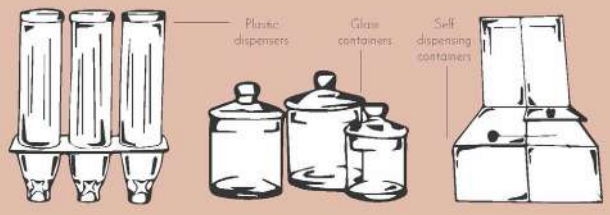


WHAT IS ZERO WASTE SHOPPING?

What does a zero waste shop sell

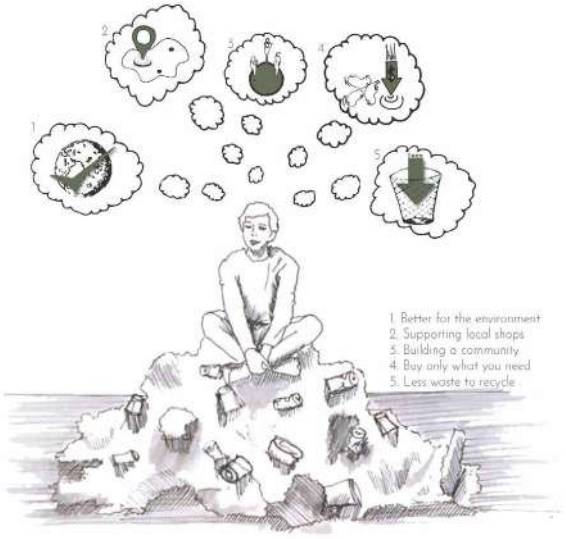
All of this is sold in bulk containers, **allowing shoppers to bring their own containers, or buy/borrow some in store**. This type of shopping reduces the load of packaging required, and it also gives the **shopper the freedom shop for their daily convenience needs**, in their own community, and **paying by weight** of the product.

How do they sell it ?



Various types of containers and dispensers can be used to hold the bare products before being sold, these vary from glass containers, plastic dispensers, some retailers even just use cotton sacks.

Why should you buy there



PRECEDENT ANALYSIS

Working from an analysis format explored by R. Koningk for his PHD, adapting his coding methodology to aid the coding and analyzing of various (20) sustainable retail stores

Kamikatz public house

This precedent proved significant, as it explored sustainability in unconventional ways. The project is situated in Japan, its main function is **a brewery**, however together with that is a small community **packaging free convenience store**. The project was unique because of its approach to **reuse objects** from the community, as it was a project for the community.

The brand of the retail space is not noticeable, in standard terms however the **unique design forms the brand for the retailer**

Reuse tables unwanted by the community

Reused glass bottles as chandelier

Food displayed n **found** jars and containers

Reuse furniture donated by the community

Timber from the **local** forestry industry

Timber frame windows are used as double glazing, **reclaimed** from abandoned houses in the area

Crated are **found** objects used for display

Brand archetype

The brand archetype is identified as every man, as the design and the space relates very closely to the community, and is infact designed to accommodate their needs.

Influence on design

The integration of found objects as reused and reclaimed created a sense of belonging in the community. The design feels warm and welcoming. Theses elements should be considered as important inclusion in a community based sustainable design. However the question is posed does it need to look antique

Reuse

Found objects

Nada grocery

This precedent proved significant as it illustrated a more typical approach to sustainable retail. This project illustrated good use of space and **displays to integrate packaging free retail**. The addition of the coffee shop and deli is strong, as it becomes a **space to linger.**

The **brand design** is used throughout as **graphics, and patterns.** This creates a clear **recognisable identity.** However the brand is not needed to be integrated into the fit-out (positive, less wasteful as reusable)

Peg board shelving display

Closed door fridge for perishables

Raw timber finish, as reminder of nature

Table top display for this and that

Real plants throughout as reminder of nature

Bold patterns, and **colour** pops to draw attention

Showcase type display, **integrated packaging free** design

Brand archetype

Identified for this design was three distinct brand archetypes. The maverick which is the standout is based on their social media movements around local waste related topics, as well as their drive to create a community around a retail based program.

Influence on design

The possibility of various display methods is well integrated into the design. The movability of the objects allow for great flexibility in the space. The notes of natural materials and plats throughout ensure the intention of fresh is kept clear and visual throughout the design.

Natural elements

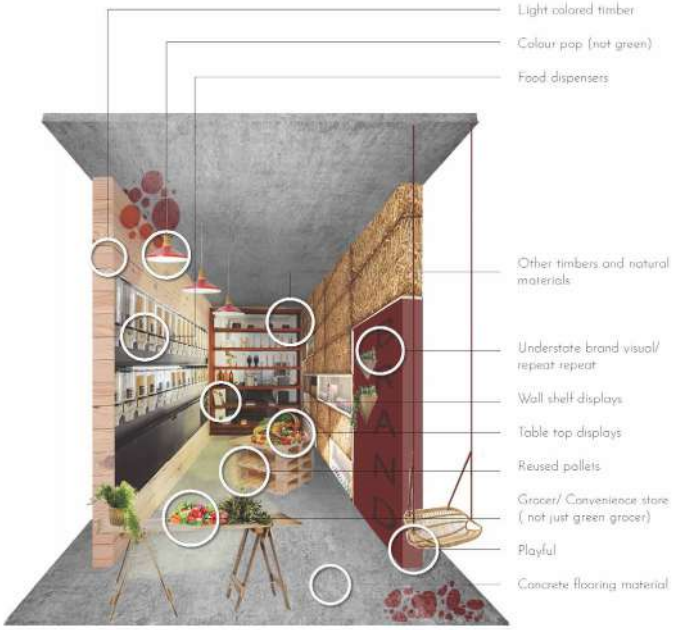
Product display

PRECEDENT SUMMARY

This graphic serves as a summative graphic that brings together the content of this part in a visual manner

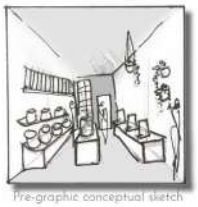
Zero waste signifier

Originating from precedent, by sussing out the most successful green retail interiors, this concept represents the ideal green retailer as currently known



Trendy zero waste store

Retail as calling card for sustainable living, a one stop shop for all your daily needs, a colorful and fun place thats exciting and inviting at the same time, a branded retail interior that walks and talks the sustainable "image" - as per precedent



Pre-graphic conceptual sketch

Figure list

References

SITE LOCATION AND INFORMATION

The selected suburb is a case study site, it serves as an example intervention of the type of area where a zero waste store would succeed

Eastern Pretoria map

Key

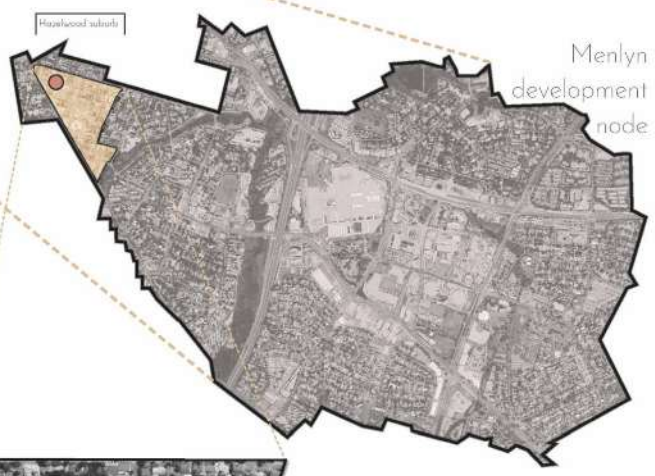
- Menlyn development node boundary
- Super regional mall >100 000
- Small regional mall > 25 000 - 50 000
- Community Centre 12 000 - 25 000 m
- Neighborhood 5 000 - 12 000
- Local Convenience 5 000 - 12 000
- Refuse sites
- Recycle sites

Where is the case study site located?

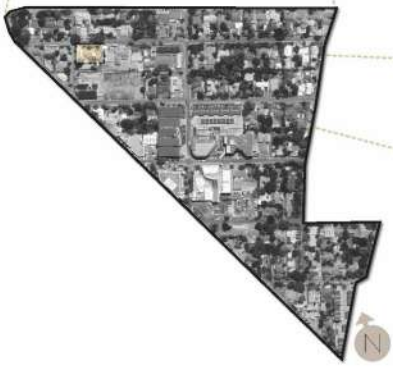
Within the larger Pretoria east area, there is a prominent **Retail strip spread from East to West**, at the center of this is the menlyn retail node, one of the largest retails developments currently in Pretoria.

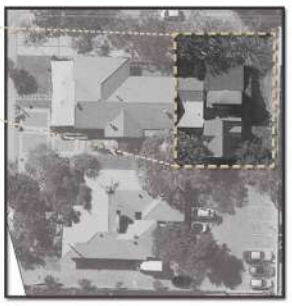
Initially Menlyn was a super regional mall surrounded by residential neighborhoods.
In 2010 the development of SA first green city was started at Menlyn Maine, despite the demolition of the neighborhood.

This development craze has been **creeping to the edges** of menlyn with **hazelwood being the next** neighborhood to be re-imagined by the Atterbury development group, with a disregard to the neighborhood identity of the area



Menlyn development node





Site, nr 13 Firwood ave

Why hazelwood suburb?

Hazelwood was selected as a case study site due to its current condition, a suburban neighbourhood that is undergoing change. Therefore this type of scheme could be implemented in a another neighborhood that is undergoing similar stresses

Site requirements

Middle class suburb

-Biggest consumers, and wasteful users
- Biggest contributers to waste

Active economy

- Necessity for successful retail
- Required for a niche program that targets only a selected community

Well defined boundary

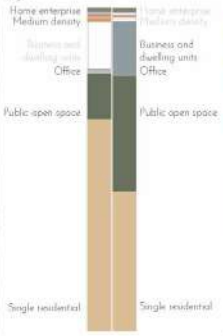
- Potential for a community to form
- Specific community to focus on

Destination

- To draw outsider interest, more feet
- To spread the brand ideals

Commercialization of Hazelwood

3b Current Land use (Hazelwood)



2012 Menlyn node development Framework, p 41

Single residential | Medium density | School | Vacant erf
Public open space | Home enterprise | Retail | Parking
Office | Business and dwelling units

3c Proposed Zoning (Hazelwood)

2012 Menlyn node development Framework, p 41

It is crucial to understand the developmental change in he Hazelwood area.

The change from residential to business/ Dwelling has a major impact on the neighborhood quality

This developmental change does not need to stop but a stand must be taken to rather **work on a green economy model**, which means focus must be shifted away from purely making money, but also include environmental concerns as well as social.

This would design a **well balanced neighborhood, without demolishing the identity** of the area.

References

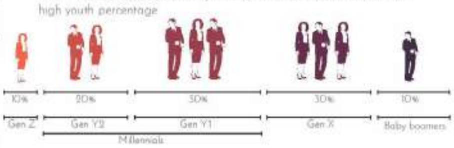
AREA USE AND DEMOGRAPHIC

Investigating the zoning, residents and shoppers in the area. Also looking at the times of use in order to understand who is using the area.

Demographics of the Ward (82)

Household demographic for the ward containing Hazelwood (2011 Census)

- Note this area overlaps with Lynnwood which would account for the high youth percentage

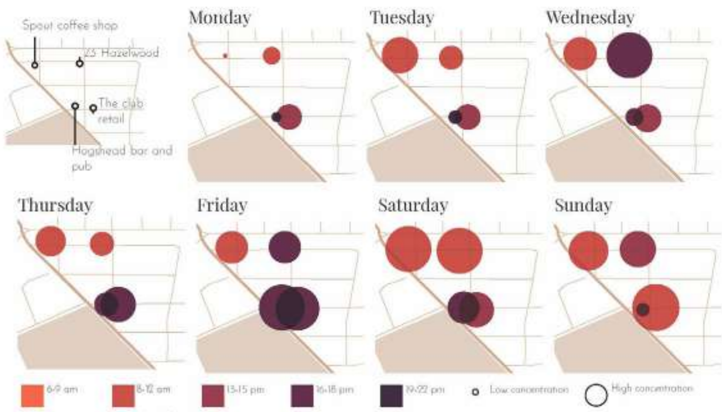


From observations made on site throughout a typical day

- There is an imbalance between the people who live in the area and the people who go to the retail spots

Wazimap. (2019). Wazimap profile: Ward 82 (79900082), City of Tshwane, Gauteng. [online] Available at: https://wazimap.co.za/profiles/ward-79900082-city-of-tshwane-ward-82-79900082/ [Accessed 14 Feb. 2019].

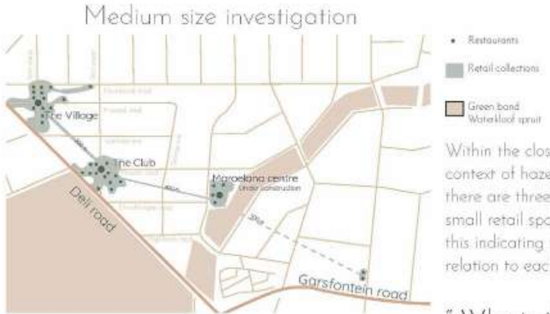
Use fluctuation in the area



Google active times for each retail type

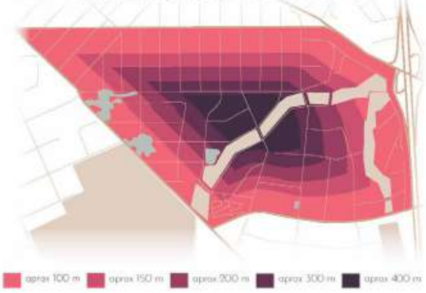
Activity investigation

Medium size investigation



Within the closer context of hazelwood there are three small retail spots, this indicating their relation to each other.

Proximity from main roads



" Why is the village and the club more successful?"

Investigating the proximity of the retail spots to the main roads, to analyses possible reasons for the success of the two retail spots, over Maroelana and the other.

Figure list:
icons from the noun project

References:
(Gen range) https://communityrising.kasasa.com/gen-x-gen-y-gen-z/

[SUB]URBAN ACUPUNCTURE

In line with UNEP's plan to move towards a green economy, the concept of urban acupuncture is used to transform the neighborhood of Hazelwood in a sustainable manner

What is UNEP's Green economy model?

