EXPERIENTIAL RETAIL, A CATALYST TO ENCOURAGE SUSTAINABLE HABITS

-13 Firwood rd, Hazelwood, Pretoria -

Chanté van der Merwe
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

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**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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**University:** University of Pretoria

**Year:** 2019
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.
Abstract
Table of contents
Table of Figures
Part 0 - Introduction
  Background 10
  Problem statement 10
  Theoretical premise 11
  Aim 11
  Significance for the discipline 11
  Delineations and limitations 11
  Conclusion 11
  Methodology 12

Part 1 - Theory
  1.1) Background 14
  1.2) [Un]sustainability in retail 15
  1.3) Sustainability in retail 16
  1.4) Sustainable lifestyle 17
  1.5) The third generation of retail 18
  1.6) What is zero waste? 19

Part 2 - Context
  2.1) Where is the case study site located? 21
  2.2) Why Hazelwood? 21
  2.3) Conclusion 22
  2.5) [Sub]urban acupuncture 24
  2.6) Urban design principles 25

Part 3 - Site analysis
  3.1) General information 27

  3.2) Solar study 27
  3.3) Heritage 31
  3.4) GBCSA 33

Part 4 - Precedent
  4.2) Analysis process (Figure 35) 38
  4.3) Precedent Variety 41
  4.4) Findings 43
  4.5) Case study 45

Part 5 - Brand
  5.2) Brand identity 50

Part 6 - Programme
  6.1) An integrated program 52
  6.2) Experiential Retail 53
  6.4) User groups 55
  6.5) Time of use 57
  6.6) Workshop intention 58

Part 7a - Informants
  7.1) Introduction 60
  7.2) Theory informants 60
  7.3) Conceptual informants 62

Part 7b - Design
  7.5) Material selection strategy 65
  7.6) Iteration process 69
  7.7) Rendered floor plan 73
  7.8) Renders 74
  7.9) Section render 75
7.10) Spatial design development
7.11) Interior design development
7.12) Shelving design development
7.13) Structural design development
7.14) Window design development

Part 8 - Technical
8.1) Conceptual approach
8.2) Aluminium vs steel
8.3) Fixing methods
8.4) Steel treatment
8.5) Shipping container research
8.6) Steel window frame
8.7) Window track systems
8.8) Window glazing
8.9) The moving planter system
8.10) Planting depth
8.13) Water calculations
8.14) Electrical calculations
8.16) Ventilation diagram
8.17) On site water use
8.18) Accessibility
8.19) Staircase design
8.20) GBCSA Tool
8.21) Acoustics

Part 9 - Drawings
9.1) Site plan
9.2) Demolition plan
9.3) Floor plan
9.4) North-south section
9.4) East-west section 1
9.5) East-west section 2

Part 10 - Conclusion
9.1) Contribution
9.2) Recommendations
9.3) Conclusion

Part 11a - References
Part 11b - Image References

Part 12 - Appendices
Part 12a - Appendix A - Precedent coding
Part 12b - Appendix B - GBCSA tool
Part 12c - Appendix C - Acoustic tool
Part 12d - Appendix D - Exam presentation
Part 12e - Appendix E - Crit photos
Part 12f - Appendix F - General ethical clearance
Part 12g - Appendix G - Editor confirmation
## Table of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Top: Graphic illustration of the global waste problem and its impact, Drawn</td>
<td>10</td>
</tr>
<tr>
<td>02</td>
<td>Right: Graphic illustration of daily barriers we face, trying to reach a</td>
<td>11</td>
</tr>
<tr>
<td>03</td>
<td>Below: Graphic illustration of A possible green economy and sustainable retail, Drawn by author</td>
<td>11</td>
</tr>
<tr>
<td>04</td>
<td>Below: Diagram illustrating the barriers we experience.</td>
<td>15</td>
</tr>
<tr>
<td>05</td>
<td>Below: Diagram illustrating The hierarchy of sustainable food retailers (REF)</td>
<td>16</td>
</tr>
<tr>
<td>06</td>
<td>Right: Sustainable retail possible impact</td>
<td>17</td>
</tr>
<tr>
<td>07</td>
<td>Right: Diagram illustrating the various paradigms of retail (author, 2019)</td>
<td>18</td>
</tr>
<tr>
<td>08</td>
<td>Right: Diagram illustrating How a zero waste cycle works, Drawing by author (2019) adapted from circular economy diagrams</td>
<td>19</td>
</tr>
<tr>
<td>09</td>
<td>Below: Diagram illustrating The waste flow of SA in 2011 (Statistics South Africa, 2018)</td>
<td>19</td>
</tr>
<tr>
<td>10</td>
<td>Below: Sustainable retail summary diagram by author</td>
<td>20</td>
</tr>
<tr>
<td>11</td>
<td>Top: Map of Pretoria(east), (Googe earth, 2019)</td>
<td>21</td>
</tr>
<tr>
<td>12</td>
<td>Below: Map of Hazelwood illustrating the two possible sites</td>
<td>23</td>
</tr>
<tr>
<td>13</td>
<td>Left: First site of consideration - Site selected for intervention</td>
<td>23</td>
</tr>
<tr>
<td>14</td>
<td>Bottom: Second site of consideration - Not ideal</td>
<td>23</td>
</tr>
<tr>
<td>15</td>
<td>Above: Graphic illustrating Suburban acupuncture plan and its rippling effect (Author, 2019)</td>
<td>24</td>
</tr>
<tr>
<td>16</td>
<td>Right: Graphic visualizing the pillars of sustainability (UNEP 2016)</td>
<td>24</td>
</tr>
<tr>
<td>17</td>
<td>Above: Graphic illustrating the acupuncture steps to be taken towards a green suburb (Author, 2019)</td>
<td>25</td>
</tr>
<tr>
<td>18</td>
<td>Right: Graphic illustrating graphical summary of the authors design thinking at this point in the study (Author, 2019)</td>
<td>25</td>
</tr>
<tr>
<td>19</td>
<td>Bottom Left: Views to and from site (author, 2019)</td>
<td>28</td>
</tr>
<tr>
<td>20</td>
<td>Top Left: Site movement graphic (author, 2019)</td>
<td>28</td>
</tr>
<tr>
<td>21</td>
<td>Below: Close up of selected site</td>
<td>28</td>
</tr>
<tr>
<td>22</td>
<td>Top: Boundaries around site (author, 2019)</td>
<td>28</td>
</tr>
<tr>
<td>23</td>
<td>Above: Spatial dynamic and use (author, 2019)</td>
<td>28</td>
</tr>
<tr>
<td>24</td>
<td>Below: Solar study diagrams (author, 2019)</td>
<td>28</td>
</tr>
<tr>
<td>25</td>
<td>Top: Graphic illustrating all four sides of the existing building (photos, and graphic done by author, 2019)</td>
<td>29</td>
</tr>
<tr>
<td>26</td>
<td>Below: Google street view image of the front facade (Google street view, 2019)</td>
<td>29</td>
</tr>
<tr>
<td>27</td>
<td>Right: All images taken by the author (2019)</td>
<td>29</td>
</tr>
<tr>
<td>28</td>
<td>Below: Diagrammatic building model (author, 2019)</td>
<td>31</td>
</tr>
<tr>
<td>29</td>
<td>Right: Entire site axonometric (author, 2019)</td>
<td>31</td>
</tr>
<tr>
<td>30</td>
<td>Bottom right: Extruded axonometric of old house (author, 2019)</td>
<td>31</td>
</tr>
<tr>
<td>31</td>
<td>Above: Shipping container diagram, visualizing the various cut outs (author, 2019)</td>
<td>33</td>
</tr>
<tr>
<td>32</td>
<td>Bottom right: sustainable tool implementation guide (author, 2019)</td>
<td>33</td>
</tr>
<tr>
<td>33</td>
<td>Right: Graphic illustrating graphical summary of the authors design thinking at this point in the study (Author, 2019)</td>
<td>33</td>
</tr>
<tr>
<td>34</td>
<td>Left: List of Retailers that were analyzed, to be found in appendix A</td>
<td>36</td>
</tr>
<tr>
<td>35</td>
<td>Top Left: Step by step diagram of investigation process (Author, 2019)</td>
<td>38</td>
</tr>
<tr>
<td>36</td>
<td>Bottom left: Graphic representation of Precedent appendix (Author, 2019)</td>
<td>38</td>
</tr>
<tr>
<td>37</td>
<td>Right: Summary graphic of selection criteria (Author, 2019)</td>
<td>38</td>
</tr>
<tr>
<td>38</td>
<td>Right: Product categories divided into more specific groupings (author, 2019)</td>
<td>39</td>
</tr>
<tr>
<td>39</td>
<td>Next page: Summary of 12 brand archetypes (by author, 2019; Icons from, Noun Project, n.d.)</td>
<td>39</td>
</tr>
<tr>
<td>40</td>
<td>Right: Comparison graphic (Author, 2019)</td>
<td>41</td>
</tr>
<tr>
<td>41</td>
<td></td>
<td>41</td>
</tr>
</tbody>
</table>
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).
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.

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 integration 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.

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 were 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 & Unobtrusive 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: Unobtrusive 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 suit 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 towards 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 derived 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 analysis 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.
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).

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?
Goodwin et al (2008) states that the main driver of production is consumption, and we consume to fulfill 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 recognize 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.

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 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.
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”
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.
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.
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 allows 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.
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).

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.

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 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.
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).
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.

