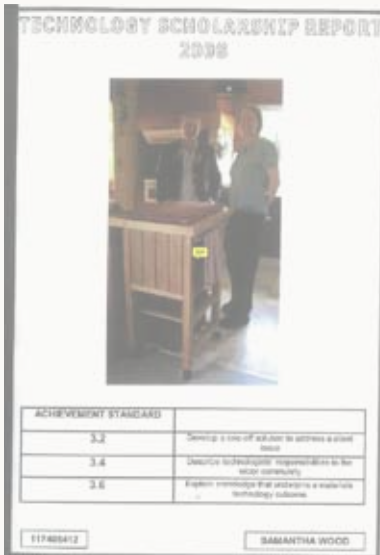
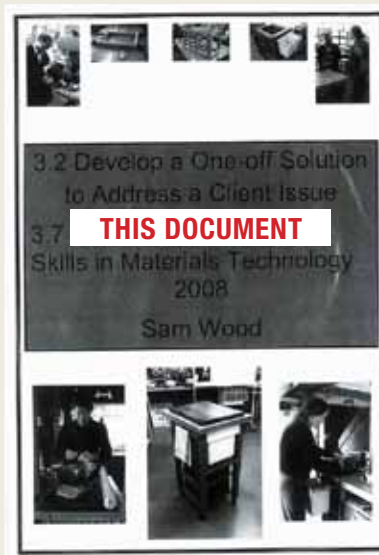


**SCHOLARSHIP REPORT**  
(comprehensively annotated)


[www.techlink.org.nz/student-showcase/Scholarship/Sam-Wood/Sam-Wood-schol-report.pdf](http://www.techlink.org.nz/student-showcase/Scholarship/Sam-Wood/Sam-Wood-schol-report.pdf)

**PORTFOLIO: 1/2**  
(two annotations)


[www.techlink.org.nz/student-showcase/Scholarship/Sam-Wood/Sam-Wood-portfolio-1.pdf](http://www.techlink.org.nz/student-showcase/Scholarship/Sam-Wood/Sam-Wood-portfolio-1.pdf)

**PORTFOLIO: 2/2**  
(no annotations)


[www.techlink.org.nz/student-showcase/Scholarship/Sam-Wood/Sam-Wood-portfolio-2.pdf](http://www.techlink.org.nz/student-showcase/Scholarship/Sam-Wood/Sam-Wood-portfolio-2.pdf)

**TECHLINK SCHOLARSHIP EXEMPLARS**

This Scholarship Exemplar presents a student's portfolio of evidence which was submitted for Technology Scholarship Examination.

The exemplar has been annotated with 'call outs' that highlight the evidence presented by the student and 'Commentary on Evidence' boxes.

These annotations show where:

- student evidence was presented that exemplifies scholarship expectations
- opportunity existed for additional evidence to be presented

The intent of this exemplar is to assist teachers and students to develop an understanding of the nature of the evidence required for award of the Technology Scholarship standard.

Other Techlink Scholarship Exemplars can be found at: [www.techlink.org.nz/student-showcase/index-scholarship.htm](http://www.techlink.org.nz/student-showcase/index-scholarship.htm)

**EXEMPLAR DESCRIPTION**

In 2008 Samantha Wood was awarded a New Zealand Scholarship in Technology for her work on the project Butcher's Block.

Butcher's Block is a Technology unit that focused on the development of a preparation and food storage unit for a client with limited space in their kitchen and a desire to minimise her impact on the Earth's environment. The student consulted a variety of practising technologists to inform her own practise.

In this reflective report and supporting evidence, this student has demonstrated synthesis and integration of technological experiences in bringing together knowledge, skills, ideas and methods to allow the successful technological outcome (butcher's block) to be placed in its intended environment. There is evidence of elegance in their technological practice and the final outcome.

This student has justified how the technological practice was undertaken and how the outcome meets her clients needs by that meets all the specifications.

She has critically reflected on the information, understandings and practices of practising technologists from a range of contexts and how this was used to inform her own practice when developing the outcome for her client.