A change from the well known economic model which promotes the use of scarce resources, waste and inequality, **a green economic model aims improve well-being and build social equality, whilst having a much smaller impact on our natural environment**

A green economy **builds on the three pillars of sustainability** and act as a vehicle to achieve it in our modern society

Pillars of sustainability

What are they?	Ecological	Economical	Social
What do they deal with?	Natural capital	Manufactured and financial capital	Human well-being capital
How do we approach them?	Resource efficiency	Low carbon growth	Social inclusivity

Sustainable development

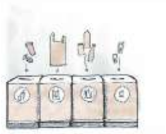
As noted on the previous poster, the development of the menlyn node is creeping into the Hazelwood neighborhood, **urbanization puts a larger strain on the natural environment** if not done in a controlled manner

*"Resource efficient cities combine greater productivity and innovation with lower costs and reduced environmental impacts, while **providing increased opportunities for consumer choices and sustainable lifestyles.**"* - UNEP (2011)

Urban design principles

Phased into action from small doable interventions by a neighborhood to larger regulation changes

First step - Interventions



Multiple scaled waste related interventions
1. Promote shared composting schemes

2. Dedicated trained waste removal service

3. Educational voluntary facilities for a zero waste home

Eco shopping, creating opportunity for the retailers to buy into the community

Second step - Restructuring

Small scale urban farming interventions, to produce some local food resources

Reclaiming the stream, Taking ownership and making it part of the shared space

Third step - Regulation & systems

Own production of energy. Used between the various areas of the neighborhood

Alternative transportation, tuk tuks, bicycles, community bus systems

Figure list

References

URBAN DESIGN GRAPHIC

Some **overlap nodes** are visible, these are areas that have potential to become livelier spaces, **these interventions can be inserted** into this type of neighborhood **to initiate** and motivate the change to **a greener more sustainable economy and lifestyle.**

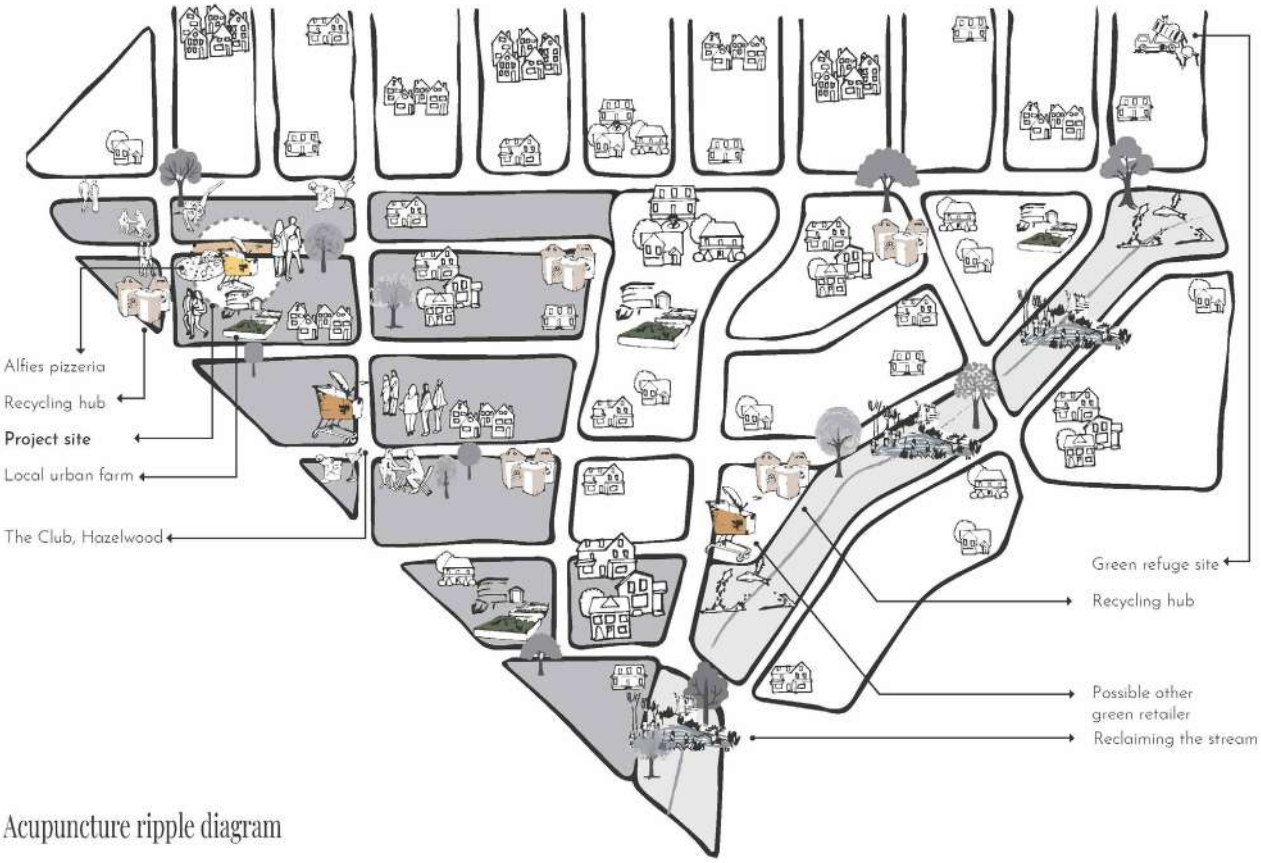
Key incorporations on an urban scale

Recycling hub
Shared composting schemes
Waste sorting area

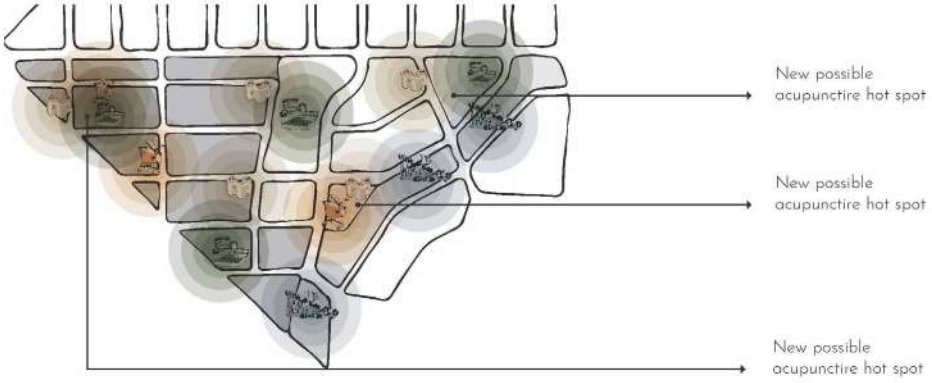
Small scale urban farms, initiated by the community

Eco shopping opportunities

Reclaiming the stream



Acupuncture ripple diagram



References

URBAN SUMMARY

This graphic serves as a summative graphic that brings together the content of this part in a visual manner

A focus on social gathering

A conceptualization of a possible interior

From the urban analyses it is concluded that **social gathering is required** in order to strengthen the community, a **place for the community to get together**, and grow together

Community zero waste hub

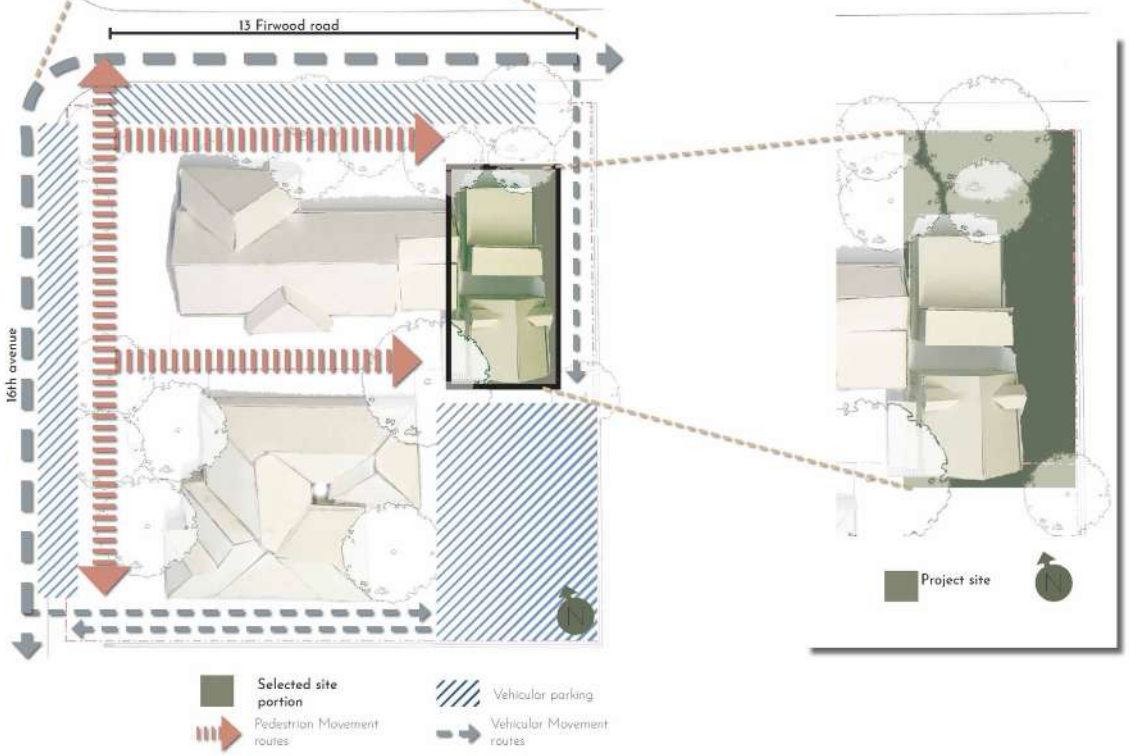
Retail as a community **gathering space,** a place for the children and **informational workshops**. A retail space that can **adapt and change to allow the community** to use it for their needs. A space focused on the s**ustainability of the community**

Pre-graphic conceptual sketch

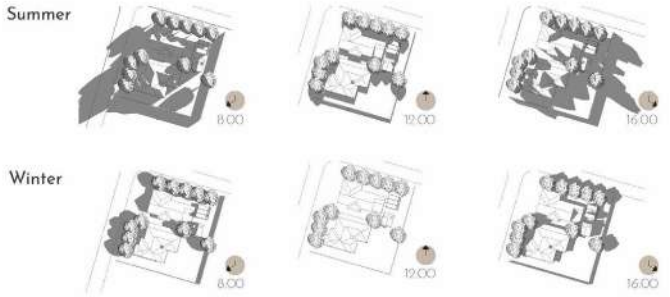
SITE ANALYSIS LARGE CONTEXT

13 firwood road is the proposed to site for a Packaging free retailer and deli , the larger site analysis illustrated the surrounding context and influences on the site

Selected site portion

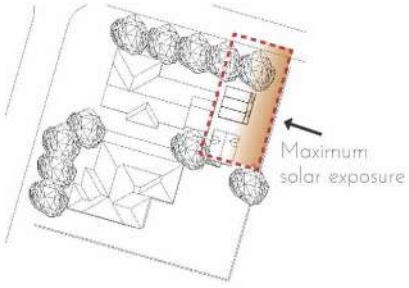


Solar study

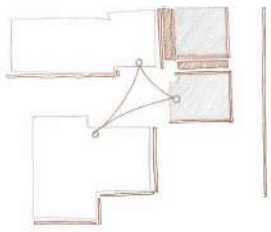


Solar study is required to visualize the **amount of sunlight available** on site

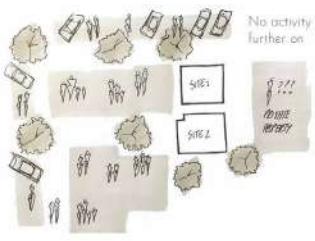
This indicates the ideal position for solar solutions as well as a retail specific roof garden



Context analysis

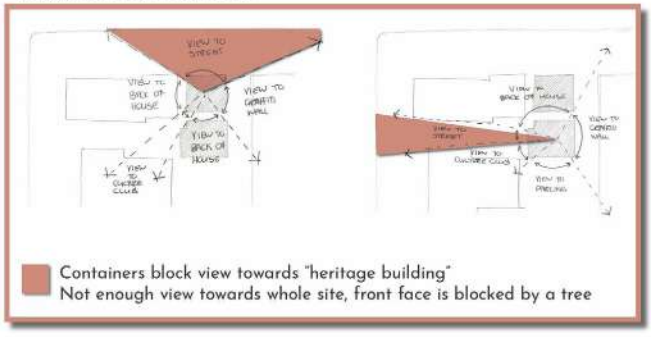


boundaries, preventing access to the site



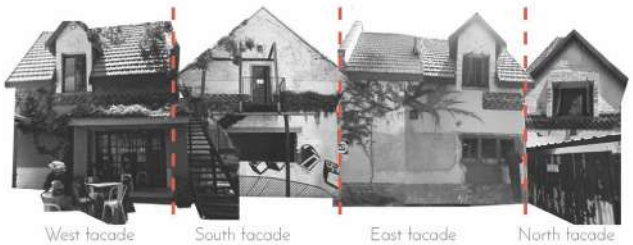
Spatial dynamic and use, High concentration of people with wide demographic variety

Views to and from site



References

SITE PHOTOS



West facade | South facade | East facade | North facade

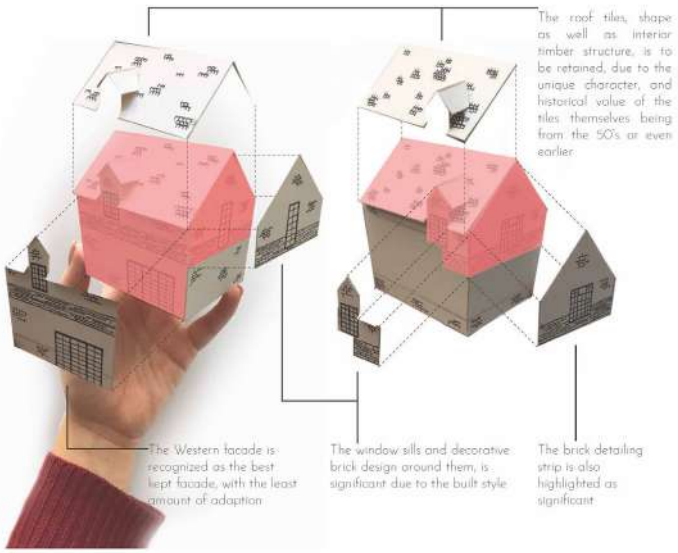
Figure list

References

STATEMENT OF SIGNIFICANCE

Finding the balance between the heritage features of the building and possible adaptations