Public space
Recycling information center
Integrated recycling design
Sustainability as brand
Affordable grocery shopping
Green urban environment
Community workshop
Community cafe
Urban farming

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
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).
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

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)

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

Summer

Winter

Maximum solar exposure
Site Photos

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
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

The Western facade is recognized as the best kept facade, with the least amount of adaption. The window sills and decorative brick design around them, is significant due to the built style. The roof tiles, shape as well as interior timber structure, is to be retained, due to the unique character, and historical value of the tiles themselves being from the 50’s or even earlier.
4 cut shipping containers, not insulated

Building built near 1930’s with various modifications

- 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

Existing Site Layout

Building Assembly
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 known trinkets from their homes. A warm and inviting interior space

Reuse of surrounding objects
Reclaim objects from surrounds to form display units
Existing roof tiles to remain
IBR from shipping containers to be reused as structure
Existing roof trusses to remain, as significant element and design element
Seating donated from the community
Reuse all timber on site as to not let it go to waste
Craft surfaces from waste material on site and in the surrounds
Reuse all demolished brick on site to ensure no material goes to waste
Re-use the unique brick patterning on other objects throughout the site

Pre-graphic conceptual sketch

Design influence

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

- Recycled materials/low VOC
- Roof garden
- LED Lighting
- Acoustic treatment
- Visible systems as learning resource
- Daylighting for visual comfort/Thermal comfort
- Building management system with visible display to motivate and inform visitors
- Indoor plants for environmental quality
- Design for disassembly/Ergonomics
- Long lasting materials with an after use recycling plan

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
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.
Inclusion criteria

Alignment criteria

Considerations

Arc-

Col-

Mat-

Prod-

Disp-

Colourbrand

Dual
desk

Line
top

Billboard

Neutral
pallet

Light	wood

Bamboo

Concrete	floor

Beauty

Grocery

Gondola

Shelf	wall

Speaks
to

Indicates
towards

The

The

Raw

Whilst

Promoting

Materials

Sourced

Sustainable

Green

Encourages

Natural

Feeling

The

Intended

Natural	warm	and

Welcoming.

The

Strives
to

Improves

Better

More

Sustainable

Products

Markets

Taste

Health

Benefits

Green

Food

Design

Character

Language

Indoor	plants

Clear	brand	message

Educational

Community	initiatives

Wide
tspread	influence

Caregiver	-	Focused	-ont

Noted
-nt

Overhead
informative
graphic

Brand	archetype

2.

3a.

5.

6a.

6b.

6c.

7.

8.

9.

10.

NAME

and
code

Overall	interior	visual

First	visual	(ininctive)	analysis

Selection
criteria

Coding	of	interior

Summary	of
tcodes

Further	connotations

Visual	graphic	of	sustainability	of	the	product	(sold)	tompared	to
design

Product	
tContent

Eco

Design

Products

Product	Packaging

Reused/

Recycled

Assembly

Caregiver	-	Focused	on	helping

Noted
-nt	the

Overhead	informative
graphic

Brand	archetype

Example	of	a	precedent

Analysis

Process

Example	of	a	precedent
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 criteria.

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.
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
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.
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.

![Material use table](image1)

![Colour use table](image2)

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).

![Colour use table](image2)

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...
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).
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).
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 colourful and fun place that’s 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

Design influence

ZERO WASTE SIGNIFIERS
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 into (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.

**Maverick brand message**

*It’s 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**

**Brand Personality**

- **Primary brand archetype:** Maverick
  - 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

**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.
\[ \text{Liv· able} \]
- 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)
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.

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 an 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 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.
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.
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.
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.

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.

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.
**Protest Vegetarian**

**Student / photographer**

**Age:** 25

**Interest:** Animal rights activist

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**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.

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**Zero Waste Enthusiast**

**Yoga instructor**

**Age:** 42

**Interest:** Healthy future for her and her family

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**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.
6.5) Time of use

The intention with the interior space is to be a space that ebbs and flows 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)
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.
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.
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.
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 as 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
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 as 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 82 Right; Diagram illustrating the hierarchy of the materials, and their applications (Author, 2019)
### Design considerations

<table>
<thead>
<tr>
<th>MATERIAL NAME</th>
<th>FUNCTIONAL PURPOSE</th>
<th>PERMANENCE</th>
<th>MATERIAL ORIGIN</th>
<th>ACOUSTICS</th>
<th>TACTILITY</th>
<th>SPATIAL QUALITY</th>
<th>LIGHT REFLECTANCE</th>
<th>CONNOTATIONS AND PERCEPTIONS</th>
<th>APPROPRIATENESS 1-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reused plastic</td>
<td>Surface material, non structural</td>
<td>Does not decay, or biodegrade, however can become brittle with high levels of solar exposure</td>
<td>100% recycled material restricted through heat into a dense surface can be worked similarly to timber</td>
<td>.75 (20mm panel) 0.23</td>
<td>smooth, hard, temperate to touch</td>
<td>dependent on finish could be high reflectance as well as light sheen dependent on the finish (polished or smooth)</td>
<td></td>
<td>durable, affordable, bad for the environment</td>
<td>1</td>
</tr>
<tr>
<td>steel</td>
<td>Structurally strong, durable material</td>
<td>can be brittle and not easily, very susceptible to bugs</td>
<td>From landfill/ manufactured from iron ore</td>
<td>N/A</td>
<td>smooth to rough, dependent on the finish, cold to touch</td>
<td>high reflectance dependent on the finish</td>
<td>very little reflectance, dependent on the finish and colour, high gloss finish would have high reflectance other than that, the timber would have some light diffusion characteristics</td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td>reclaimed timber</td>
<td>Durable material, ideal for non structural use, seating, flooring screens</td>
<td>can be brittle and not easily, very susceptible to bugs</td>
<td>Found in landfill to be reused</td>
<td>0.18 *.6 if wood fiber</td>
<td>directional texture, smooth if painted/treated, warm</td>
<td>very little reflectance, dependent on the finish and colour, high gloss finish would have high reflectance other than that, the timber would have some light diffusion</td>
<td></td>
<td>warm, inexpensive, strong, practical</td>
<td>1.5</td>
</tr>
<tr>
<td>Certified timber</td>
<td>Structurally strong material, durable, ideal for frames and shopfitting</td>
<td>can not easily if not treated, very susceptible to bugs</td>
<td>Cut from a certified growing forest specifically aimed to reduce</td>
<td>0.18 *.6 if wood fiber</td>
<td>directional texture, smooth if painted/treated, warm</td>
<td>very little reflectance, dependent on the finish and colour, high gloss finish would have high reflectance other than that, the timber would have some light diffusion</td>
<td></td>
<td>warm, inexpensive, strong, practical</td>
<td>2</td>
</tr>
<tr>
<td>bamboo</td>
<td>Structurally strong material, furniture, framing and shopfitting</td>
<td>can not easily if not treated, very susceptible to bugs</td>
<td>Rapidly growing plant / 100% renewable source, high water usage</td>
<td>0.62</td>
<td>smooth, texture, roughness varies dependent on reworking process, cold to touch</td>
<td>medium sheen would reflect some light off the treated surface</td>
<td></td>
<td>warm, inexpensive, strong, practical, natural, exotic</td>
<td>2.5</td>
</tr>
</tbody>
</table>

### Design considerations

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<td>smooth, hard, temperate to touch</td>
<td>dependent on finish could be high reflectance as well as light sheen dependent on the finish (polished or smooth)</td>
<td></td>
<td>durable, affordable, bad for the environment</td>
<td>1.5</td>
</tr>
<tr>
<td>steel</td>
<td>Structurally strong, durable material, heavy, in weight and visually</td>
<td>very durable, can rust if not treated regularly, labour intensive fixing</td>
<td>From landfill/ manufactured from iron ore</td>
<td>N/A</td>
<td>smooth to rough, dependent on the finish, cold to touch</td>
<td>high reflectance dependent on the finish</td>
<td>very little reflectance, dependent on the finish and colour, high gloss finish would have high reflectance other than that, the timber would have some light diffusion characteristics</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>reclaimed timber</td>
<td>Durable material, ideal for non structural use, seating, flooring screens</td>
<td>can be brittle and not easily in wet areas, very susceptible to bugs, well known material very workable</td>
<td>Found in landfill to be reused</td>
<td>0.18 *.6 if wood fiber</td>
<td>directional texture, smooth if painted/treated, warm</td>
<td>very little reflectance, dependent on the finish and colour, high gloss finish would have high reflectance other than that, the timber would have some light diffusion characteristics</td>
<td></td>
<td>warm, inexpensive, kitchen, practical</td>
<td>5</td>
</tr>
<tr>
<td>Certified timber</td>
<td>Structurally strong material, durable, used for frames and shopfitting</td>
<td>can not easily if not treated in wet areas, very susceptible to bugs,</td>
<td>Cut from a certified growing forest specifically aimed to reduce</td>
<td>0.18 *.6 if wood fiber</td>
<td>directional texture, smooth if painted/treated, warm</td>
<td>very little reflectance, dependent on the finish and colour, high gloss finish would have high reflectance other than that, the timber would have some light diffusion</td>
<td></td>
<td>warm, inexpensive, strong, practical</td>
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<td>Rapidly growing plant / 100% renewable source, high water usage</td>
<td>0.62</td>
<td>smooth, texture, roughness varies dependent on reworking process, cold to touch</td>
<td>medium sheen would reflect some light off the treated surface</td>
<td></td>
<td>warm, inexpensive, strong, practical, natural, exotic</td>
<td>3.5</td>
</tr>
</tbody>
</table>
## Environmental considerations