3.2 Develop a One-off Solution  
to Address a Client Issue

3.7 Demonstrate Advanced  
Skills in Materials Technology  
2008

Sam Wood



# MATERIALS TECHNOLOGY

## LEVEL 3 2008

<b>ACHIEVEMENT STANDARD</b>		
<b>3.2</b>	Develop a one-off solution to address a client issue	<b>INTERNAL</b>
<b>3.4</b>	Describe technologists responsibilities to the wider community	<b>EXTERNAL</b>
<b>3.6</b>	Explain knowledge that underpins a materials technology outcome	<b>EXTERNAL</b>
<b>3.7</b>	Demonstrate techniques in materials technology	<b>INTERNAL</b>

## CONTENTS

### 3.2 DEVELOP A ONE-OFF SOLUTION TO ADDRESS A CLIENT ISSUE

	PAGE
◆ The Development of my Technological Solution: Facilities	1
◆ Problem Areas Brainstorm	2
◆ Identifying a Problem Brainstorm	3
◆ Conceptual Statement and First Thoughts Brainstorm	4
◆ Situating My Brief: - Current Problems in my Stakeholder's Environment - Exploring the Context	5-7
◆ 1 <sup>st</sup> Interviews and Analysis - Primary Stakeholder - Secondary Stakeholder	8 9
◆ Initial Brief and Specifications	10
◆ Prioritisation of Key Factors and Justification of Properties	11
◆ Brainstorming Key Factors For My Issue: - Key Factors That Contribute Directly & Indirectly - Links Between the Key Factors	12-14
◆ Existing Products and Attributes	15-16
◆ Stakeholder Requirements and Attributes	17
◆ Conceptual Ideas (1-12): - Comments on Conceptual Ideas	18-20
◆ 2 <sup>nd</sup> Interview: Primary Stakeholder	21
◆ 3-D Models	22
◆ Design Development - Materials and Features - Situating the Outcome in the Environment - Research on Materials - Feedback From Stakeholder From Design Development	23-32

◆ Re-Defined Brief	33
◆ Planning and Product Development	34-35
◆ Final Brief and Final Specifications	36
◆ Reprioritisation of Key Factors	37
◆ Justification of Reprioritisation and Construction Brief	38
◆ Final Design and Prototype Construction	39-40
◆ Cutting List	41
◆ Machinery Functions & Important Codes of Practice	42-44
◆ Flowchart of Production	45-48
◆ 3 <sup>rd</sup> Interview: Primary Stakeholder	49-50
◆ Table of Resources and Codes of Practice	51-55
◆ Installation of the Outcome in Chosen Environment	56
◆ Final Outcome	57
◆ Post-Production Stakeholder Interview	58-60
◆ Evaluation of the Technological Practice Undertaken	61-65

### APPENDICES FOR ACHIEVEMENT STANDARD 3.2:

- ◆ Plan of Action (Terms 1-4)
- ◆ Gantt Chart (Terms 1-4)

## THE DEVELOPMENT OF MY TECHNOLOGICAL SOLUTION: FACILITIES

### CONTACTS FOR MY TECHNOLOGICAL OUTCOME:

- ◆ Mitre 10
- ◆ Glass Supplies
- ◆ Place Makers
- ◆ Athena Bathrooms
- ◆ Boca Carter Engineers
- ◆ Resene
- ◆ The Warehouse
- ◆ Plastic Box
- ◆ Spotlight
- ◆ Fletcher Steel
- ◆ Seawood Marine
- ◆ The Kauri Warehouse
- ◆ Bunnings Warehouse
- ◆ Rose and Heather

**MITRE 10**

**Resene**

the paint the professionals use

**FLETCHER** FASTSTEEL

**spotlight**

**PlaceMake**  
Know how. Can

**THE WAREHOUSE**

**PLASTIC BOX**  
get it sorted

### FACILITIES WITHIN THE SCHOOL:

- ◆ Teachers – Ms Ashton & Mr Bennett
- ◆ Technician – Mrs Brown

### WORKSHOP:

- ◆ Bandsaw
- ◆ Scroll saw
- ◆ Welding Equipment
- ◆ M.I.G
- ◆ Drill Saw
- ◆ Biscuit Machine
- ◆ Tools
- ◆ Chisel
- ◆ Spanner
- ◆ Hot Glue Guns
- ◆ Resource Room
- ◆ Handsaw
- ◆ Sanding equipment
- ◆ Wood Putty
- ◆ Hand Drill
- ◆ Measuring Tools
- ◆ Circular Saw
- ◆ Domino Joiner