Building significance

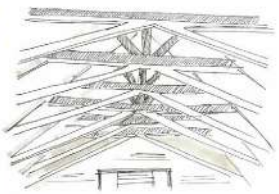


The building is **not listed as a heritage site,** however there are some significant features. The unique brickwork is not traditional in South Africa, and the roof tiles are the same as used in the klubsaal on UP main campus which was completed in the 1930's. **A strategy of juxtaposition** could be used to build onto the existing building without loosing the value of the existing

Significant elements

The following features have been identified as significant elements, due to their unique character, that should be **Retained/Remembered/Reused** to retain some of the undocumented heritage value

Western face

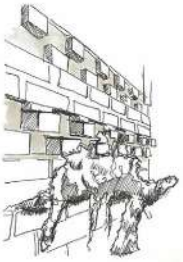


Solid hardwood roof trusses

Interior roof trusses Redone within the last +-20 years. Presumed oriental pine, scissor style roof truss

Unique style should be retained

Southern face



Brick detailing

Intriguing Brick pattens on the facade of the building. Similar textures are used around window frames as well as arched on the exterior

Unique style, no seen else were should be retained and reused

Eastern face

Northern approach

Old roof tiles

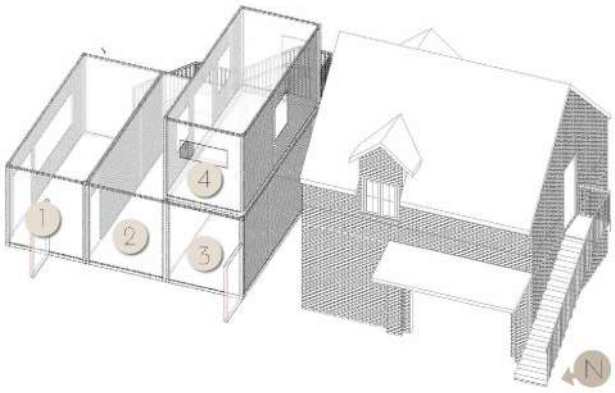
Old roof tiles (same as protected building down the road) Same tiles as numerous Gerhard Moerdijk buildings built between 1919-1936

Rare heritage tile, should be retained

Figure list

References

EXISTING BUILDING ANALYSIS

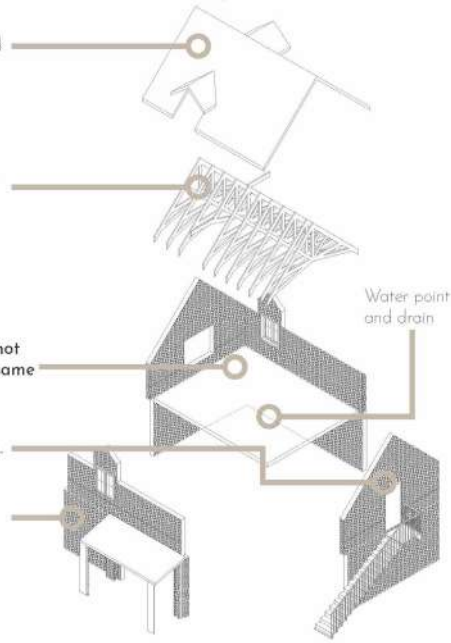


4 cut shipping containers, not insulated

Building built near 1930's with various modifications (google map images from 2002 - 2019)

Building assembly

(google map images from 2002 - 2019 & informal discssion with the owner)



Clay tile roof, carried by the Oregon pine trusses and structural walls

Intricate Oregon pine **scissor roof trusses**

Oregon pine timber floor,beams built into walls, **full floor was not constructed at the same time**

Entrance door to above level, **built** within **last 10 years**

Western facade, only facade kept in its **original aesthetic**

Container assembly

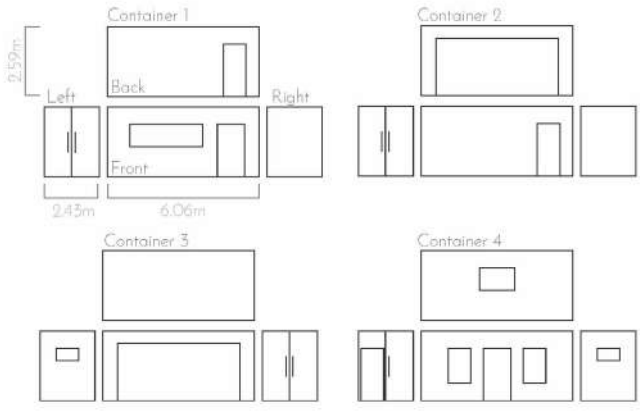


Figure list

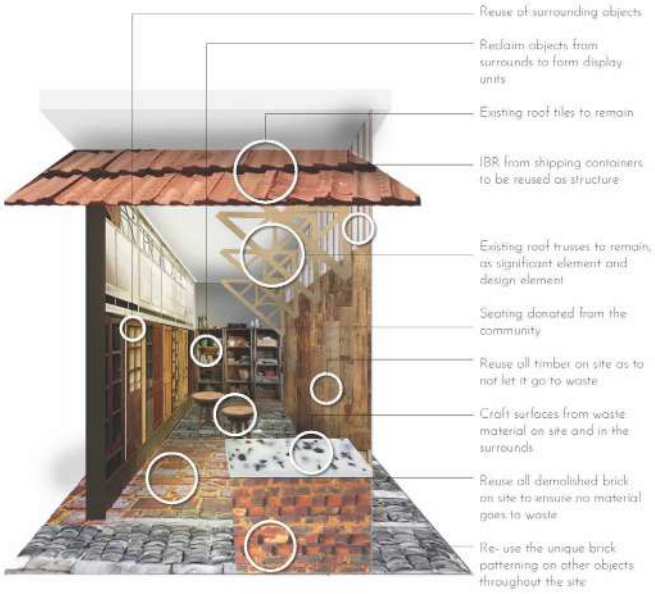
References

HERITAGE SUMMARY

This graphic serves as a summative graphic that brings together the content of this part in a visual manner

Envelope as informant

Graphic visualizing interior concept through bringing the different significant and site elements together as unique ways of adaption and re-use



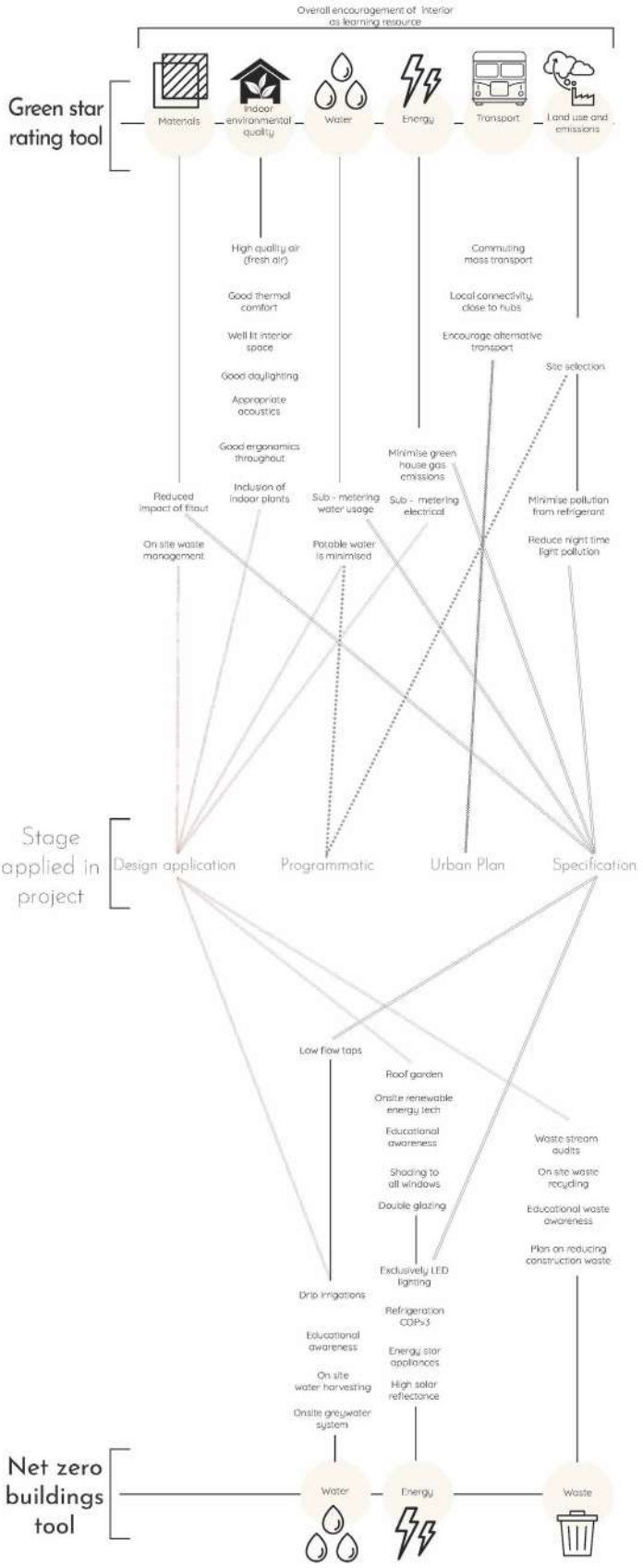
Historic hub

A space where people can go to connect to the past of the neighbourhood, a homely landscape filled with well knows trinkets from their homes. A warm and inviting interior space

Pre-graphic conceptual sketch

GBCSA SUSTAINABLE GUIDE

Information gathered from studying the interiors green star rating tool, as well as looking at the zero waste tool.



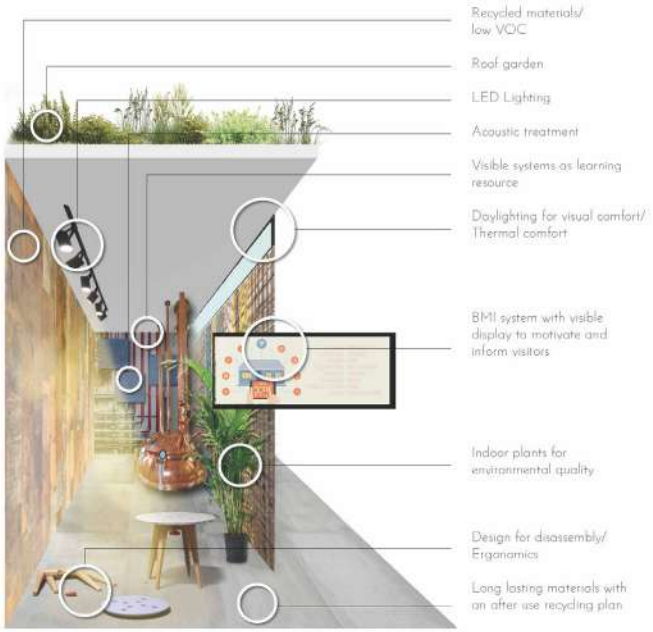
References:
Green Building Council South Africa (n.d.). Interiors Green Star Rating Tool. Green Star Rating Tool. [online] Green Building Council South Africa. Available at: https://gbcsa.org.za/tools/green-star-sa/interiors/ [Accessed 19 Aug. 2019].

SUSTAINABILITY SUMMARY

This graphic serves as a summative graphic that brings together the content of this part in a visual manner

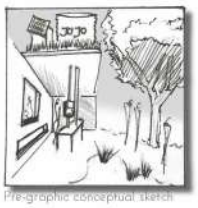
Visible systems

Graphic visualizing of possible interior originating from various rating tools available for net zero and green interiors (GBCSA green interiors and GBCSA net zero buildings)



Green star eco shop

Retail as a central information point for all zero waste related dealings, a zero waste lab of sort, displaying supplying and educating the community on the possibilities ans workings of zero waste



Pre-graphic conceptual sketch

PROGRAM

Built from the 5 barriers toward a sustainable lifestyle (Gleim et al., 2013, Bonini & Oppenheim, 2008) the program shapes a space where a community of people (user groups) can find what they need

Addressing barriers through programme

Three integrated programmes

Three integrated parts

Zero waste retailer

A bulk store that focuses on providing the community with a selection of sustainable daily necessities

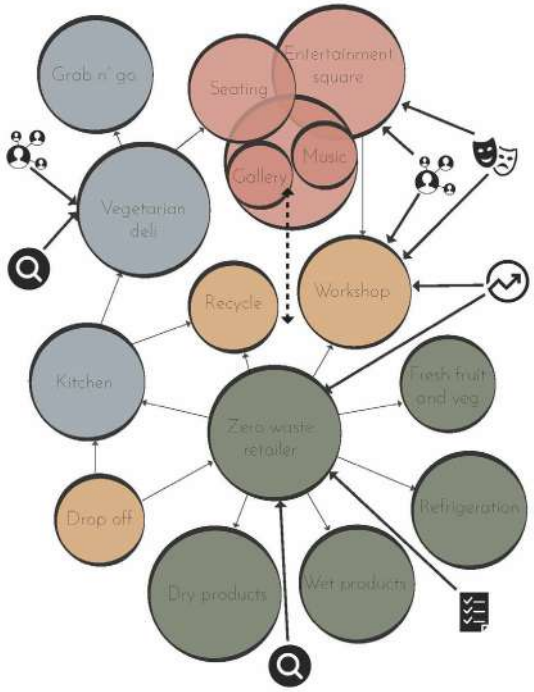
Entertainment square

A place where strangers and the zero waste community can meet and socialize

Vegetarian deli

A on-the-go deli that specializes on food that supports the ideals of a zero waste community