<table>
<thead>
<tr>
<th>EMBODIED ENERGY</th>
<th>CHARACTERISTICS</th>
<th>REWORKING PROCESS</th>
<th>CONNECTIONS AND FIXINGS</th>
<th>OPPORTUNITY TO BE REUSED</th>
<th>APPROPRIATENESS 1-5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>80.9 - 89.5 MJ/kg</td>
<td>High melting point, high recyclability, inexpensive, currently recycled extensively</td>
<td>smelted and extruded into thin fibres which are felled together</td>
<td>woven, glued, nailed, screwed create a singular object, could be used as 3D printing material (loses translucence as it densifies the plastic)</td>
<td>2</td>
<td>2.5</td>
<td>3.5</td>
</tr>
<tr>
<td>58.1 - 62 MJ/kg</td>
<td>Very durable, high malleability</td>
<td>can be recycled with moderate impact, smelted and reformed, cut up and rewelded, reused as is</td>
<td>weld, bolt, used as singular object</td>
<td>3</td>
<td>4</td>
<td>6.5</td>
</tr>
<tr>
<td>10.5 - 11.6 MJ/kg</td>
<td>Strong material, can be used for various applications, can be reused, but is biodegradable (does however release its carbon content back into the atmosphere)</td>
<td>can be shredded for wood fiber, also cut and sawn to create new products, can be upcycled</td>
<td>nailed, screwed, glued, friction joint</td>
<td>3</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>10.5 - 11.6 MJ/kg</td>
<td>Strong material, can be used for various applications, can be reused, but is biodegradable (does however release its carbon content back into the atmosphere)</td>
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<td>nailed, screwed, glued, friction joint</td>
<td>3</td>
<td>3</td>
<td>5.5</td>
</tr>
<tr>
<td>1.7 - 2.58 MJ/kg</td>
<td>Not recyclable, but is biodegradable, very high compressive strength, very affordable due to rapid production</td>
<td>can be shredded into fibers to create a dense panel system, cannot be reused as structural integrity becomes questionable</td>
<td>Friction tee bolt joint, tie in joint, pin connection, butt joint</td>
<td>2</td>
<td>3</td>
<td>5.5</td>
</tr>
</tbody>
</table>

## Environmental considerations

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<td>smelted and extruded into thin fibres which are felled together</td>
<td>woven, glued, nailed, screwed create a singular object, could be used as 3D printing material (loses translucence as it densifies the plastic)</td>
<td>2</td>
<td>2.5</td>
<td>4.0</td>
</tr>
<tr>
<td>58.1 - 62 MJ/kg</td>
<td>Very durable, high malleability</td>
<td>can be recycled with moderate impact, smelted and reformed, cut up and rewelded, reused as is</td>
<td>weld, bolt, used as singular object</td>
<td>3</td>
<td>2.5</td>
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<td>can be shredded for wood fiber, also cut and sawn to create new products, can be upcycled</td>
<td>nailed, screwed, glued, friction joint</td>
<td>3</td>
<td>3.5</td>
<td>8.5</td>
</tr>
<tr>
<td>10.5 - 11.6 MJ/kg</td>
<td>Strong material, can be used for various applications, can be reused, but is biodegradable (does however release its carbon content back into the atmosphere)</td>
<td>can be shredded for wood fiber, also cut and sawn to create new products, can be upcycled</td>
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<td>3</td>
<td>3.5</td>
<td>9.0</td>
</tr>
<tr>
<td>1.7 - 2.58 MJ/kg</td>
<td>Not recyclable, but is biodegradable, very high compressive strength, very affordable due to rapid production</td>
<td>can be shredded into fibers to create a dense panel system, cannot be reused as structural integrity becomes questionable</td>
<td>Friction tee bolt joint, tie in joint, pin connection, butt joint</td>
<td>2</td>
<td>3</td>
<td>6.5</td>
</tr>
</tbody>
</table>
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.
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 challenges 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.

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

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

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

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.
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.

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

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

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

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.
The design driver for his iteration was the discovery of the surrounding demolitions. Using the reclaimed window panes brought a whole new 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.

**Iteration 3 19/09/2019**

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

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

**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.

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

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

Figure 99: Various sketches made throughout the year (Author, 2019)
7.11) Interior design development

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

7.12) Shelving design development
7.13) Structural design development

New & Existing Connection

7.14) Window design development
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 harder and can often be re-used with minor adaptations (Zahner 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). 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
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.

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).
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
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
windows. Various other methods were considered, such as horizontal 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 control 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).

<table>
<thead>
<tr>
<th>Clear glass</th>
<th>Double glazed</th>
<th>Palram solar control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour: Clear</td>
<td>Colour: Clear</td>
<td>Grey tint</td>
</tr>
<tr>
<td>Solar heat gain coefficient: 0.67</td>
<td>Solar heat gain coefficient: 0.45</td>
<td></td>
</tr>
<tr>
<td>Light transmittance: 78%</td>
<td>Light transmittance: 35%</td>
<td></td>
</tr>
<tr>
<td>Haze: &lt;1%</td>
<td>Haze: 52%</td>
<td></td>
</tr>
<tr>
<td>Comments: Improved but High solar gain</td>
<td>Comments: Low light transmittance, but high haze balances it out</td>
<td></td>
</tr>
</tbody>
</table>
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.
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
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.
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.

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.

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).
<table>
<thead>
<tr>
<th>Rainwater</th>
<th>month</th>
<th>jan</th>
<th>feb</th>
<th>mar</th>
<th>apr</th>
<th>may</th>
<th>jun</th>
<th>jul</th>
<th>aug</th>
<th>sep</th>
<th>oct</th>
<th>nov</th>
<th>dec</th>
<th>annual sum</th>
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<td>average precipitation/ mm</td>
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<td>0.08</td>
<td>0.08</td>
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<td>0.01</td>
<td>0.00</td>
<td>0.01</td>
<td>0.02</td>
<td>0.07</td>
<td>0.10</td>
<td>0.15</td>
<td>0.73</td>
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<tr>
<td>(P) ave precipitation/m</td>
<td>92</td>
<td>92</td>
<td>92</td>
<td>92</td>
<td>92</td>
<td>92</td>
<td>92</td>
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<td>92</td>
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<td>(A) area of catchment</td>
<td>0.85</td>
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<td>0.85</td>
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<td>(C) run off coefficient</td>
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<td>5.87</td>
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<tr>
<td>number of days</td>
<td>Water usage in liters per day</td>
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<td>Hand wash basin usage</td>
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<td>4650</td>
<td>4200</td>
<td>4650</td>
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<td>Water per day for toilets</td>
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<td></td>
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<td></td>
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<td>Water use for plant watering</td>
<td>66</td>
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<td></td>
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<tr>
<td>monthly balance in tank (m³)</td>
<td>18</td>
<td>29</td>
<td>41</td>
<td>50</td>
<td>57</td>
<td>62</td>
<td>68</td>
<td>74</td>
<td>81</td>
<td>93</td>
<td>106</td>
<td>123</td>
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<tr>
<td>rain water harvest (per month)</td>
<td>54760</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Accumulative water in tank (incl grey)</td>
<td>13.1</td>
<td>24.5</td>
<td>36.0</td>
<td>45.6</td>
<td>52.0</td>
<td>58.1</td>
<td>63.8</td>
<td>69.8</td>
<td>77.1</td>
<td>88.1</td>
<td>101.3</td>
<td>118.4</td>
<td></td>
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<td>Grey water used toilets, Plants</td>
<td>4.5</td>
<td>4.5</td>
<td>4.4</td>
<td>4.5</td>
<td>4.4</td>
<td>4.5</td>
<td>4.5</td>
<td>4.4</td>
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<td>4.4</td>
<td>4.4</td>
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<tr>
<td>To be reused (Dish washing, basins)</td>
<td>5.6</td>
<td>5.0</td>
<td>5.6</td>
<td>5.4</td>
<td>5.6</td>
<td>5.4</td>
<td>5.6</td>
<td>5.4</td>
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<td>5.4</td>
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<table>
<thead>
<tr>
<th>Quantit</th>
<th>Appliance/Loads</th>
<th>Watts</th>
<th>Hours per week</th>
<th>Watt-hours per week</th>
<th>Total watt usage per annum</th>
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<td>2</td>
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<td>14400.00</td>
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<td>LED General lighting</td>
<td>11</td>
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<td>21120.00</td>
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<td>Spot Lights</td>
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<td>96</td>
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<td>479232</td>
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<td>13</td>
<td>Strip light, 1500mm</td>
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<td>36</td>
<td>16380.00</td>
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<td>3</td>
<td>cash register</td>
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<td>11520.00</td>
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<td>Computer</td>
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<tr>
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<td>Dishwasher</td>
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<td>6000.00</td>
<td>312000</td>
</tr>
<tr>
<td>8</td>
<td>Door motor</td>
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<td>1</td>
<td>Fridge</td>
<td>22</td>
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<td>2064.00</td>
<td>107328</td>
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<tr>
<td>1</td>
<td>router/modem</td>
<td>30</td>
<td>64</td>
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<tr>
<td>1</td>
<td>alarm system</td>
<td>30</td>
<td>104</td>
<td>3120.00</td>
<td>162240</td>
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<tr>
<td>1</td>
<td>coffee machine</td>
<td>200</td>
<td>30</td>
<td>6000.00</td>
<td>312000</td>
</tr>
</tbody>
</table>

Highest power used at one time: 98410.00 Wh/w  5117320 Wh/Annum

Building:

<table>
<thead>
<tr>
<th>Roof area (m²)</th>
<th>W/m² (solar panels)</th>
<th>Avarage hours sun/week (for all)</th>
<th>Wh/week</th>
<th>Total annual capacity</th>
</tr>
</thead>
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<tr>
<td>45</td>
<td>150</td>
<td>62</td>
<td>418500</td>
<td>21762000</td>
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<tr>
<td>16644680</td>
<td>surplus annu. capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.
8.17) On site water use

As previously discussed 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.
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
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

DRAWINGS

The following part deals with the drawings and final design and tech stages of the project, illustrating the site and detailing of various objects.
A rendered site plan illustrating the final site design.
Original entrance
Staircase to above
Containers were moved from this location and not demolished
Site boundary line from road
Site boundary line from neighbouring property
Existing house footprint
Bicycle parking
One way Driveway
New development, mini residential complex, projected three story 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

Existing three story office building
Boundary line

Project site
Deli shop
Firwood ave

Boundary line
Site nr: R1/142

Entrance to site
Seating/social area

New development, mini residential complex, projected three story building

Bathroom

Deliery zone

Building line from neighbouring property

8165 3282 3501

102
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
Morning rush scenario

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.
5. She arrives at livable by bicycle after her kids leave for school.
6. Notices an advert for a workshop later the afternoon on making your own all purpose cleaner.
7. Starts her daily stock run with her own containers.
8. Weighs and pays without any assistance.
9. Greets a neighbourhood friend and heads back home.
Gardening workshop scenario

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.