### LIBRARY:

- ◆ Books
- ◆ Computers
- ◆ Photocopy Machines

### HOME FACILITIES:

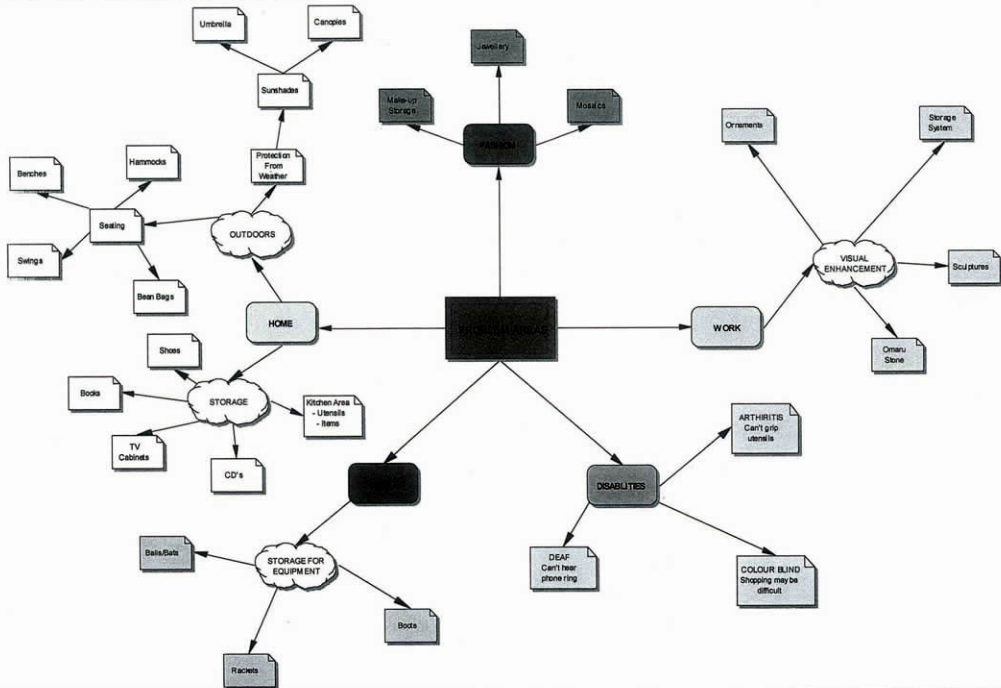
- ◆ Dad's Workshop
- ◆ Laptops
- ◆ Tools

### MY COMMUNITY:

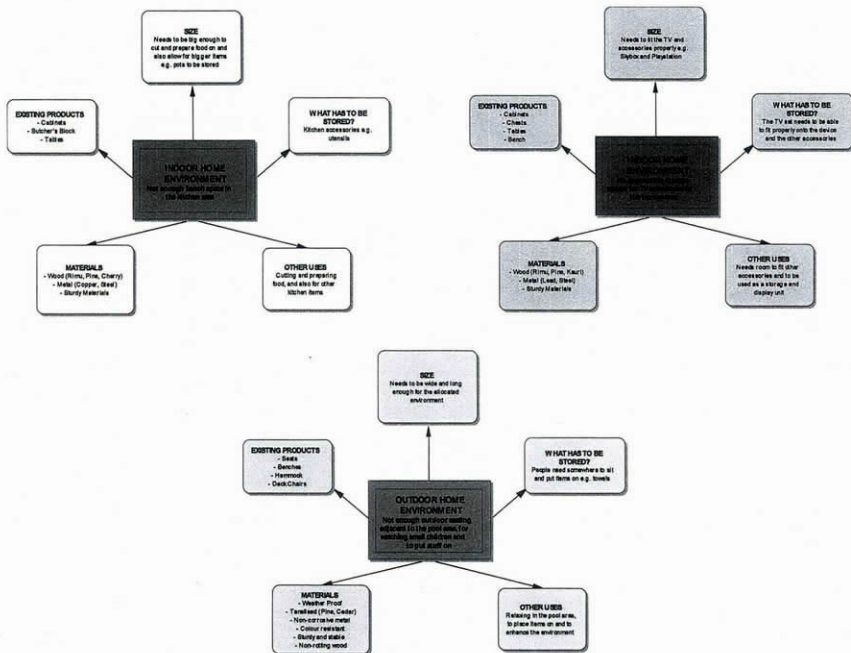
- ◆ Epsom and Remuera Libraries
- ◆ Industries that have other machines that the school doesn't have
- ◆ Local Retailers – Rose and Heather, Martin Hughes, Kitchen 'n' Things
- ◆ Massey University College of Creative Arts (Albany)
- ◆ Citizens Advice Bureau (regulatory requirements)