Programme relationship diagram

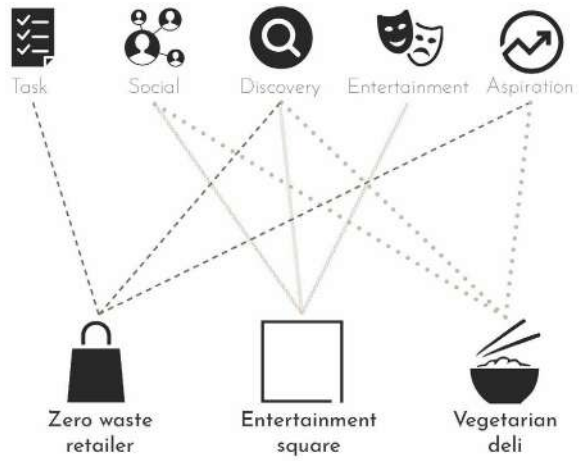


RETAIL EXPERIENCE MODES

From the research done by the Gensler institute, they have identified **5 types of retail experience modes** (Gensler Research Institute, 2017). Each has a unique place in retail and illuminates the **reason users visit a retail store.**

Experience mode	What is their intention?	What do they want?
Task	**Get something done.** 49% of users are task driven	**Efficiency** They do not care for decoration or experience.
Social	**Engage with others.** Often combined with other modes	**Sense of community** Appreciate a wide variety of spaces
Discovery	**Just killing time.** Likely to wander around	**Inspiration and novelty** Open to the unexpected
Entertainment	**Looking to be entertained.** Break away from the everyday	**Novel and unique** Design should have a memorable impact
Aspiration	**Connect to larger purpose.** Seeking personal growth	**Opportunities for growth** A larger mission is appreciated

Experience translated to space



USER PROFILES

Identified from on site surveillance, aligned with experiential modes to identify where design needs more intervention

LOCAL

Business woman

Age : 34

Interest : Foodie / Socialite

Testimony :

I go shopping every afternoon after work at the **local store to stock up on some necessities**. I have a few friends in the neighbourhood and we were very excited to discover a **new healthy food deli and food market** in our neighborhood

My intention when visiting a retail store is often for necessity and for the social aspect that comes along with it

PROUD VEGETARIAN

Student / photographer

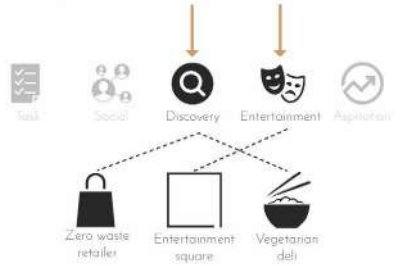
Age : 25

Interest : Animal rights activist

Testimony :

I saw online that there is a **vegetarian deli** that opened up, i went there and stumbled upon a zero waste retailer, The food store was **hosting a workshop** on living sustainable. There I met a few **like minded people** and we are intending to do an eco drive together.

My intentions when visiting a retail store is based upon discovering new things and to be entertained by something out of the ordinary



ZERO WASTE ENTHUSIAST

Yoga instructor

Age : 42

Interest : Healthy future for her and her family

Testimony :

I noticed a **waste free workshop** being advertised in my area and wanted to become **part of the community**. I now host weekly yoga classes there. I enjoy stopping by in the mornings before work to **grab a snack** at the deli.

My intention when visiting a store is to support my lifestyle and connect with people around me.

Figure list

References

BRAND CONCEPT

The brand is built from the various informants that originate from the design intention. The brand and personality is used as an informant in order to guide the interior design.

Brand personality

Primary brand archetype: **Maverick**

Secondary brand archetype: Caregiver

Tertiary brand archetype: Entertainer

"Rules are made to be broken"

Brand voice

Candid
Raw
Honest

Brand Intention

Reducing single use **packaging**

Reusing as much as possible

Educating people on the **zero waste lifestyle**

Support a **community**

Maverick brand message

Its time for action, being raw and honest rather than hiding behind health as a facade. The retailer should **be true to the problem** they are dealing with - **PLASTIC**

Maverick as design concept

The maverick brand is selected as the conceptual approach for this design project,. the personality speaks about disrupting and taking a stand.

Within a zero waste retailer this is interpreted into various levels of the design.

Changing the way we shop - new experience without plastic

Offering just what you need - food for necessity not leisure

Giving you flexibility on price - only pay what you buy (per g)

Brand name

Livable Adj.
[livable]

- worth living.
- (of an environment) fit to live in.
- easy or bearable to live with

A name fit for a sustainable retailer trying to voice change needing to happen

- sustainable, **what type of world do you want to live in**
- Comfortable in **your decision** to be a **conscious consumer**

Figure list

References

BRAND IDENTITY

The brand is created from various informants set out below into the various parts of the brand design

Font

A **fun and quirky** font
Against the grain of mainstream green retailers
Reflects the importance of **sociability and fun** in the brand

LIVABLE
FOOD AND DELI

Crisp sans serif font to **signify the seriousness** of **the brand message**

Colours

Colours are **muddled** - **contrasting to pure bright colours** often used in mainstream green retail

Muddled colours **connect to earth tones** relating strongly to the **ecological** side of the design

Icon

The revolution fist used to **signify the change** that needs to happen in our **consumerist ways**

The fist is softened and contextualized towards retail, and as part of the **3rd gen of retail** the **hand and falling grain** connotes touch as part of a **interaction experience**

Patterns

Falling out of the hand as a **bare product,** symbolizing **packaging free** and new **experience** with food

Patterns are inspired by the 5 main **product categories** of in the retail space **(vegetarian)**

- Beans - Grains - Nuts - Oils - Fruit & veg

Graphics

Three shapes signify the **three critical parts** of **the program** working together

The shapes are of **organic form** to connote to the **sustainable nature** of the program.

Colours and organic shapes **can adapt** to signify flexibility in the spatial design but should **remain within visual consistency**

Final brand image

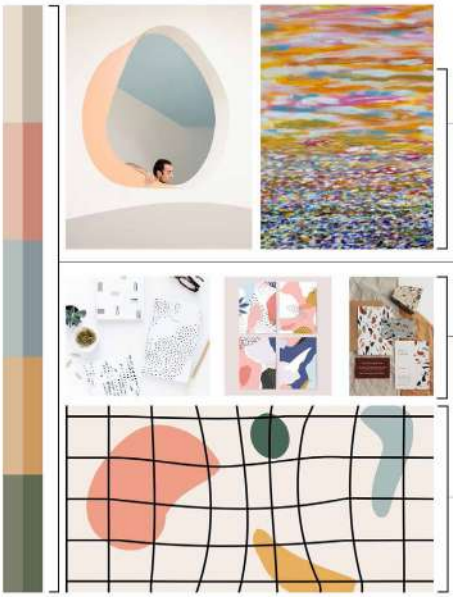
Figure list

References

BRAND MOOD-BOARD

The images collected on this page are from the four design informants collected in a visual format (limited to the informants that have an aesthetic influence)

Colour



Artwork, plastic in the ocean (global problem)
=
Textural (speckle graphics)

Soft colour pallet
=
Caregiver archetype

2D effect
=
Paper as inspiration (packaging)

Bold Patterns
=
Maverick archetype

Display

Bulk food
=
Typology (precedents)

Maverick archetype
=
Break the rules

Redefine retail

Processes

GBCSA
=
Educational
Sustainable

3rd gen retail
=
Experiential

Texture

Existing building
=
Patterns in the architecture

Trendy containers
=
Material influence

Figure list

References

INFORMANT SUMMARY

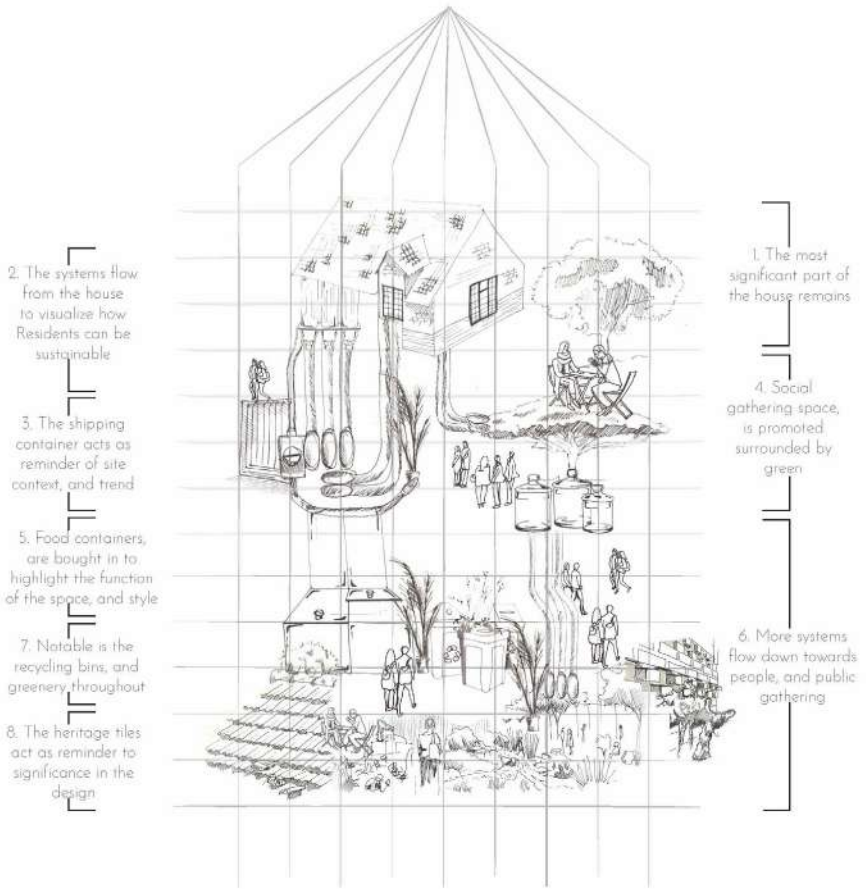
Diagramme illustrating where in the design process which informant is valuable

Theory Informants

Concept Informants

ZERO WASTE INFORMANTS	SOCIAL GATHERINGS	ENVELOPE AS INFORMANT	VISIBLE PROCESSES	FLEXIBILITY	EXPERIENTIAL DESIGN	MAVERICK
Encourage community - Precedent - Barriers	**Learn from precedent** - Urban plan - Precedent	**Relate to site** - Buildings on site - Neighbourhood	**Educate through design** - GBCSA	**Adapting spaces** - 3rd Gen	**Multi functional space** - Programme _ 3rd Gen	**Brand as concept** - Brand Personality - Brand identity
Material Function Language Closed loop	Spatial Functions Form	Material Detail Systems New meets old	Detail Systems Spatial Closed loop New meets old	Spatial Form Function Detail	Spatial Detail Systems	Material Function Detail

Application to design stages



ANSWERING THE TITLE

Breaking down the various aspects that to be designed through answering the project title.
Experiential retail, a catalyst to encourage sustainable habits

Encourage

4 Elements of the retail space that encourage and educate users on zero waste as a lifestyle

Educational workshops
How to make your own necessities to avoid extra waste in your home

Food education
Specifies label information on alternative uses/ recipes

Recycling & composting
En-grained into the social design of the space, educating through awareness and access

Only the necessities
Preventing over-buying = Minimal display & not using supermarket tricks to promote consumerism

Sustainable

Zero waste retail. The act of **reducing waste** to landfill

1. **Packaging free retail** = Minimal packaging to take home
2. **On site recycling** = Ease of access, convenience, honest
3. **Community activity** = Social interaction grows the community

Habits

Sustainable consumerism, how is the **retail promoting** a **smaller impact** on the environment

1
Vegetarianism
The top way of reducing you Eco footprint

2
The 6 R's (recycle ens)
The process gives a understanding of your own impact

3
Buy local
Promotes less traveling, as well as local economy

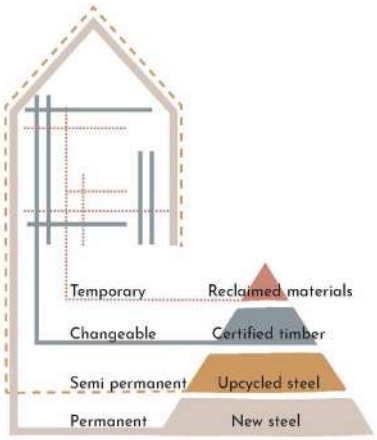
References

DESIGN & TECHNICAL

As a starting point into the design and tech, material investigations were needed to ensure the material selection was not naive

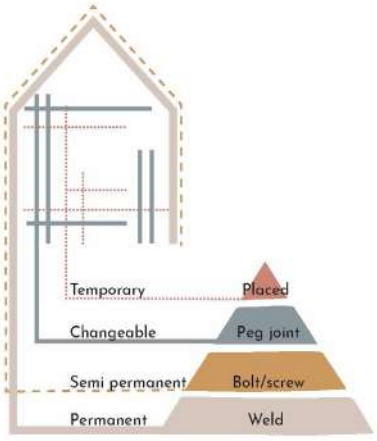
Hierarchy of sustainable material sourcing

As sustainability forms a core part of this project, materials were a strong consideration. Understanding **the lifespan of materials** and their **relative use**. The diagram below illustrates the materials use hierarchy.



Hierarchy of material fixing

Hand in hand with material selection is the relative fixing methods. they determine the ease of dissassembly, which in turn aids in the possible reuse and recycle posibilities for the material.