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

1. She arrives in the evening to a function for the zero waste community.
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 plants 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.
Water usage visualisation
Elevation view, Scale 1:50 noting the steel member increments

Glass comparison

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Exploded view, scale 1:50

**Detail A1 - Gutter**

- Existing roof with existing roof tiles in the background
- Formed steel flashing to close off the eves, in the background
- 5mm Perforated steel plate gutter, fixed in a black oxide finish, held in place by steel ties clamping 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 steel frame window with putty

**Detail A2 - Structural footing**

- 60x120mm steel RHS frame, in a black oxide finish, welded to the steel portal frame structure, fixed into a pad foundation
- 300x500 Echophon acoustic panel
- 1000x400mm concrete strip foundation, with a 250mm plant setup to fix the various portal frame footings into
- 2mm Preformed steel plate
- 2mm Thick cast steel
- Formed steel flashing to roof tiles in the background
- 400micron DPM
- 1000mm anchoring bolts
**Detail A3 - Portal frame meets existing roof**

Scale 1:2

- **New Gutter, 3mm galvanised steel.** Painted black.
- **Existing roof trim edge.** @ 600mm; fixed to the existing roof Battens.
- **Existing roof tiles.**
- **Existing timber battens.**
- **New 6mm Gypsum green board.** Fixed to the existing battens in between the existing roof trusses. To be painted white.
- **230mm Existing brick wall.**
- **20mm steel window frame profile fixed to the C-Profile filled with silicone infill to fit the glass panel into.**
- **1mm steel formable flashing fixed to the existing timber battens, placed below the reclaimed window frames.**
- **60x100mm Rectangular hollow section portal frame structure, fixed into a pad foundation.**
- **Reclaimed window fixed into steel portal frame with M6 bolts, edge.**
- **Sealed with neoprene trim.**

---

**Detail A4 - Floor finish transition**

Scale 1:2

- **25mm Brick and screwed.**
- **25mm concrete base.**
- **10mm Heavy top black anodised terrazzo divider strip.**
- **220x100x1500mm Reclaimed oregon pine planks from mezzanine, screwed into timber battens, with 40mm timber screws.**
- **32x100mm Timber beams spaced at 1000mm.**
- **300 microns, damp proof membrane.**

---

**3D view of Portal frame meeting existing roof**
Detail A5 - Window joint to roof frame
Scale 1:1

Reclaimed steel frame window in varying sizes, finished with the original paint as found, held in place by steel ties in the 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.

10mm galvanized plate flushing folded and fitted to the window, treated with a black oxide finish.

10mm polycarbonate palram sheet with a solar control finish, fixed into reclaimed steel frame 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 steel frame 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 frame 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 varying colors, fixed into steel portal frame structure with a 8mm self tapping screw.

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

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

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

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

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

40x120mm steel RHS frame, in a black oxide finish, welded to the steel portal frame structure, 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 trimmed off, cast steel painted in varying colors, fixed into steel portal frame structure with a 8mm self tapping screw.

Side fixed wheel, running along a 21mm aluminium track driven by a small engine fitted at the top of the portal frame structure.
Exploded 3D of the hanging planter

**Detail B1 - Planter hook detail**
Scale 1:2

60x300mm 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.

Reclaimed window base frame 30mm thick cast steel painted in varying colors, fixed into steel portal frame structure with an M6 self tapping screw.

3mm steel loop which is bolted into the 60x300mm cross beam to carry the hanging planter.

14mm nylon cord, to be by engineer, strung between the four pulleys hanging from eyelet loop fixed to the portal brace, to be manoeuvred by hand with the assistance of a weight reducing pulley mechanism.

**Detail B2 - Planter tray detail**
Scale 1:2

2mm thick steel tray in a black oxide finish, with reinforcing web to carry the load of the planting system to be implemented, fixed onto the fully system through a series of bolts

20mm thick recycled plastic surface tray, smoothed and polished, layed into steel angle edge tray

300x600 Echophon acoustic panell clipped into steel tray

Fully wheel mechanism to be bolted into the steel tray, with a M12 bolt

---

**Planting range**

- Arugula
- Basil
- Peas
- Lettuce
- Oregano
- Radish
- Sage
- Thyme
- Mustard
- Rosemary
- Basil
- Chives
- Zucchini
- Radishes
- Garlic
- Mint
- Peppers
- Cucumber
- Spinach
- Tomatoes
- Parsley
- Sunflower
- Sage
- Sunflowers

---

**B3 - Elevation of hanging planter**
Scale 1:10

121
Dry goods display, i.e., Pasta, grains, beans, and nuts, containers suspended from plastic infill shelf, placed onto 10mm steel rod.

Reclaimed pavers to be crushed to 20-30mm aggregate, mixed with reclaimed screed from the existing house. To cast terrazzo style floor. Meet with timber deck finish and concrete, 10mm black steel transition strip to be inserted end the terrazzo finish.

76X50mm Saligna timber batten, fixed together with a peg/key system, resting on 76x50mm timber column which is fixed into the wall with a steel boot.

350x40mm C-section fixed around the edge of the existing wall.

76x50mm C-profile fixed to existing brick wall with two M8 bolts.

8mm steel rod, finished in a white coating, refer to detail D.

76x50mm Timber shelf footing, to be placed into AC Profile, fixed into place with two 10mm steel rods.

8mm Steel rod, finishes in a white coating, pushed through openings in steel channel and timber, can be secured with bolts at each end.

Custom designed timber shelf refer to detail D.

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

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#### Exploded 3D of Shelf

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#### Detail C3 - Shelf Side View
- Scale 1:5

#### Detail C4 - Shelf Top View
- Scale 1:5

---

**Notes:**
- 3D view of shelf structure
- Exploded 3D of shelf
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:

- Landfill
- Recycle
- Compost

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
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.
REFERENCES


Part 11b

IMAGE REFERENCES


Part 12a

APPENDIX A - PRECEDENT CODING
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<td>KAMIKATZ PUBLIC HOUSE</td>
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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.

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

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

Selection criteria

1. Commercial
2. Public access
3. Physical context
4. Contemporary
5. Conceived/ Intentional
6. Small scale production
7. Sustainable products
8. Sustainable design
9. Sustainable ethos
10. Intervention
11. Insertion
12. Local
13. Other
14. Design center
15. Alpha city
16. New
17. Renovation
18. Sophisticated
19. Value judgment
20. Utility

Reference data

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.

https://retaildesignblog.net/2014/03/03/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.

**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**
- 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.
- The colour scheme speaks to playful brand image.

**Mat - Material pallet, to identify material trends**
- Raw materiality encourages the natural feeling of the design.
-Whilst promoting green materials (sourced sustainably).

**Prod - Visible products, a broad idea of what is sold**
- 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.

**Disp - Types of displays used, which leads to the retail archetype**
- 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.

**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.

**Other considerations**
- Further connotations
- Other elements that are expected (personal opinion)
- 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.
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 is allusive to a certain personality that people could be drawn towards.

1. Reference data

2. Name and nr code

3a. Overall interior visual

3b. Other interior context image

4. Selection criteria

5. First visual (instinctive) analysis

6. Design center

7. Alpha city

8. Local

9. Other

10. Design center

11. Alpha city

12. New

13. Sophisticated

14. Utility
Brand design: The interior makes use of various different types, 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.

Other elements that are expected (personal opinion)

Indoor plants
Clear brand message
Educational
Community initiatives
Wide spread influence

Summary of codes
Further connotations

6a. Coding of interior

6b. Summary of codes

6c. Further connotations

6. Overall conclusions

7. Other elements that are expected (personal opinion)

8. Summary of noticed brand archetype

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

10. Other considerations

- Eco materials
- Recycled
- Assembly

Product content
Product Packaging
No Packaging

Design

Notes
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.
Interior design:
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.

Denotation

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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 overhead informative graphic
The interior gives off a fresh and healthy feeling, the exposed soffit and plain floors make it feel more like a typical green grocer. The brand is noticeable through the colouring and of course the large ligio light display. Overall the interior speaks to eco shopping but does not give the feeling of a welcoming/inviting space.
Interior design:
The interior design is 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 would draw the necessary attention, but doesn’t spark interest and excitement.