# PROBLEM AREAS BRAINSTORM



# IDENTIFYING A PROBLEM BRAINSTORM



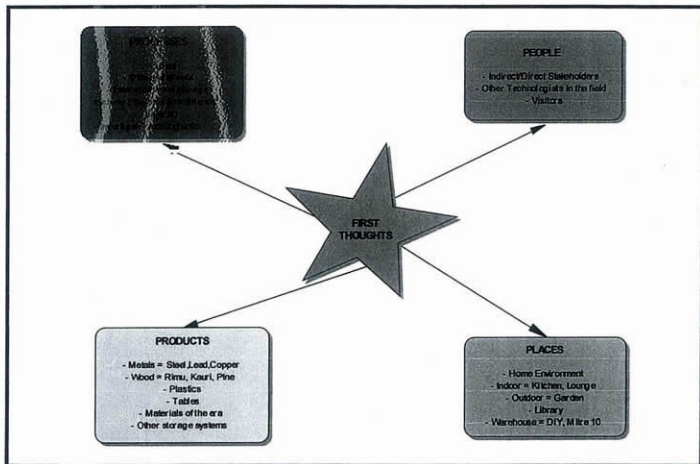
## CONCEPTUAL STATEMENT

In today's world the home environment has a multitude of uses. It is a place for shelter, rest and sustenance as well as for socialising, entertaining and recreation. There are two separate but interconnecting environments in most homes – indoors and outdoors. For convenience and ease of use, linkages are required between the two environments. Every home has its own unique issues and limitations. Technology can be used to solve some of these issues. As technologists we have the opportunity to enhance the environment for the stakeholders living in or visiting the home.

Some common issues in the home environment include lack of storage, room size or wall space limitations, natural light restrictions, look and feel (e.g. complementary furniture), lack of privacy (indoors); and protection from weather (sun and rain), seating, garden space, impractical installations, pool safety, access restrictions, parking and storage limitations and visual unattractiveness (outdoors).

My task is to identify a specific issue within my primary stakeholder's home environment that is of particular and regular concern or irritation to him/her. By producing an outcome that is both useful to my stakeholder and enhances the environment, I will be well placed to solve my stakeholder's needs while fulfilling my responsibilities as a technologist.

## FIRST THOUGHTS





# SITUATING MY BRIEF

## ISSUE 1:

No place to store cuisine equipment, leading to clutter and mess around the small kitchen area.



## ISSUE 2:

Does not have enough available bench space to prepare food easily.



## ISSUE 3:

The outcome has to be made of materials that will fit in with the rustic style home.



## ISSUE 4:

The outcome needs to be stable and safe as it is used for the preparation of food and storage of items.



My stakeholder, Libby Ashton lives in a Bucolic Home. The kitchen is the centre of the home environment, and is the only space currently available to prepare and serve cuisine. However, like many kitchens, there is insufficient bench space to prepare food and store items.

The kitchen is very small, with limited built in bench space built into the area and it cannot be extended easily because of the area limitations. Because of these space restrictions it is very hard to prepare and serve food with ease. This means that although Libby has to prepare all food in this space kitchen is always untidy as the ingredients take up all of the available bench space. There is also currently nowhere to store her kitchen utensils in close proximity so they are easily accessible to her.

I have chosen Libby as my primary stakeholder as she is the main user of the kitchen. Her mother and husband are secondary stakeholders, as they struggle constantly with the messiness and limitations of the kitchen area. I would like to design and build a storage/preparation unit for Libby's kitchen that will solve all of these problems.

# CURRENT PROBLEMS IN MY STAKEHOLDER'S ENVIRONMENT

**IMAGE 1**



Not enough permanent storage space in the kitchen environment; meaning items are left on the bench top, creating clutter and mess.

The space between the bench and fridge is quite narrow; this means that a customised unit is required to fit into the environment because of the space limitations in the area.

**IMAGE 2**



The bench space is very limited, making it hard to prepare and serve food.

**IMAGE 3**



The built-in storage system is over-loaded with kitchen utensils and ingredients, making it hard for my stakeholder to access them.

The bench space is small and limiting so it is difficult for my stakeholder to serve food from. This space is also currently used for overflow storage of kitchen items.

**IMAGE 4**



The bench can become very unhygienic at times, because of the small amount of preparation area and items that cannot be stored cluttering what space there is.

My stakeholder is keen on recycling and composting, however her current singular bin is very small and unattractive. It also fills up very quickly, meaning the compost over-flows onto the bench area, making the area very unhygienic and hard to prepare food on.