Front approach

Front approach

SITE PLAN 1:100

A rendered site plan illustrating the final site design

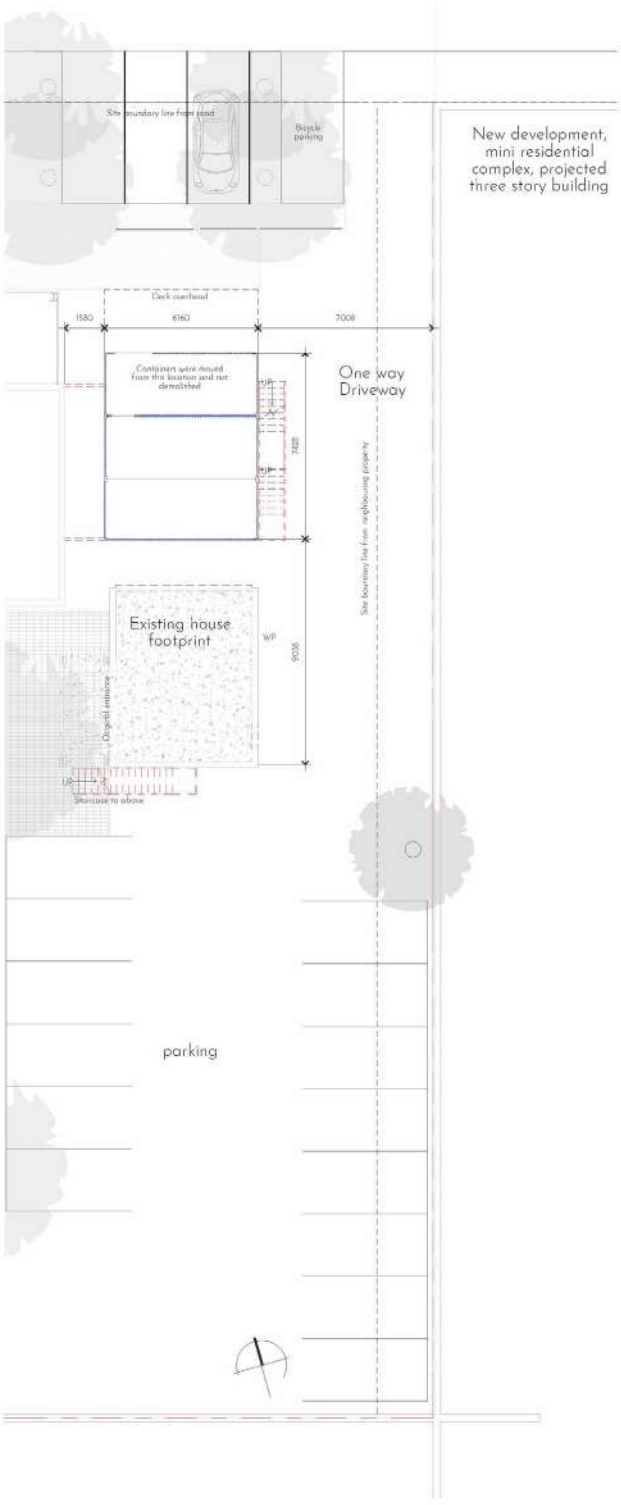
Existing three story office building

DEMOLITION PLAN 1:100

Illustrates objects to be demolished

Illustrates objects to be moved and reused

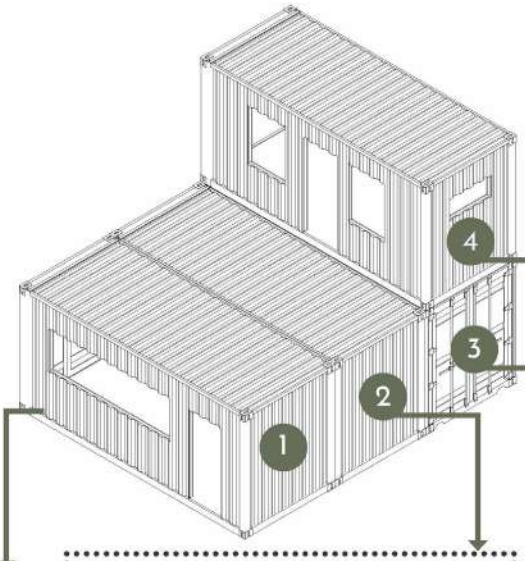
New development, mini residential complex, projected three storey building



REUSE OF THE SHIPPING CONTAINERS

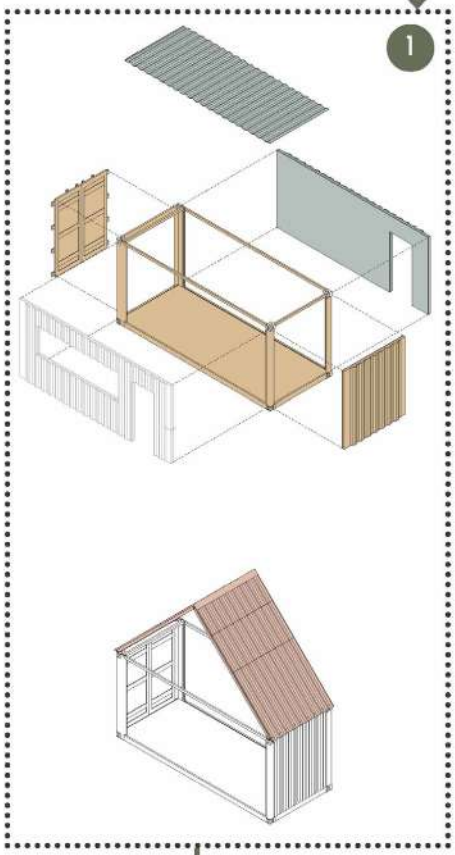
The existing shipping containers will be relocated on the site to the new position as noted on the floor plan.

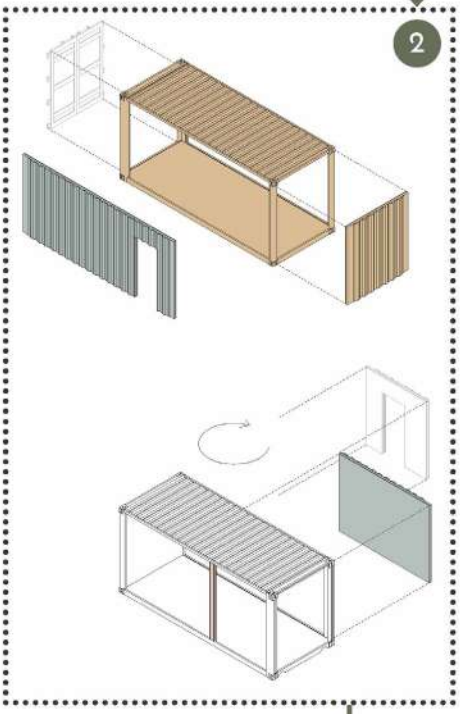
Each container will be reused and adapted as noted in the graphic below.

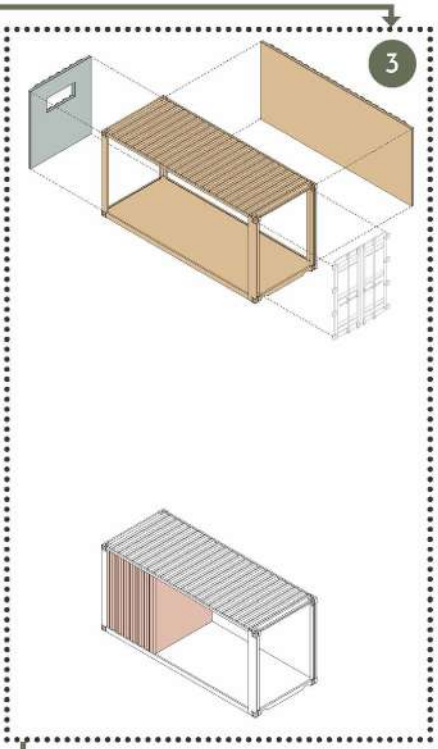


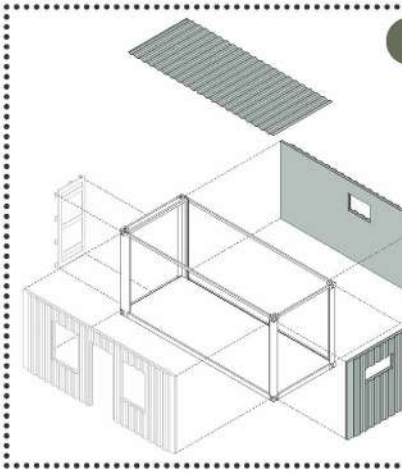
Key:

- Grey = Demolished
- Blue = To be re-used
- Beige = Existing re-used as is
- Pink = New (from reused parts)

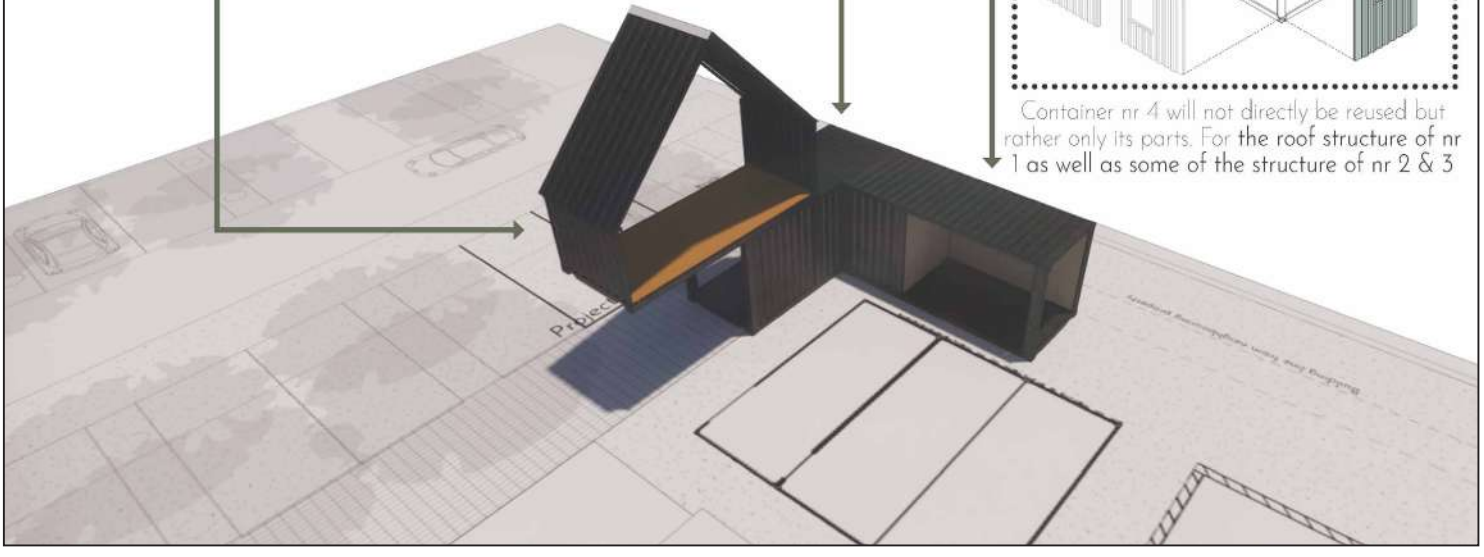








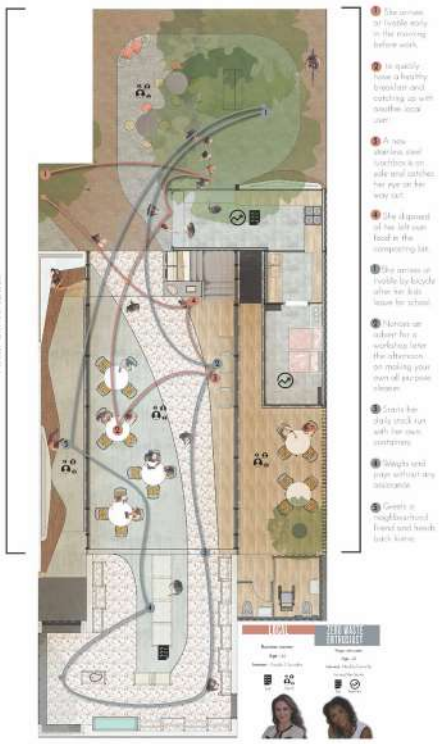
Container nr 4 will not directly be reused but rather only its parts. For the roof structure of nr 1 as well as some of the structure of nr 2 & 3