**Denotation**

<table>
<thead>
<tr>
<th>Arc - 1</th>
<th>Understated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arc - 2</td>
<td>Vitrine - Object (implied)</td>
</tr>
<tr>
<td>Arc - 3</td>
<td>Vitrine - Store</td>
</tr>
<tr>
<td>Arc - 4</td>
<td>Exaggerate</td>
</tr>
<tr>
<td>Arc - 5</td>
<td>White box</td>
</tr>
<tr>
<td>Col - 1</td>
<td>Green pop</td>
</tr>
<tr>
<td>Mat - 1</td>
<td>Reused pallets</td>
</tr>
<tr>
<td>Mat - 2</td>
<td>Epoxy floor</td>
</tr>
<tr>
<td>Prod - 1</td>
<td>Plant based grocery</td>
</tr>
<tr>
<td>Prod - 2</td>
<td>Grocery</td>
</tr>
<tr>
<td>Disp - 1</td>
<td>Gondola</td>
</tr>
<tr>
<td>Disp - 2</td>
<td>Shelf wall</td>
</tr>
</tbody>
</table>

**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.
Interior design:
The 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

Conclusion

Design

Products

Eco materials
Reused/Recycled
Assembly

No Product
No Packaging

No Product
No Packaging
The interior is spacious and seems well planned, which would make for a pleasant shopping experience. The natural wood 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.
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

| Arc - 1 | Understated |
| Arc - 2 | Line up |
| Col - 1 | Neutral pallet |
| Mat - 1 | Light wood (reused planed pallets) |
| Prod - 1 | Fresh produce |
| Prod - 2 | Dry products |
| Prod - 3 | Wet products |
| Disp - 1 | Gondola |
| Disp - 2 | Dispensers |

| Connotation |
| The brand is not visible other than the visual coloring of the interior |
| The organized dry products, create rhythm and simplicity |
| The neutrality speaks to the natural nature of the retail interior |
| The glass containers continue the sustainable message |

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 defined and differentiated. The interior has an elitist feel.
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 doesn't 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

<table>
<thead>
<tr>
<th>Arc - 1</th>
<th>Activate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arc - 2</td>
<td>Specimen</td>
</tr>
<tr>
<td>Arc - 3</td>
<td>Line up</td>
</tr>
<tr>
<td>Col - 1</td>
<td>Black accents</td>
</tr>
<tr>
<td>Mat - 1</td>
<td>Light timber</td>
</tr>
<tr>
<td>Mat - 2</td>
<td>Red facebrick</td>
</tr>
<tr>
<td>Mat - 3</td>
<td>White tiles</td>
</tr>
<tr>
<td>Prod - 1</td>
<td>Dry Products</td>
</tr>
<tr>
<td>Prod - 2</td>
<td>Wet products</td>
</tr>
<tr>
<td>Disp - 1</td>
<td>Dispensers</td>
</tr>
<tr>
<td>Disp - 2</td>
<td>Shelf wall</td>
</tr>
</tbody>
</table>

Connotation

- The brand name is featured throughout strengthening the identity.
- This form of display helps keep the design organized and easy to read.
- This colour accent helps with the sophisticated feel of the interior.
- A nod towards nature, without it being the only language.
- Speaks to the past, the steel and brick have a feeling of a bygone time.
- The tiles with the text seem playful and practical at the same time.
- These dispensers are made from enduring plastic.

---

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.
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 brand 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.

<table>
<thead>
<tr>
<th>Denotation</th>
<th>Connotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arc - 1 Understated</td>
<td>The logo type displays add brand character</td>
</tr>
<tr>
<td>Arc - 2 Harlequin</td>
<td>This together with the colour notes towards a playful aspect</td>
</tr>
<tr>
<td>Arc - 3 Vitrine-object (implied)</td>
<td>Gives clear and logical display of products</td>
</tr>
<tr>
<td>Arc - 4 line-up</td>
<td>The colours add playfulness and excitement to the interior</td>
</tr>
<tr>
<td>Col - 1 Colour pops, 50s inspired</td>
<td>The timber speaks to the natural aspect of a packaging free shop</td>
</tr>
<tr>
<td>Mat - 1 Black painted pressed wood</td>
<td>where the black and steel talk towards a certain sophistication</td>
</tr>
<tr>
<td>Mat - 2 Perforated steel sheet</td>
<td>Playfulness in the brand</td>
</tr>
<tr>
<td>Mat - 3 Marmoleum</td>
<td></td>
</tr>
<tr>
<td>Prod - 1 Dry products</td>
<td></td>
</tr>
<tr>
<td>Prod - 2 Wet products</td>
<td></td>
</tr>
<tr>
<td>Disp - 1 Table display</td>
<td></td>
</tr>
<tr>
<td>Disp - 2 Dispensers</td>
<td></td>
</tr>
</tbody>
</table>

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, the 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 identifiable. There's a lot of careful detailing that shows care and attention in the designed product, the whole stand disassembles into two flat pack pallets. The products are using plastic as their packaging however it is a sustainable recyclable sugarcane plastic.
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.

<table>
<thead>
<tr>
<th>Denotation</th>
<th>Connotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arc - 1</td>
<td>Repeat repeat</td>
</tr>
<tr>
<td>Arc - 2</td>
<td>Plinth</td>
</tr>
<tr>
<td>Arc - 3</td>
<td>Line up</td>
</tr>
<tr>
<td>Col - 1</td>
<td>White combined with natural elements</td>
</tr>
<tr>
<td>Col - 2</td>
<td>Colour pop</td>
</tr>
<tr>
<td>Mat - 1</td>
<td>Duco Supawood, Timber look HPL</td>
</tr>
<tr>
<td>Mat - 2</td>
<td>Straw carpet</td>
</tr>
<tr>
<td>Mat - 3</td>
<td>Detailing: steel, leather, brass</td>
</tr>
<tr>
<td>Prod - 1</td>
<td>Personal use</td>
</tr>
<tr>
<td>Prod - 2</td>
<td>Cleaning</td>
</tr>
<tr>
<td>Disp - 1</td>
<td>Grid Wall display</td>
</tr>
</tbody>
</table>

Conclusion

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 in the center pulling the focus to certain sections of the store as you move through.

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interior design</td>
</tr>
<tr>
<td>2. Commercial</td>
</tr>
<tr>
<td>3. Public access</td>
</tr>
<tr>
<td>4. Physical context</td>
</tr>
<tr>
<td>5. Contemporary</td>
</tr>
<tr>
<td>6. Conceived/ Intentional</td>
</tr>
<tr>
<td>7. Small scale production</td>
</tr>
<tr>
<td>8. Sustainable products</td>
</tr>
<tr>
<td>Sustainable design</td>
</tr>
<tr>
<td>Sustainable ethos</td>
</tr>
<tr>
<td>9. Intervention</td>
</tr>
<tr>
<td>Insertion</td>
</tr>
<tr>
<td>Installation</td>
</tr>
<tr>
<td>10. Local</td>
</tr>
<tr>
<td>Design center</td>
</tr>
<tr>
<td>Alpha city</td>
</tr>
<tr>
<td>11. New</td>
</tr>
<tr>
<td>Renovation</td>
</tr>
<tr>
<td>12. Sophisticated</td>
</tr>
<tr>
<td>13. Value judgment</td>
</tr>
<tr>
<td>Utility</td>
</tr>
</tbody>
</table>
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:
The brand is clear and well rounded especially through clever use of materials and using simple elements in 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

<table>
<thead>
<tr>
<th>Arc-1</th>
<th>Arc-2</th>
<th>Arc-3</th>
<th>Arc-4</th>
<th>Arc-5</th>
<th>Arc-6</th>
<th>Mat-1</th>
<th>Mat-2</th>
<th>Mat-3</th>
<th>Mat-4</th>
<th>Prod-1</th>
<th>Disp-1</th>
<th>Disp-2</th>
<th>Disp-3</th>
<th>Disp-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activated</td>
<td>Line up</td>
<td>Vitrine-Object (implied)</td>
<td>Duel desk</td>
<td>Specimen</td>
<td>Specimen</td>
<td>Subway tiles</td>
<td>Red face brick</td>
<td>OSB</td>
<td>Steel and wood detailing</td>
<td>Grocery</td>
<td>Table display</td>
<td>Dispensers</td>
<td>Grid wall display</td>
<td>Shelf wall display</td>
</tr>
</tbody>
</table>

### Connotation

- Noticeable through the brand logo name and font used throughout the space.
- 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.

### 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:
The brand is clear and well rounded especially through clever use of materials and using simple elements in 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.
The interior feels fresh alive and exciting the red colour pop has connotations to an increased appetite, and the patterns 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.

Nada; Retail - Products(grocer); Bei 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:
The 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.

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, the warm oranges and timber combined with the plants 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.
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:
The 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
Arc - 4 | Specimen (adapted to circular)
Col - 1 | Light Blue
Col - 2 | Colour pop orange
Mat - 1 | Light timber
Mat - 2 | Glass display containers
Prod - 1 | Dry products
Prod - 2 | Wet products
Disp - 1 | Containers
Disp - 2 | Table Display

The pendants ad spatiality to the top of the store taking the design up
Products are displayed in a different way, (inverted Vitrine-Object)
The colour is calming
The orange is exciting and inviting
The colors are brought together and neutralized by the timber
Reusable glass containers rather than dispensers are used

### 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
8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
    Renovation
12. Sophisticated
13. Value judgment
14. Utility
Understated
Vitrine - Object (implied)
Line up
Pink neon light
Neutral
Light timber
Concrete floor
White duco plinth
Beauty
Other (cleaning and misc)
Shelf wall
Table Display

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

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.
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 find.