**IMAGE 5**



# EXPLORING THE CONTEXT

## OVERVIEW

**PRIMARY STAKEHOLDER =  
LIBBY ASHTON**



## STAKEHOLDER PROFILE

My stakeholder is a 32 year old woman married to Marcote. They have one young baby, Atariki. Libby is passionate about her natural lifestyle, providing her family with home-grown, organic foods and preferring to minimise her impact on the earth's environment. She is a very environmentally aware person who practices sustainability whenever possible. An example of this is how Libby composts all of her family's organic waste and is a keen recycler. She recycles all paper and metal products, making sure that nothing is wasted in the household.

Food preparation and providing sustenance for her family and friends, plays a very big part in Libby's life. Not only does Libby work in the kitchen environment, but her husband Marcote also gets involved and helps. Libby does not use convenience foods. She prefers to use only natural and home-grown food which is produced and prepared from scratch. Because my stakeholder's house is situated rurally, a long way from the shops, all of the food provisions that she does not grow herself have to be bought and stored, so Libby needs efficient storage space.

Marcote is not from a Kiwi cultural background. He is from Chile, where they tend to have two cooked meals daily plus snacks throughout the day. This makes the kitchen environment the hub of the small family's household. Quite a large proportion of their time, especially Libby's, is spent in or around the kitchen environment.

Currently, storage of Libby's kitchen equipment and accessories is spread out across the kitchen environment, making it inaccessible and disorganised. This makes it very hard for Libby to find the equipment that she needs efficiently and causes numerous problems for her, especially when guests are visiting. In addition to this shortage of storage space, the area for food preparation is not well defined. Because Libby's kitchen is cramped, with very little bench space, cutting up and preparing food is all done in the same small area. This means the environment becomes quite chaotic, disorganised and very unhygienic. The current composting bins that Libby uses are small red cookie bins that fill up very quickly. They are very unattractive and unappealing to the eye and detract away from the friendly environment Libby is trying to create. Also, the tea towels do not have a designated place for hanging, so they are either flung over the oven door or sit on the bench. This means they do not dry out properly, making them unhygienic.

I have to take into account and address all of these identified issues and produce an outcome for Libby that will efficiently solve all of the recognised problems in and around the kitchen environment.

## 1<sup>ST</sup> INTERVIEW: PRIMARY STAKEHOLDER

(LIBBY ASHTON)

- 1. WHY DO YOU WANT A STORAGE/PREPARATION UNIT FOR YOUR KITCHEN?**
  - To increase my available kitchen bench space
  - To help organise kitchen materials – ingredients and utensils
  - So that access to my kitchen tools is easy and convenient
  - To make the disposal of kitchen waste easier and more hygienic
  - To enhance the visual attractiveness of my kitchen – make it tidier
- 2. WHAT SORT OF STORAGE UNIT WOULD BE MOST USEFUL AND WHY?**

A storage unit that could be moved easily to different locations in the kitchen if needed would be very useful. It needs to be a suitable height to avoid bending and fit in with the existing bench. It needs to incorporate a space for sliding in chopping boards (to help Ventilate). Also, space for disposal of kitchen waste would be great.
- 3. WHAT OTHER STORAGE/PREPARING AREA IS AVAILABLE IN YOUR CHOSEN ENVIRONMENT?**

Fixed shelves, cupboards and benches
- 4. WHAT TYPE OF MATERIALS WOULD YOU LIKE THE OUTCOME TO BE MADE OF?**

Wood, preferably recycled and untreated. The top surface needs to be made of a material that can be used for chopping and is easy to clean and maintain hygiene
- 5. ARE THERE ANY DESIGNS/PATTERNS YOU WOULD LIKE INCORPORATED IN YOUR STORAGE UNIT?**

I like a simple country rustic style. This will also fit best in my house.
- 6. ARE THERE ANY SAFETY ISSUES AROUND THE CHOSEN ENVIRONMENT THAT I SHOULD BE AWARE OF?**

The location unit will usually be located in the entrance way to of the kitchen beside the dining room, so it needs to be stable and secure, with no protruding objects or angles, to avoid people knocking into the unit or harming themselves. As it will be visible from the dining room, it also needs to be visibly attractive.
- 7. DOES THE STORAGE UNIT NEED TO BE TRANSPORTABLE?**

It would be preferable if it could be moved within the kitchen area, but does not need to be transported anywhere else.
- 8. IS THERE A SPECIFIC BUDGET WHICH I HAVE TO WORK WITHIN?**