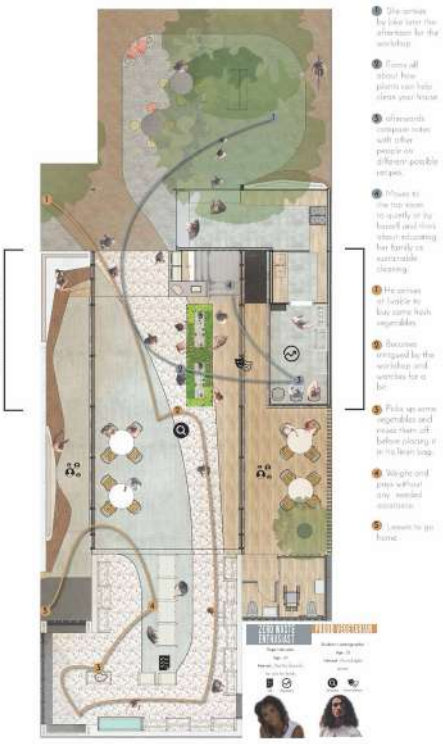
GENERAL FLOOR PLAN 1:20

EBB AND FLOW OF THE INTERIOR

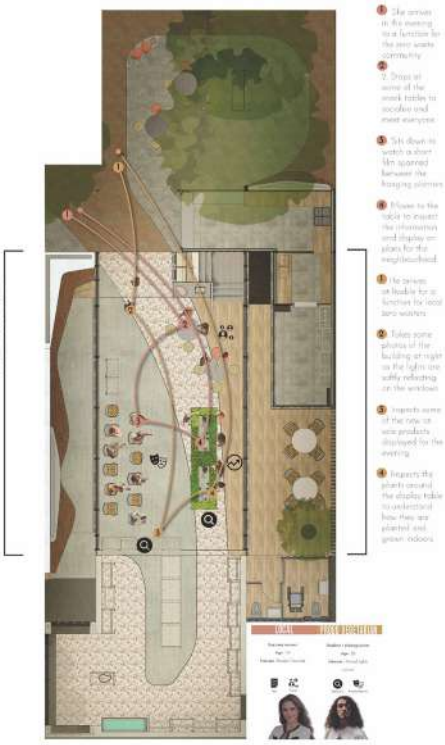
Morning rush scenario

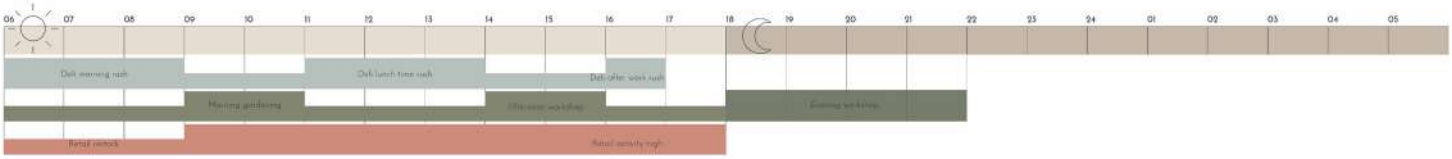


Gardening workshop scenario



Evening function scenario





Informative recycling unit

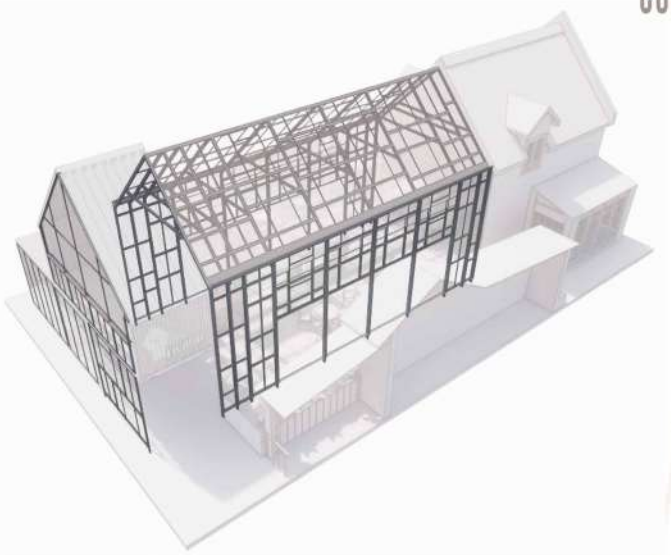
Gardening workshop

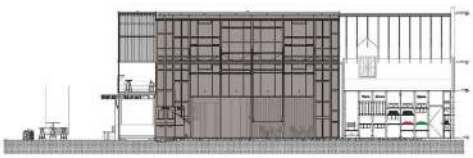
Water usage visualisation

LONG SECTION 1:20

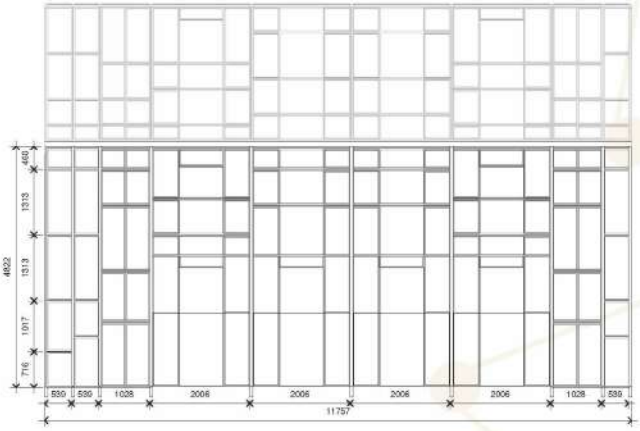

04 - TOP OF ROOF
8047
03 - LINE OF ROOF
4905
02 - FIRST
3120
00 - FFL
75
Packaging free
retail area
Pasta
Grains
Spices

STEEL STRUCTURE
COMPONENT A





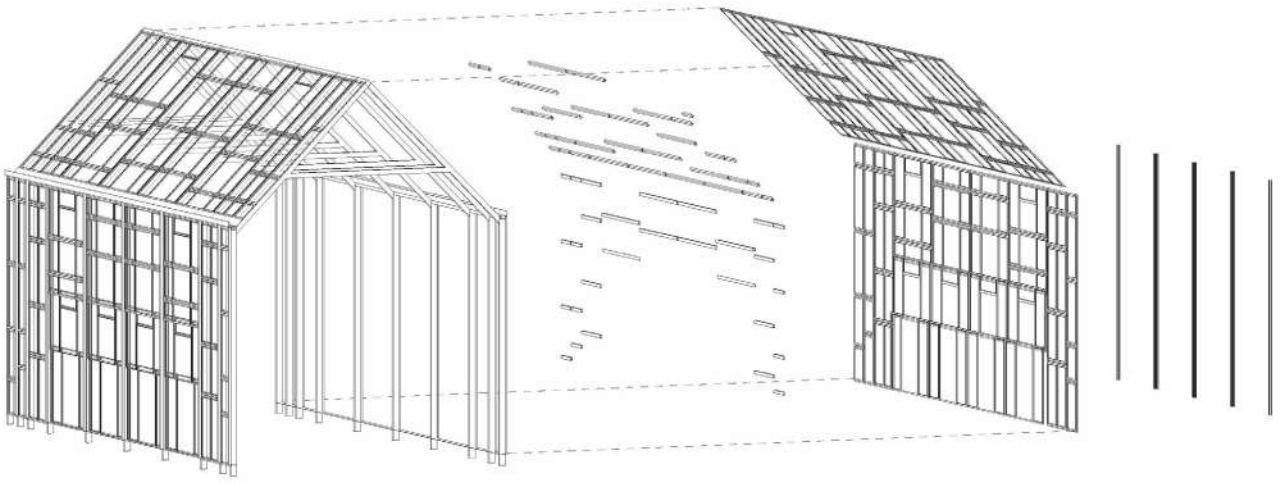
Elevation view, Scale 1:50
noting the steel member increments



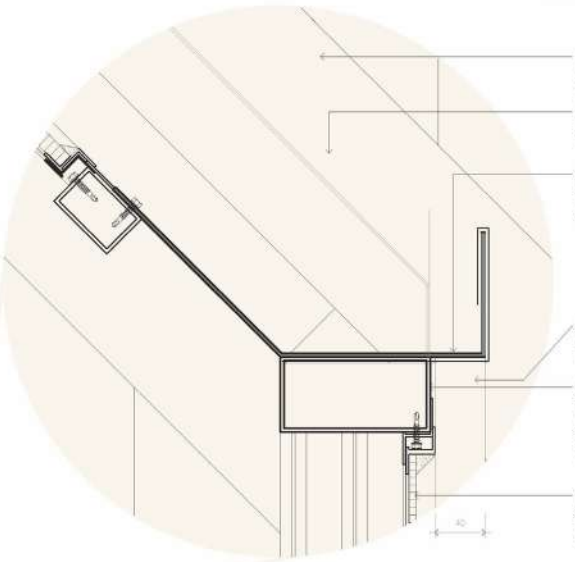
Glass comparison

Clear glass	VS	Double glazed	VS	Pairam solar control
• Clear		Colour • Clear		• Grey tint
• 0.87		Solar heat gain coefficient • 0.67		• 0.45
• 90%		Light transmittance • 78%		• 35%
• <1%		Haze • <1%		• 52%
• Standard glass		Comments • Improved but High solar gain		• Low light transmittance, but high haze balances it out

Exploded view, scale 1:50



Detail A1 -Gutter
Scale 1:2



Exising roof with existing roof tiles in the background

Formed steel flashing to close off the eves, in the background

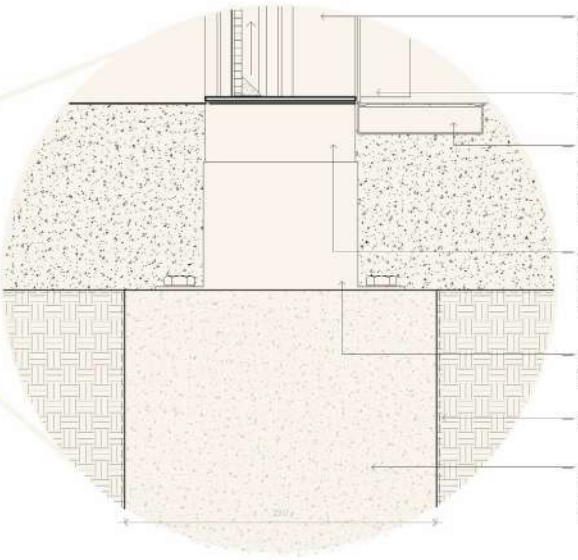
2mm Preformed steel plate gutter, finished in a black oxide finish, held in place by steel ties clasping over the edge

40x60mm Downpipe, finished in a black oxide finish, welded into gutter plate

60x120mm steel RHS frame, in a black oxide finish, welded to the steel portal frame structure, which is placed into a steel boot that is bolted into the pad foundation

6mm polycarbonate palram sheet, with a solar control finish, fixed into reclaimed steelframe window with putty

Detail A2 - Structural footing
Scale 1:2



60x120mm steel RHS frame, in a black oxide finish, welded to the steel portal frame structure , fixed into a pad foundation

40x60mm Downpipe, finished in a black oxide finish, welded into gutter plate

100x25mm aluminium floor drain,with top filter, draining water towards jojo tanks, placed in recess to be cast into concrete, together with drainge pipes for water harvesting

60x120mm Rectangular hollow section, post of the portal frame, black anodised finish,to be fixed nto pad foundation through a steel boot

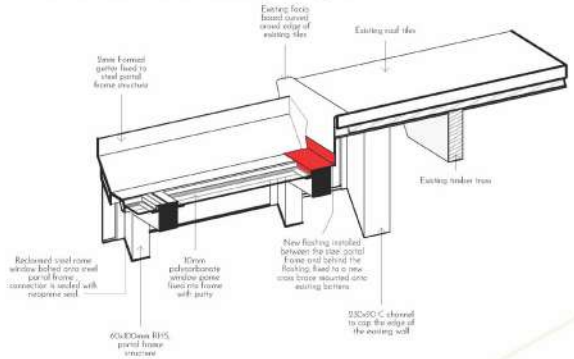
3mm steel boot bolted into concrete pad foundation with 150mm anchoring bolts

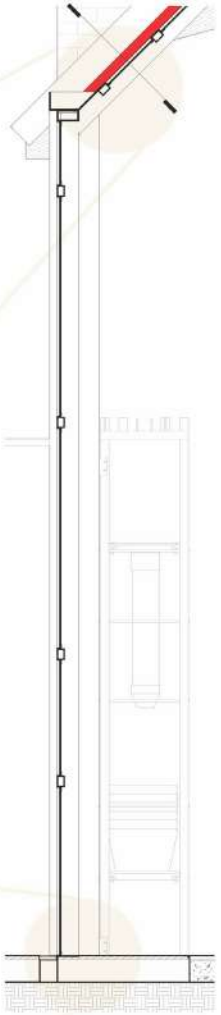
300 microns DPM

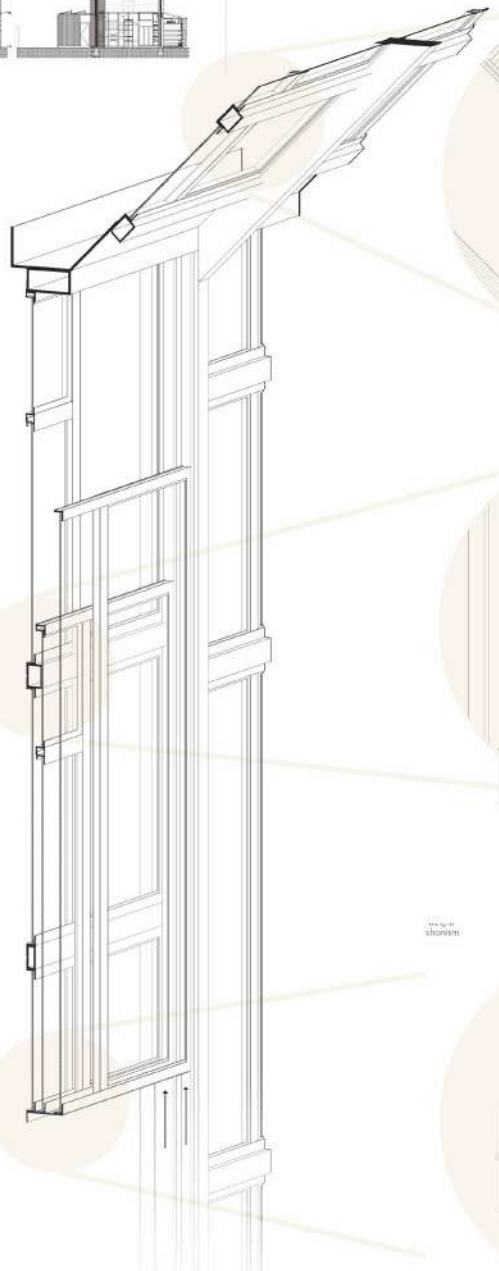
300x600mm concrete strip foundation, with a 250mm plinth antop to fix the various portal frame footings into

STRUCTURE & WINDOW CONNECTION DETAILS

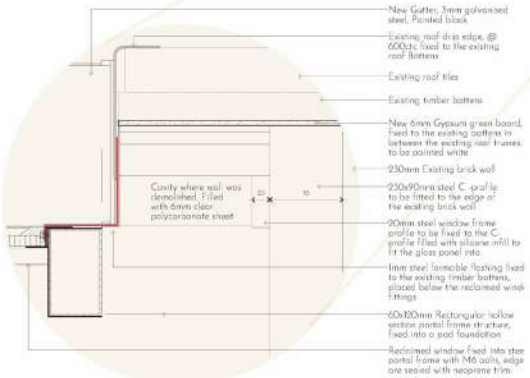
3D view of Portal frame meeting existing roof



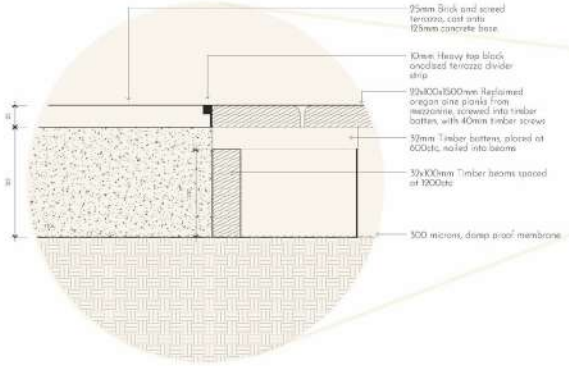




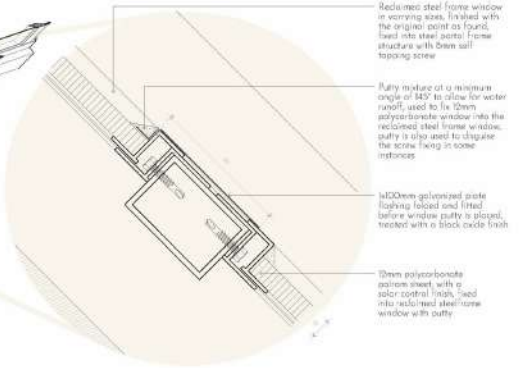
Detail A3 - Portal frame meets existing roof
Scale 1:2