---

<table>
<thead>
<tr>
<th>Considerations</th>
<th>Alignment criteria</th>
<th>Inclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Value judgment**
- **Sophisticated**
- **Renovation**
- **New**
- **Alpha city**
- **Other**
- **Local**
- **Installation**
- **Intervention**
- **Sustainable design**
- **Sustainable ethos**
- **Small scale production**
- **Conceived/Intentional**
- **Contemporary**
- **Commercial**
- **Public access**
- **Interior design**

|------------|------------------|---------------|--------|---------------|---------|---------|-----------------|-------------------|-----------------------|----------------------|------------------------|------------------------|-------------------|-------------------|----------------|-------------------|
Conclusion

Interior design: The interior space guides the user well and the objects aren’t 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.

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

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
The interior is very warm and inviting, almost feels like you’re walking into someone’s 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.
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 overhead 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.
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 won't know what you will find, the space is exciting and new to discover every time, the colour and the textures are inviting.

**Conclusion**

**Denotation**

<table>
<thead>
<tr>
<th>Arc-1</th>
<th>Colourbrand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arc-2</td>
<td>Wunderkammer</td>
</tr>
<tr>
<td>Arc-3</td>
<td>Line up</td>
</tr>
<tr>
<td>Col-1</td>
<td>Cobalt blue</td>
</tr>
<tr>
<td>Mat-1</td>
<td>Planed pallet wood</td>
</tr>
<tr>
<td>Mat-2</td>
<td>OSB</td>
</tr>
<tr>
<td>Mat-3</td>
<td>Straw</td>
</tr>
<tr>
<td>Prod-1</td>
<td>Dry products</td>
</tr>
<tr>
<td>Prod-2</td>
<td>Miscellaneous</td>
</tr>
<tr>
<td>Disp-1</td>
<td>Grid wall display</td>
</tr>
</tbody>
</table>

**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 go to 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 planned out to the t, the repetition and preciseness is uncanny, does not necessarily read as a food shop but rather a rare gem boutique.
Interior design:
The space feels intimidating and pure, there is no room for flexibility, 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 can't be sure what the store is selling.

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

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

### 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 speak to a purist design

Conclusion

**Interior design:** The space feels intimidating and pure, there is no room for flexibility, 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 cannot be sure what the store is selling.

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

**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 it’s being drowned out by the loud red and incredible height 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 brand is much more clear than the in-store brand, with use of colorful colors and bold texts to draw attention.
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 in 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 cheap 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 enticing. 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.
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

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

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
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.

| 1. | Interior design |
| 2. | Commercial |
| 3. | Public access |
| 4. | Physical context |
| 5. | Contemporary |
| 6. | Conceived/Intentional |
| 7. | Small scale production |
| 8. | Sustainable products |
|    | Sustainable design |
|    | Sustainable ethos |
| 9. | Intervention |
|    | Insertion |
|    | Installation |
| 10. | Local |
|    | Other |
|    | Design center |
|    | Alpha city |
| 11. | New |
|    | Renovation |
| 12. | Sophisticated |
| 13. | Value judgment |
| 14. | Utility |
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 get 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.
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 bit of kash 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.

Ijen Restaurant, Potato heads in house design team; Bali, Indonesia

1. Interior design
2. Commercial
3. Public access
4. Physical context
5. Contemporary
6. Conceived/ Intentional
7. Small scale production
8. Sustainable products
   Sustainable design
   Sustainable ethos
9. Intervention
   Insertion
   Installation
10. Local
    Other
    Design center
    Alpha city
11. New
12. Renovation
13. Sophisticated
14. Value judgment
15. Utility
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

<table>
<thead>
<tr>
<th>Arc - 1</th>
<th>Colourbrand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arc - 2</td>
<td>Dressed ceiling</td>
</tr>
<tr>
<td>Arc - 3</td>
<td>Line up</td>
</tr>
<tr>
<td>Arc - 4</td>
<td>Specimen</td>
</tr>
<tr>
<td>Col - 1</td>
<td>Blue brown patterns</td>
</tr>
<tr>
<td>Mat - 1</td>
<td>Light wood</td>
</tr>
<tr>
<td>Mat - 2</td>
<td>Concrete</td>
</tr>
<tr>
<td>Mat - 3</td>
<td>Recycled ocean plastic</td>
</tr>
<tr>
<td>Prod - 1</td>
<td>Fish</td>
</tr>
<tr>
<td>Disp - 1</td>
<td>Table display</td>
</tr>
</tbody>
</table>

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.

Kamikatz public house; Brewery; Hiroshi nakamura & NAP; Bali, Japan
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.

<table>
<thead>
<tr>
<th>Denotation</th>
<th>Connotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arc - 1 Understated</td>
<td>The associated bran is not visible in the retail interior</td>
</tr>
<tr>
<td>Arc - 2 Pendant play</td>
<td>The clever reuse of recycled items( bottles and windows) associations to sustainable reuse</td>
</tr>
<tr>
<td>Arc - 3 Wunderkamer</td>
<td>Visible systems, refer to educational side of sustainability</td>
</tr>
<tr>
<td>Arc - 4 Pompidou</td>
<td>A selection of natural materials, give the space a warm feeling</td>
</tr>
<tr>
<td>Col - 1 Natural</td>
<td></td>
</tr>
<tr>
<td>Mat - 1 Timber</td>
<td></td>
</tr>
<tr>
<td>Mat - 2 Glass</td>
<td></td>
</tr>
<tr>
<td>Prod - 1 Beer</td>
<td></td>
</tr>
<tr>
<td>Prod - 2 Wet products</td>
<td></td>
</tr>
<tr>
<td>Prod - 3 Dry products</td>
<td></td>
</tr>
<tr>
<td>Disp - 1 Shelf wall</td>
<td></td>
</tr>
<tr>
<td>Disp - 2 Table display</td>
<td></td>
</tr>
</tbody>
</table>

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.
Appendix B - GBCSA Tool
## Score Sheet
### Green Star SA - Interiors v1

<table>
<thead>
<tr>
<th>Credit</th>
<th>Credit Name</th>
<th>Aim of Credit</th>
<th>Points Available</th>
<th>Points Targeted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Category</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Int-Man-1</td>
<td><strong>Green Star SA Accredited Professional</strong></td>
<td>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.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Int-Man-2</td>
<td><strong>Commissioning &amp; Tuning</strong></td>
<td>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.</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Int-Man-3</td>
<td><strong>Occupant Users' Guide</strong></td>
<td>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.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Int-Man-4</td>
<td><strong>Environmental Management</strong></td>
<td>To encourage and recognise the adoption of a formal environmental management system in line with established guidelines during construction.</td>
<td>1.5</td>
<td>0</td>
</tr>
<tr>
<td>Int-Man-5</td>
<td><strong>Construction Waste Management</strong></td>
<td>To recognise and encourage management practices that minimise the amount of demolition and construction waste going to disposal.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Int-Man-6</td>
<td><strong>Work space efficiency</strong></td>
<td>To recognise the design of workspaces that provide spatial efficiency and improve productivity and occupant performance.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Int-Man-7</td>
<td><strong>Green Lease</strong></td>
<td>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.</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Int-Man-8</td>
<td><strong>Learning Resources</strong></td>
<td>To encourage and recognise sustainability initiatives implemented in the development as learning resources for building users and visitors</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Management credits</td>
<td></td>
<td></td>
<td>12.5</td>
<td>8</td>
</tr>
</tbody>
</table>

### Indoor Environmental Quality Category

<table>
<thead>
<tr>
<th>Credit</th>
<th>Credit Name</th>
<th>Aim of Credit</th>
<th>Points Available</th>
<th>Points Targeted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int-I EQ-1</td>
<td><strong>Quality of Internal Air</strong></td>
<td>To encourage and recognise projects that provide high quality air to occupants.</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Int-I EQ-2</td>
<td><strong>Thermal Comfort</strong></td>
<td>To encourage and recognise fitouts that achieve a high level of thermal comfort.</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Int-I EQ-3</td>
<td><strong>Lighting Comfort</strong></td>
<td>To encourage, recognise and reward well-lit spaces that provide appropriate levels of lighting comfort to occupants.</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Int-I EQ-4</td>
<td><strong>Visual Comfort</strong></td>
<td>To recognise the delivery of well daylit spaces that provide high levels of visual comfort and views to fit-out occupants.</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Int-I EQ-5</td>
<td><strong>Acoustic Comfort</strong></td>
<td>To encourage and recognise buildings that are designed to provide appropriate acoustic qualities to enable the functionality of the space.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Int-I EQ-6</td>
<td><strong>Reduced Exposure to Air Pollutants</strong></td>
<td>To recognise projects that safeguard occupant health through the reduction in internal air pollutant levels.</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Int-I EQ-7</td>
<td><strong>Mould Prevention</strong></td>
<td>To encourage and recognise the design of services that eliminates the risk of mould growth and its associated detrimental impact on occupant health.</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Int-I EQ-8</td>
<td><strong>Ergonomics</strong></td>
<td>To recognise the choice of equipment and design of spaces that promotes wellbeing, efficiency and effectiveness</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Int-I EQ-9</td>
<td><strong>Indoor Plants</strong></td>
<td>To encourage and recognise the installation of indoor plants that improve indoor environment quality and also provides occupants with a connection to nature.</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Indoor Environmental Quality credits</td>
<td></td>
<td></td>
<td>23</td>
<td>20</td>
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</tbody>
</table>

### Energy Category

<table>
<thead>
<tr>
<th>Credit</th>
<th>Credit Name</th>
<th>Aim of Credit</th>
<th>Points Available</th>
<th>Points Targeted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int-E NE-1</td>
<td><strong>Greenhouse Gas Emissions</strong></td>
<td>To encourage and recognise projects that minimise the greenhouse gas emissions associated with tenant fit outs.</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>Int-E NE-2</td>
<td><strong>Electrical Sub-metering</strong></td>
<td>To encourage and recognise the installation of electrical energy sub-metering to facilitate on-going management of electrical energy consumption.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Energy credits</td>
<td></td>
<td></td>
<td>14</td>
<td>9</td>
</tr>
</tbody>
</table>

### Transport Category

<table>
<thead>
<tr>
<th>Credit</th>
<th>Credit Name</th>
<th>Aim of Credit</th>
<th>Points Available</th>
<th>Points Targeted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int-Tra-1</td>
<td><strong>Commuting Mass Transport</strong></td>
<td>To encourage and recognise developments that select a site near public transport and facilitate the use of mass transport.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Int-Tra-2</td>
<td>Local connectivity</td>
<td>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.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Int-Tra-3</td>
<td>Alternative Transport</td>
<td>To encourage and recognise projects that promote and facilitate the use of alternative modes of transport over the use of private cars.</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Transport credits</td>
<td></td>
<td></td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Int-Wat-1</td>
<td>Potable Water</td>
<td>To recognise projects that minimise potable water consumption</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Int-Wat-2</td>
<td>Water Sub-metering</td>
<td>To encourage and recognise the installation of sub-metering to facilitate on-going management of water consumption</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Water credits</td>
<td></td>
<td></td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Int-Mat-1</td>
<td>Operational Waste Management</td>
<td>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.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Int-Mat-2</td>
<td>Furniture</td>
<td>To recognise the selection of fit-out furniture that has a reduced environmental impact when compared to available alternatives.</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Int-Mat-3</td>
<td>Assemblies</td>
<td>To recognise the selection of fit-out assemblies that have a reduced environmental impact when compared to available alternatives.</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Int-Mat-4</td>
<td>Flooring</td>
<td>To recognise the selection of flooring that has a reduced environmental impact when compared to available alternatives.</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Int-Mat-5</td>
<td>Wall coverings</td>
<td>To recognise the selection of wall coverings that have a reduced environmental impact when compared to available alternatives.</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Int-Mat-6</td>
<td>Local Sourcing</td>
<td>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.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Int-Mat-7</td>
<td>Sundries Materials Sourcing</td>
<td>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.</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Materials credits</td>
<td></td>
<td></td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>Int-Eco-1</td>
<td>Site selection</td>
<td>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.</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Land use and Ecology credits</td>
<td></td>
<td></td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Int-Emi-1</td>
<td>Impacts from refrigerants and insulants</td>
<td>To encourage and recognise developments that minimise light pollution into the night sky.</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Int-Emi-2</td>
<td>Light Pollution</td>
<td>To encourage and recognise the avoidance of substances that contribute to the deterioration and long-term alteration of the Earth’s atmosphere.</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Emissions credits</td>
<td></td>
<td></td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Int-Inn-1</td>
<td>Innovative Strategies &amp; Technologies</td>
<td>To encourage and recognise pioneering initiatives in sustainable design, process or advocacy.</td>
<td></td>
<td></td>
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<tr>
<td>Int-Inn-2</td>
<td>Exceeding Green Star SA Benchmarks</td>
<td>To encourage and recognise projects that achieve environmental benefits in excess of the current Green Star SA benchmarks.</td>
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<td>Int-Inn-3</td>
<td>Environmental Design Initiatives</td>
<td>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.</td>
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<td>Innovation credits</td>
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**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
APPENDIX C - ACOUSTIC TOOL
Results and Ecophon recommendation

<table>
<thead>
<tr>
<th>Reverberation time T20 (s)</th>
<th>Speech clarity C50 (dB)</th>
<th>Strength G (dB)</th>
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<tr>
<td>Sabine calculation 0.50</td>
<td>Sabine calculation 4.71</td>
<td>Sabine calculation 21.46</td>
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<tr>
<td>Ecophon recommendation ≤ 0.5</td>
<td>Ecophon recommendation ≥ 6</td>
<td>Ecophon recommendation ≤ 19</td>
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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)
Speech clarity C50 (dB)

![Graph showing speech clarity C50 (dB)]

- Sabine calculation
- RAC calculation

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>125 Hz</th>
<th>250 Hz</th>
<th>500 Hz</th>
<th>1000 Hz</th>
<th>2000 Hz</th>
<th>4000 Hz</th>
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Strength G (dB)

![Graph showing strength G (dB)]

- Sabine calculation
- RAC calculation

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<th>Frequency (Hz)</th>
<th>125 Hz</th>
<th>250 Hz</th>
<th>500 Hz</th>
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Your input data

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<td>Furnishing</td>
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Room dimensions

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<tr>
<td>Width</td>
<td>5.53 m</td>
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<tr>
<td>Height up to suspended ceiling</td>
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<td>Total wall area</td>
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<td>Soffit area</td>
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Part 12d

APPENDIX D - EXAM PRESENTATION
EXPERIENTIAL RETAIL, A CATALYST TO ENCOURAGE SUSTAINABLE HABITS
-13 Finwood rd, Hazelwood, Pretoria -

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 community?

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

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

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

Background & problem statement

Hazelwood, Pretoria

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

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.

EXPERIENCE, A CATALYST TO ENCOURAGE SUSTAINABLE HABITS
-13 Finwood rd, Hazelwood, Pretoria -

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

Theme by (Moloney, Moloney, Van Cleemput, 2018)

The graphic illustrates the various generations that retail has gone through and their impact/intentions. Peterson (2015) also has a unique argument in this document as she highlights the use of adaptive reuse in line with these retail generations.

Currently in Generation 3

Client knows what is best for them

Heritage is reused for sustainability and historical continuity

Adaptive reuse - Creates possibility for experience triggers

Space should have one main function supported by multiple others

Variety of activities

Monofunctional spaces don’t work. Experience improves when there are multiple experiences available.

Use of retail space

55% People like 66% Desiring 45% Appreciating 24% Existing 44% Unlikely 16% Take a photo 20% Something new...
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.

1a. The main goal is to divert as much waste away from landfill as possible.
1b. Zero waste is not a linear, but rather a journey, currently defined as 90% diverted waste.
1c. 6 concepts that embody zero waste: Rethink > Reduce > Reuse > Recover/Recycle > 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 amount of waste compared to the eventual recycled content.

The majority of the waste in our homes and surroundings are from product packaging. This could be solved at a design level within a retail brand, reducing packaging would reduce the urgency of recycling, and improve the circularity of our system.

Why don’t South Africans recycle (specifically in urban areas)?

In conclusion...

There are various barriers that prevent the everyday user from living a more sustainable life. Based on theory this is a summary of the aspects that prevent people from changing their lifestyles.

In order for us to move towards a green economy we must make the lifestyle changes necessary. A key in this 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

- Basics: Lentils, Super Salt, Milk, Sugar
- Flour
- White rice, Brown rice
- Olives, Cucumbers, Figs
- Spices
- Fresh fruits and veg
- Cleaning products
- Seeds, Vinegar
- Olive oil
- Pasta

All of the products are 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 to 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 socks.

Why should you buy there

1. Better for the environment
2. Supporting local shops
3. Building a community
4. Buying only what you need
5. Less waste is needed
PRECEDENT ANALYSIS

Kamikatz public house

This precedent proved significant as it employed 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.

Brand archetype

The brand archetype is identified as everyday, 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 on wood and discarded created a sense of belonging in the community. The design feels warm and welcoming. These elements should be considered as important inclusion in a community-based sustainable design. However, the question is posed does it need to look antique?

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 the graphics, and patterns. This creates a clear recognizable identity. However, the brand is not needed to be integrated into the output (positive less wasteful as evasible).

Brand archetype

Identified for this design was three distinct brand archetypes. The medium 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 mobility of the objects allow for great flexibility in the space. The sense of natural materials and plants throughout ensure the intention of fresh is kept clear and visual throughout the design.
**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.

- Light colored timber
- Colour pop (foot traffic)
- Food chippers
- Other timber and natural material
- Underneath brand visuals
- Repeat repeat
- Basket shelf displays
- Table top displays
- Raised pallets
- Ground Conveniences store (not just green graced)
- 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 colorful and fun place that exciting and existing at the same time, a branded retail interior that works and tells the sustainable "image" - as per precedent.
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.

Why Hazelwood Suburb?

Hazelwood was selected as a case study site due to its current condition, a suburban neighborhood that is undergoing change. Therefore this type of scheme could be implemented in another neighborhood that is undergoing similar stresses.

Site requirements:

- Middle class suburb
  - Bigger consumers and wasteful users
  - Bigger contributors to waste
- Active economy
  - Necessity for successful retail
  - Required for 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 outside interest, more feet
  - To spread the brand ideals

Commercialization of Hazelwood

3b Current Land use (Hazelwood)

3c Proposed Zoning (Hazelwood)

It is crucial to understand the developmental change in the Hazelwood area. The change from residential to business/dwelling has a major impact on the neighborhood quality.

The developmental change does not need to stop but a stand must be taken to rather work on the green economy model, which means housing must be shifted away from purely making money, but also include environmental concerns as well as social.

The world design a well balanced neighborhood, without demolishing the identity of the area.
**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 demographics for the ward covering Hazelwood (2011 Census).

- The ward overlaps with Eastwood which account for the high youth environment.

From observations made over a typical day.

- There is an imbalance between the people who live in the area and the people who go to the retail spots.

**Use fluctuation in the area**

- Monday: Cafe, coffee shop, neighborhood bar and restaurant.
- Tuesday: Cafe, coffee shop, neighborhood bar and restaurant.
- Wednesday: Cafe, coffee shop, neighborhood bar and restaurant.
- Thursday: Cafe, coffee shop, neighborhood bar and restaurant.
- Friday: Cafe, coffee shop, neighborhood bar and restaurant.
- Saturday: Cafe, coffee shop, neighborhood bar and restaurant.
- Sunday: Cafe, coffee shop, neighborhood bar and restaurant.