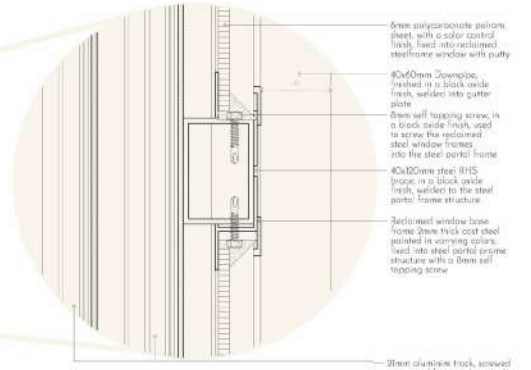
Detail A4 - Floor finish transition
Scale 1:2



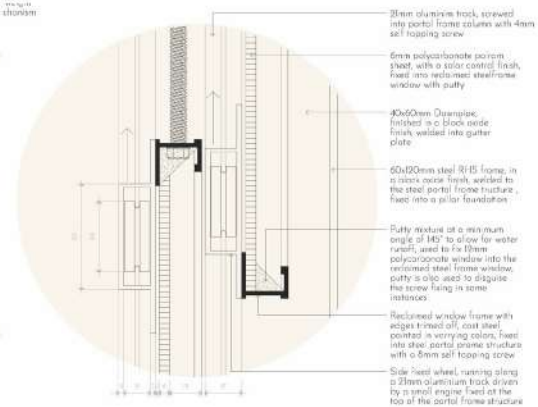
Detail A5 - Window joint to roof frame
Scale 1:1



Detail A6 - Window joint to steel frame
Scale 1:1



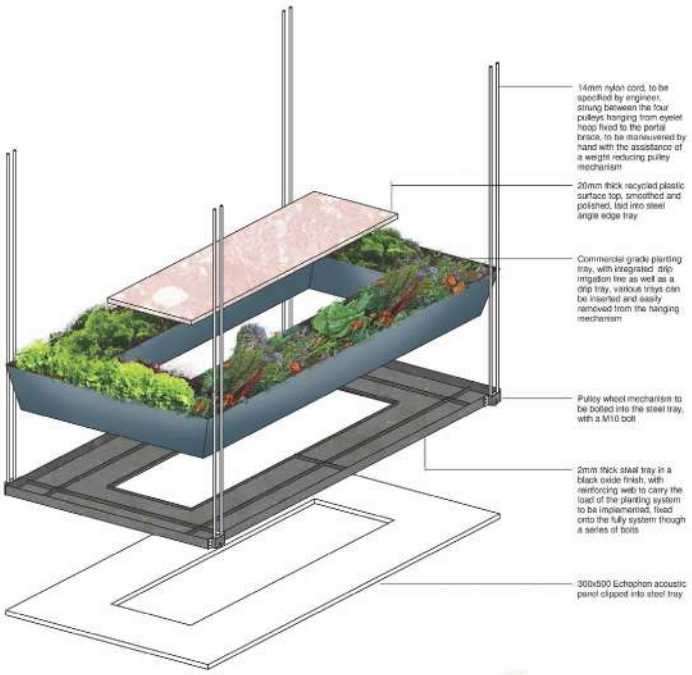
Detail A7 - Window track and wheels detail
Scale 1:1



CROSS SECTION LOOKING NORTH
SCALE 1:20

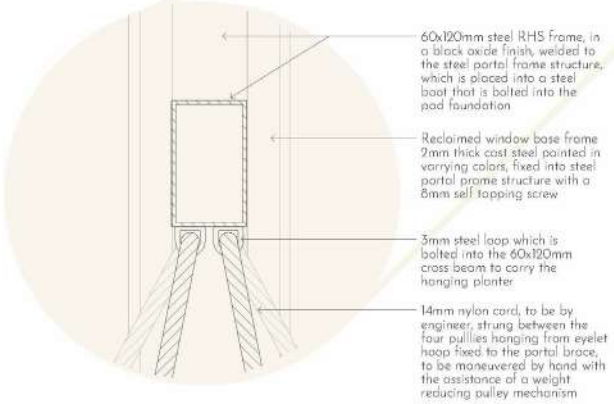
HANGING PLANTER DETAIL
COMPONENT B

Exploded 3D of the hanging planter

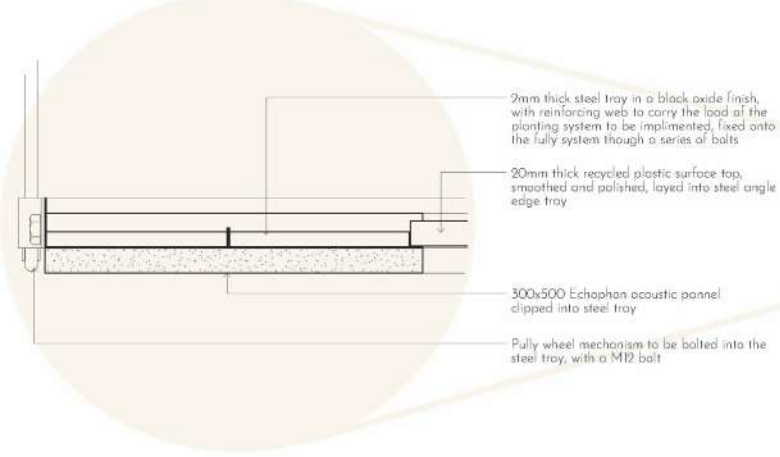


Planting range

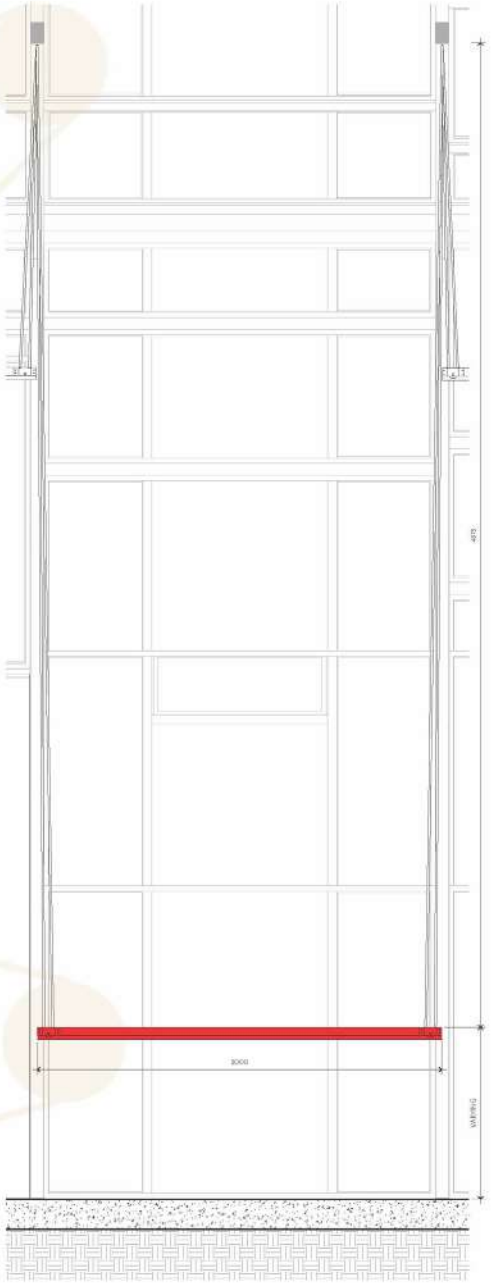
Detail B1 - Planter hook detail
Scale 1:2



Detail B2 - Planter tray detail
Scale 1:2



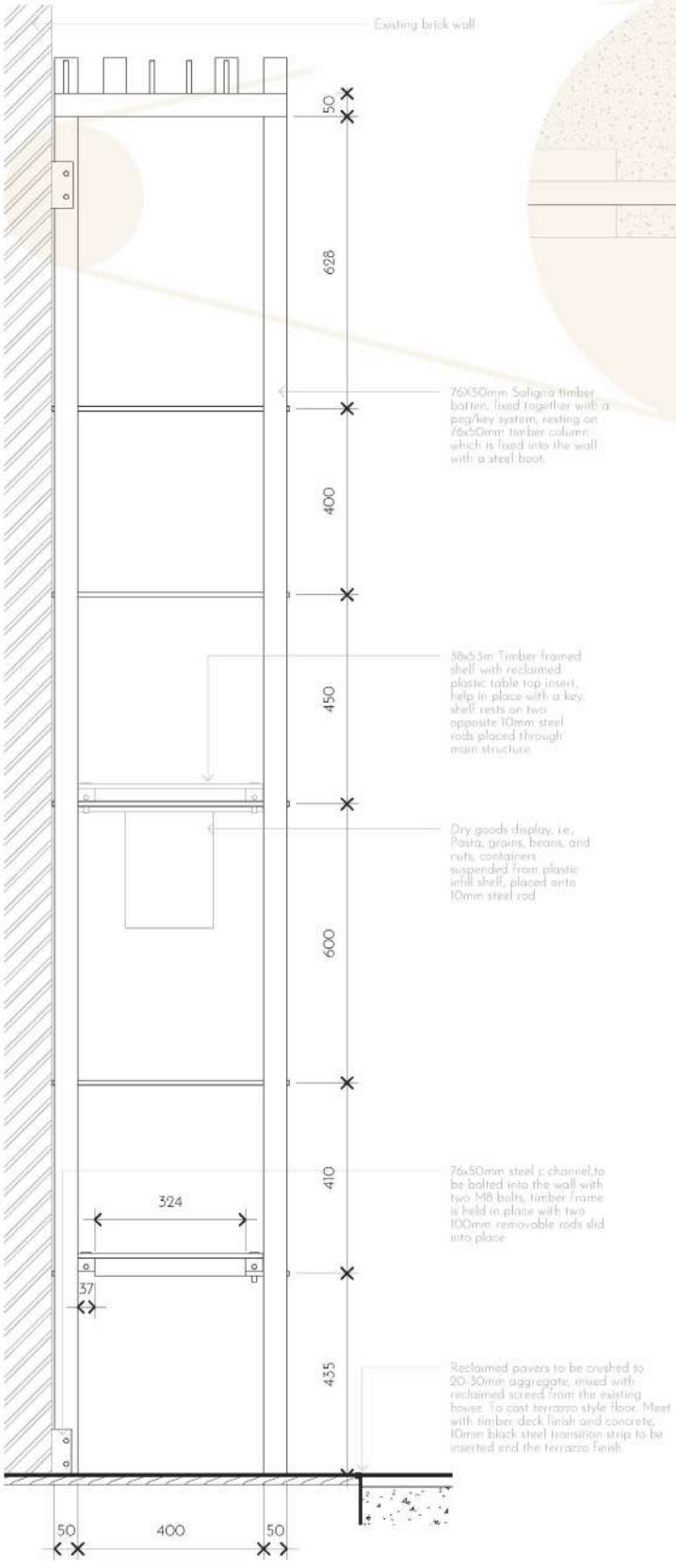
B3 - Elevation of hanging planter
Scale 1:10



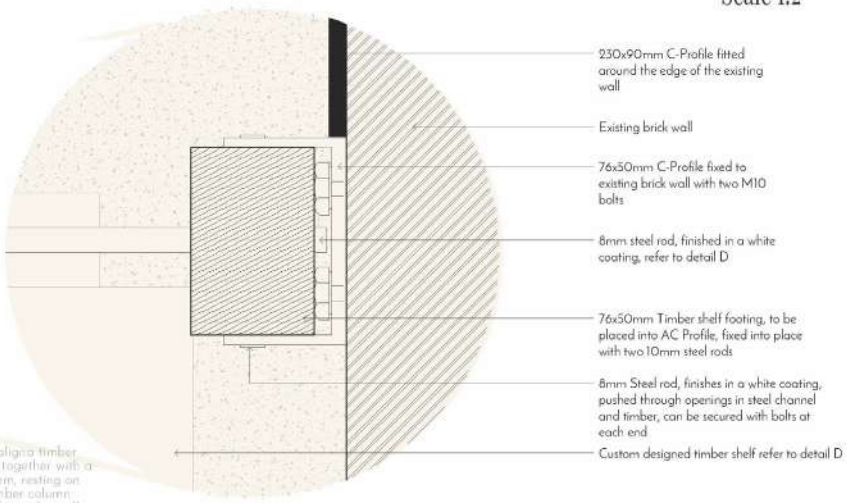
CROSS SECTION LOOKING SOUTH
SCALE 1:20

TIMBER SHELF STRUCTURE
COMPONENT C

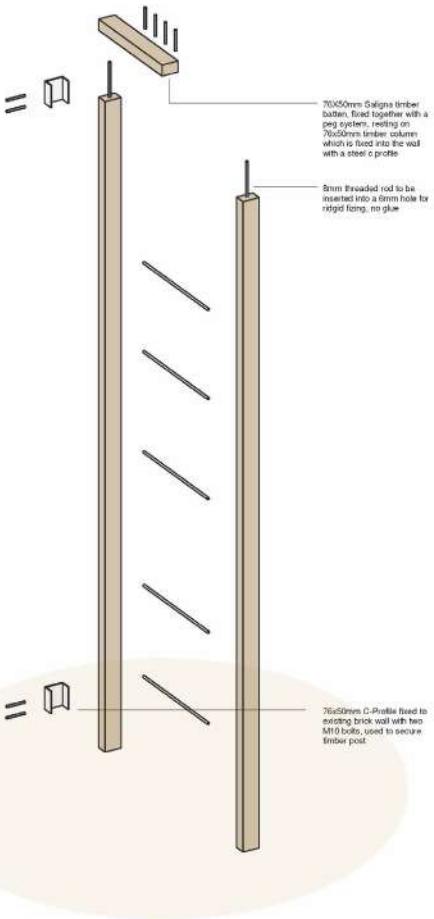
Detail C1 - Side view of shelf
Scale 1:5