**Activity investigation**

- Medium size investigation.
- 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 analyse possible reasons for the success of the two retail spots, over Mallawea and the other.

---

**[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 to improve well-being and build social equity 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**

- Ecological
- Economical
- Social

**Sustainable development**

As noted on the previous page, the development of the urban model is creeping into the Hazelwood neighborhood, urbanisation 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 (2013).

**Urban design principles**

Phased into action from small, doable interventions by a neighborhood to larger regeneration changes.

**First step - Interventions**

1. Declared round waste removal areas.
2. Innovative voluntary facilities for a zero waste home.
3. Small scale urban farming, to produce some local food resources.
4. Exploring the dreams, taking ownership and making it part of the shared space.
5. Own production of energy, used between the various areas of the neighborhood.

**Second step - Restructuring**

**Third step - Regulation & systems**
Key incorporations on an urban scale

- Recycling hub
  - Shaped composting schemes
  - Waste sorting area
- Small scale urban farms
  - Initiated by the community
- Eco shopping opportunities
- Reclaiming the stream

Acupuncture ripple diagram

- New possible acupuncture hot spot
- New possible acupuncture hot spot
- New possible acupuncture hot spot
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.

- Public space
- Recycling infrastructure
- Integrated recycling design
- Sustainability in brand
- Affordable grocery shopping
- Green urban environment

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.

Preliminary conceptual sketch
SITE ANALYSIS LARGE CONTEXT

13 Firwood Road is the proposed 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

Summer

Winter

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

Views to and from site

Boundaries, preventing access to the site

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

Containers block view towards heritage building. Not enough view towards whole site, front face is blocked by a tree.
### Site Photos

- West facade
- South facade
- East facade
- North facade

### Statement of Significance

#### Building significance

- The roof tiles, shape as well as interior timber structure, is no be retained due to the unique character and historical value of the tilings themselves, being from the 1920's or even earlier.

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 Kloosterhoek 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 losing 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 undocumentated heritage value**:

- **Solid hardwood roof trusses**
  - Historic roof trusses. Redone within the last 15 years.
  - Preserved original pieces, storer style roof truss.
  - Unique style should be retained.

- **Brick detailing**
  - Intricately designed brick features on the facade of the building.
  - Unique style, no seen after war should be retained and reused.

- **Old roof tiles**
  - Old roof tiles came as standard building down the road.
  - Rare tiles on numerous historic buildings built between 1890-1930.
  - Rare heritage tiles should be retained.
EXISTING BUILDING ANALYSIS

Building assembly

- Clay tile roof carried by the Oregon pine trusses and structural walls.
- Integrate Oregon pine scissor roof trusses.
- Oregon pine timber posts built into walls. Full floor was not constructed at the same time.
- Entrance door to above level built within the last 10 years.
- Western façade, only façade kept in its original aesthetic.

Container assembly

- Containers 1, 2, 3, 4
- Dimensions: 2.45m x 6.05m

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 adoption and re-use.

Reuse of surrounding objects
- Reuse of objects from buildings to form display units.

Existing roof tiles to remain
- Building's roof structure to remain.

Existing features to remain:
- Significant elements and design elements.

Building elements from the community:
- Reuse of timber to ensure no waste.

Glass surfaces from waste material to enhance the environment.

Reuse all timber and site to ensure no material goes to waste.

Variable scale: Extending book no size to ensure no material goes to waste.

Historic hub

A space where people can go to connect to the past of the neighborhood, a homely landscape filled with well known features from their homes. A warm and inviting interior space.
GBCSA SUSTAINABLE GUIDE
Information gathered from studying the interiors green star rating tool, as well as looking at the zero waste tool.

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).

Net zero buildings tool

Green star eco shop
Retail as a central information point for all zero waste-related dealings, a zero waste lab of sorts, displaying supplies and educating the community on the possibilities and workings of zero waste.
PROGRAM
Built from the 5 barriers toward a sustainable lifestyle (Kahn et al., 2005; Biers & Oppenheim, 2002), the program shapes a space where a community of people (user groups) can find what they need.

Addressing barriers through programme

How retail addresses these

Community was created through common interest, and part of the 3rd Generation

Experience mode

What is their intention?

What do they want?

Task

Get something done.  
40% of users are task driven.

Social

Engage with others.  
Often combined with other modes.

Entertainment

Looking to be entertained.  
Break away from the everyday.

Aspiration

Connect to larger purpose.  
Seeking personal growth.

Efficiency

Sense of community

Appreciation of variety of spaces

Inspiration and novelty

Novel and unique

Design should have a memorable impact

Opportunities for growth

A larger mission is appreciated

Experience translated to space

Zero waste retailer

Entertainment square

Vegetarian deli

Grab 'n go

Serving

Workshop

Kitchen

Recycle

DIY products

DIY products

Zero waste retailer

Entertainment square

Vegetarian deli

Three integrated programmes

Three integrated parts

Programme relationship diagram
USER PROFILES
Identified from on site surveillance, aligned with experiential modes to identify where design needs more intervention

LOCAL
Business woman
Age: 54
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 neighborhood 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 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 planning to do an eco drive together.

My intention 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 lifestyle 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 or deli.

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

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

Brand voice
Consistently Raw, Honest

Brand intention
Reducing single use packaging
Reusing as much as possible
Educating people on the zero waste lifestyle
Support is community

Maverick brand message
It’s 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
- word: living
- (of an environment) fit to live in
- easy or enjoyable to live with

Livable FOOD AND DELI
A name fit for a sustainable retailer trying to voice change needed to happen
- sustainable, what type of world do you want to live in
- comfortable, in your decision to be a conscious consumer
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

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 contextualised towards retail, and as part of the 3rd gen of retail the hand and falling grain connect to themes of interaction experience

Patterns
Pasting out the hand as a bare product, symbolising 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

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
- Autumn, plastics in the ocean (global problem)
- Textural (sparkle graphics)
- Soft colour palette
- Caregiver archetype
- 3D effect
- Paper as inspiration (packaging)
- Bold Patterns
- Maverick archetypes

Display
- Bulk food
- Topology (premises)
- Maverick archetypes
- Break the rules

Processes
- GBCSA
- Educational
- Sustainable
- 3rd gen retail
- Experimental

Texture
- Existing building
- Patterns in the architecture
- Trendy containers
- Material influence
INFORMANT SUMMARY

Diagramme illustrating where in the design process which informant is valuable

Theory Informants

- ZERO WASTE INFORMANTS
  - Encourage community
    - Precedent
    - Barriers
- SOCIAL GATHERINGS
  - Learn from precedent
    - Urban plan
    - Precedent
- ENVELOPE AS INFORMANT
  - Relate to site
    - Buildings on site
    - Neighbourhood
- VISIBLE PROCESSES
  - Educate through design
    - GBCSA
- FLEXIBILITY
  - Adapting spaces
    - 3rd Gen
- EXPERIENTIAL DESIGN
  - Multi functional space
    - Programme
    - 3rd Gen
- MAVERICK
  - Brand as concept
    - Brand Personality
    - Brand identity

Concept Informants

- Material Function
- Language
- Closed loop
- Spatial Functions
- Form
- Material Detail
- Systems
- New meets old
- Denial
- Systems
- Spatial
- Closed loop
- New meets old
- Spatial
- Form
- Function
- Detail
- Spatial
- Detail
- Systems
- Material
- Function
- Detail

Application to design stages

1. The most significant part of the house remains
2. The systems flow from the house to visualize how Residents can be sustainable
3. The kitchen container acts as reminder of site context and mood
4. Social gathering space is promoted surrounded by green
5. Food containers are brought in to highlight the function of the spaces and style
6. Maze systems flow down towards people and public gathering
7. Notable is the recycling bin and greenery throughout
8. Heritage tiles act as reminder to significance in the design
ANSWERING THE TITLE

Breaking down the various aspects that need 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
Engrained 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 your 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.

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 disassembly, which in turn aids in the possible reuse and recycle possibilities 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

 Existing house footprint

Parking

New development, mini residential complex, projected three-storey building

One way Driveway
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.
**HANGING PLANTER DETAIL**

**COMPONENT B**

Exploded 3D of the hanging planter

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**Planting range**

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**B1 - Elevation of hanging planter**

Scale 1:10

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**Detail B1 - Planter hook detail**

Scale 1:2

60x38mm steel HSS Frame, in a steel angle finish, welded to the steel portal frame structure, which is bonded into the base beam that is bolted into the post foundations.

Reclaimed window base frame 90mm thick, used for mounting in varying spans, fixed into the steel portal frame structure with 8mm self-holding screws.

Stainless steel hooks, which are bolted into the 60x38mm cross beams to carry the hanging planter.

18mm galvanized steel pipe is held in place, with the frame supporting the load.

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**Detail B2 - Planter tray detail**

Scale 1:2

Press thick steel tray in a black color finish, with recessed flanges to carry the load of the planting system to be implemented, fixed onto the fully system through a series of bolts.

20mm thick smoked glass, heat treated and polished, fixed into the steel single edge tray.

300x500 Ekiblon acoustical plaster shaped into steel tray.

Fully sub-decking to be bolted into the steel tray, with a FIFA finish.
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

Air movement section

Electrical calculation

Water calculation

Water harvesting system
Part 12e

APPENDIX E - CRIT PHOTOS
APPENDIX F - GENERAL ETHICAL CLEARANCE
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
APPENDIX G - EDITOR CONFIRMATION
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, therefore the title stated here is inaccurate.