Detail C2 - Wall bracket detail
Scale 1:2

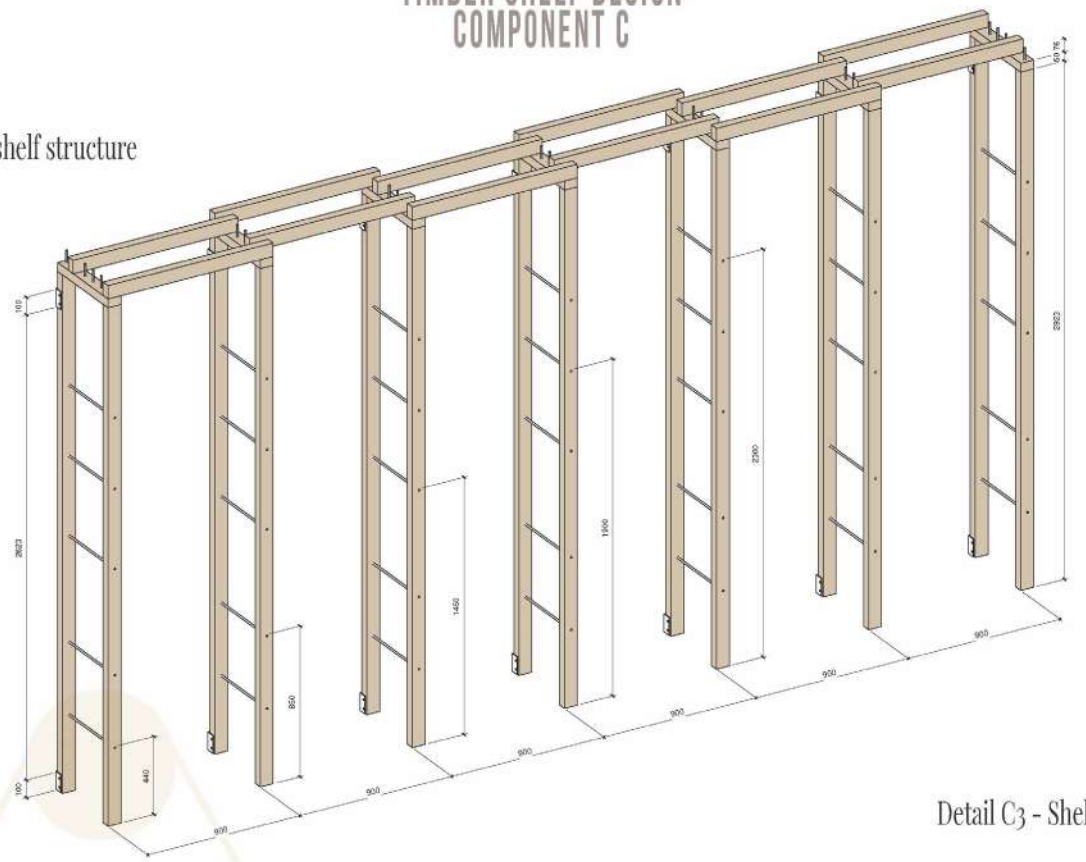


Exploded 3D of the shelf frame
Scale 1:10



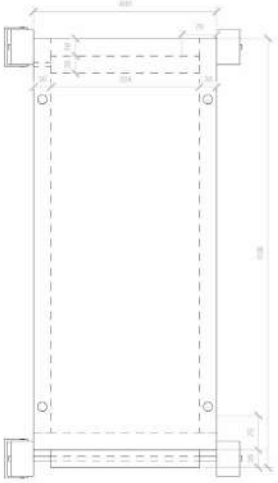
TIMBER SHELF DESIGN
COMPONENT C

3D view of shelf structure
Scale 1:10

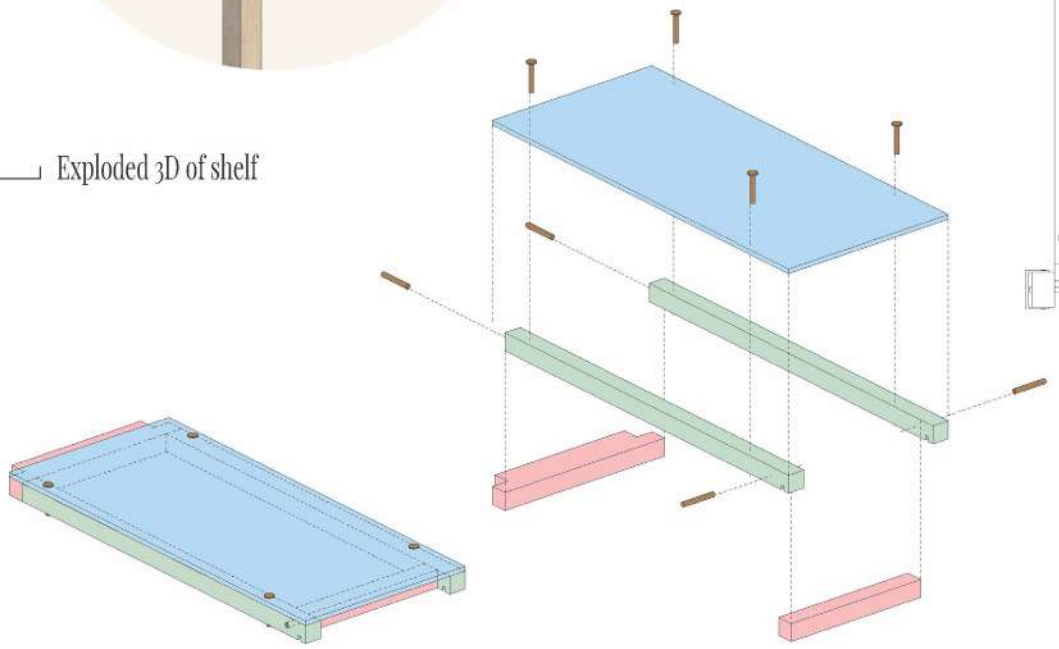


Detail C3 - Shelf side view
Scale 1:5

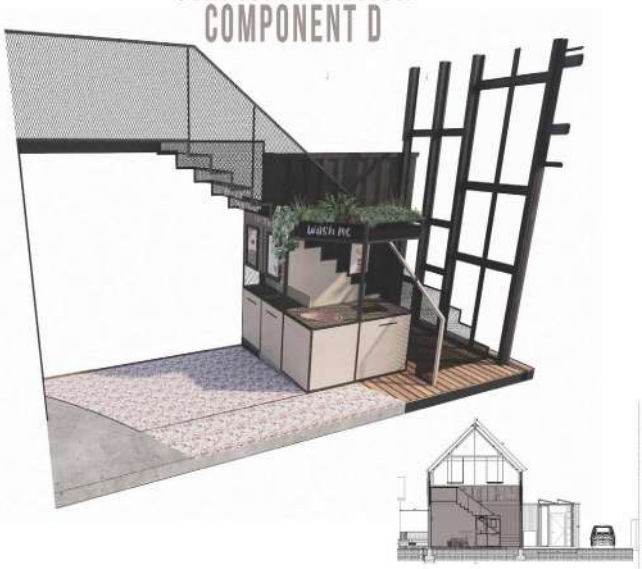
Detail C4 - Shelf top view
Scale 1:5



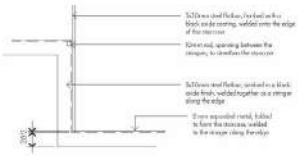
Exploded 3D of shelf



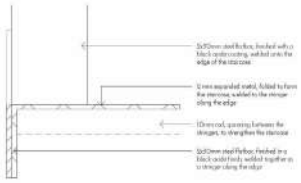
STAIRCASE DESIGN COMPONENT D



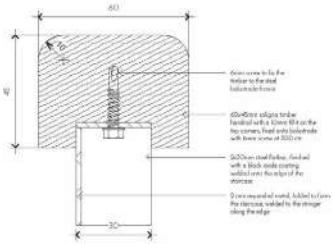
Detail D1 - Side detail of staircase
Scale 1:2



Detail D2 - front detail of staircase
Scale 1:1



Detail D3 - front detail of handrail
Scale 1:1



Examples of bin graphics
Bin design informed by concept tested at Washington university

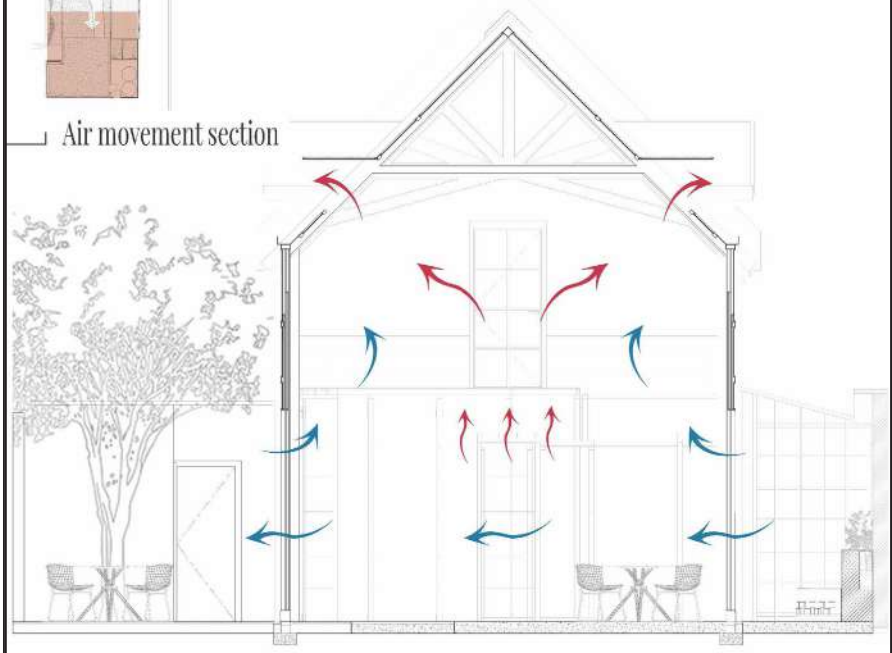
One of the landfill bin graphics

Notification user receives when recycling something

Illustration of graphic moving to the next example

AIR MOVEMENT, ENERGY AND WATER

Air movement section

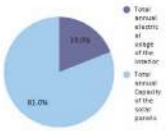


Electrical calculation

Quantity	Appliance/Loads	Watts	Hours per week	Watt-hours per week	Total watt usage per annum
2	Pressure pump	800	12	14400.00	748800
20	LED General lighting	11	96	21120.00	1098240
8	Spot Lights	12	96	9216.00	479232
13	Strip light, 1500mm	39	36	16380.00	851760
3	cash register	40	96	11520.00	599040
1	Computer	100	64	6400.00	332800
1	Dishwesher	500	12	6000.00	312000
8	Door motor	575	0.09	270.00	14040
1	Fridge	22	96	2084.00	107328
1	router/modem	30	64	1920.00	99840
1	alarm system	30	104	3120.00	162240
1	coffee machine	200	30	6000.00	312000
Highest power used at one time:				98410.00 Wh/week	5117320 Wh/Annum

Building:

Roof area (m²)	W/m² (solar panels	Average hours sun/week	Wh/week		Total annual capacity
45	150	62	418500		21762000
				16644880	surplus annu capacity

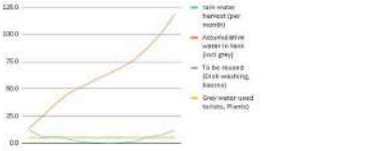


Water calculation

Rainwater	month	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annual sum	
	average precipitation/ mm														
Yield = P x A x C	(P) ave precipitation/m	0.15	0.09	0.09	0.05	0.01	0.01	0.00	0.01	0.02	0.07	0.10	0.15	0.79	
	(A) area of catchment	52	52	52	52	52	52	52	52	52	52	52	52		
	(C) run off coefficient	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85		
	Yield	12.04	6.87	8.41	3.98	1.07	0.55	0.23	0.47	1.75	5.83	7.88	11.73	67.24	m³
number of days	Water usage in litres per day	31	28	31	30	31	30	31	31	30	31	30	31		
Hand wash basin usage		150	4650	4200	4650	4500	4650	4500	4650	4650	4503	4500	4500	4650	54750 litres/w
Dish washing		50	930	840	930	900	930	900	930	930	900	930	900	930	10950 litres/w
															65.7 m³
water per day for toilets															
31		130	4030	3640	4030	3900	4030	3900	4030	4030	3900	4030	3900	4030	47430 grey
Water use for plant watering		15	465	420	465	450	465	450	465	465	450	465	450	465	5475 grey
															53 m³

Monthly balance of potable water use towards grey water	0	0	0	0	0	0	0	0	0	0	0	0	0 m³
accumulative balance in tank (m³)	18	39	61	66	67	82	88	74	61	93	106	123	m³

rain water harvest (per month)	12.0	5.0	8.4	4.0	1.0	0.5	0.2	0.5	1.7	5.8	7.7	11.7	For the whole building
Accumulative water in tank (incl grey)	13.1	24.0	38.0	46.0	53.6	58.1	63.8	68.8	77.1	66.1	101.3	118.4	
Grey water used toilets, Plants)	4.5	4.1	4.5	4.4	4.5	4.4	4.5	4.5	4.4	4.5	4.4	4.5	For the interior alone
To be reused (Dish washing, basins)	5.6	5.0	5.6	5.4	5.6	5.4	5.6	5.6	5.4	5.6	5.4	5.6	For the interior alone



Water harvesting system

Part 12e

APPENDIX E - CRIT PHOTOS


welcome
to


welcome
to
LIVABLE
FOOD AND DELI

Part 12f

APPENDIX F - GENERAL ETHICAL CLEARANCE

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

Reference number: EBIT/E11/2019 25 April 2019

Prof A Barker, Mr JN Prinsloo & Ms C Karusseit
Department Architecture
University of Pretoria
Pretoria
0028

Dear All

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Approval is granted for the application with reference number that appears above.

1. This means that the research project entitled "*Masters professional dissertation in architecture, landscape architecture and interior architecture*" has been approved as submitted. It is important to note what approval implies. This is expanded on in the points that follow.

2. This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Research Ethics Committee.

3. If action is taken beyond the approved application, approval is withdrawn automatically.

4. According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.

5. The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Prof JJ Hanekom
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

Part 12g

APPENDIX G - EDITOR CONFIRMATION

Nathan T Lowe
9 Lamborghini Avenue
Wierda Park
Centurion
0157
Tel: 076 362 7852
Email: nathanthomaslowe@gmail.com
20 October 2019

To whom it may concern

I hereby declare that I, Nathan Thomas Lowe, edited Chanté van der Merwe's dissertation entitled "Encouraging a zero waste lifestyle: Creating a spatial typology for packaging-free retail, and educating clients through experiential retail".

Regards

Nathan T Lowe

Language practitioner for the University of Pretoria's Language Unit

*Note: a title change happened in the same week as editing, therefor the title stated here is inaccurate.