Under \$400 if possible, but some flexibility depending on the range of uses the unit will have

### ANALYSIS OF PRIMARY STAKEHOLDER INTERVIEW

(LIBBY ASHTON)

- ◆ The outcome needs to have a large, flat surface and also be able to store kitchen utensils so they are easy accessible.
- ◆ Needs the unit to incorporate something that makes the disposal of kitchen waste easier and more hygienic.
- ◆ The stakeholder would prefer if the outcome was made out of recycled and untreated wood.
- ◆ The top of the unit needs to be made of a material that is hygienic and easy to clean and maintain.
- ◆ The design needs to fit into the simple rustic country style of the home environment.
- ◆ The stakeholder would like the unit to be transportable and moveable around the kitchen area.

## **1<sup>ST</sup> INTERVIEW: SECONDARY STAKEHOLDER**

**(MRS ASHTON)**

- 1. WHY DO YOU WANT A STORAGE UNIT FOR YOUR DAUGHTER'S CHOSEN ENVIRONMENT?**  
I would like a storage unit for my daughter, so her kitchen's useable space is enlarged, she is able to prepare and serve food more easily, and so that her utensils and waste products are both dealt with in a clean and efficient manner, instead of cluttering up the kitchen.
- 2. WHAT SORT OF STORAGE UNIT WOULD BE MOST USEFUL?**  
A storage unit that can be easily moved around the kitchen and that can store utensils easily and tidily, without the need for bending and reaching too far.
- 3. IS THERE A SPECIFIC BUDGET WHICH I HAVE TO WORK WITHIN?**  
Yes, try to stick to a budget of around \$400.
- 4. WHAT MATERIALS WOULD FIT BEST IN THE CHOSEN ENVIRONMENT?**  
Natural, recycled wood that will not rot, and non corrosive metal will fit best into my daughter's home as it is a rustic style. Environmentally friendly products would also be preferred.

### **ANALYSIS OF SECONDARY STAKEHOLDER INTERVIEW**

**(MRS ASHTON)**

- ◆ Needs some sort of bench and storage unit so she can prepare and serve food easily in the kitchen area
- ◆ A system that will help deal with her waste products is preferred so there is less mess and clutter in the kitchen area
- ◆ A unit that she can easily move around the kitchen area and that can be accessed without bending over and having to reach too far.
- ◆ Natural, recycled wood that will not rot and non-corrosive metals fit best with the rustic style of the home

## INITIAL BRIEF & SPECIFICATIONS

### THE ISSUE:

My primary stakeholder has extremely limited storage space and bench space in her kitchen area. This means that she finds it difficult to find the space to prepare and serve food. Also, the area is always untidy as my stakeholder does not have enough storage facilities to hold and put away all of her kitchen utensils.

### AIM:

To produce a food preparation and storage unit that will solve my primary stakeholder's issues. It needs to incorporate both bench and storage space, be easily accessible, transportable and blend in with the simple country rustic style house where the unit will be installed.

### RESTRICTIONS / CONSIDERATIONS:

TIME: Has to be finished by the end of Term 3 in September, 2008

BUDGET: A budget of around \$400 is preferred, although I can revert to my stakeholder to revise this

MATERIALS: Needs to be sturdy and stable. Non-rotting wood and non-corrosive metals are required.

SKILLS: I have had more experience working with wood rather than metal, so this will have an influence on the materials I choose to use to build the unit.

SPACE: The chosen environment (kitchen) has a very limited amount of space so the storage unit cannot be too wide or long. There is a particular space where it will usually be kept that it needs to fit into

CURRENT UNITS: The height of the existing bench space will also be a consideration during the design phase of the new unit

## INITIAL SPECIFICATIONS

- (1) The new unit should incorporate both bench and storage space, as well as cater for the disposal of kitchen waste.
- (2) The budget is a little flexible at this stage, but should aim for no more than \$400.
- (3) A butcher's block type unit that is free standing, of the same height as the existing bench, and with storage space that is easily accessible.
- (4) All materials must be non - corrosive as the chosen environment gets damp easily.
- (5) The unit needs to be stable, non-hazardous and visually attractive as its usual location will be beside the entrance to the kitchen area.
- (6) A plain, simple design is preferred, to fit in with the Rustic Country style of the home (cannot be too modern).
- (7) The unit needs to be easily transportable around the environment, so cannot be too wide or long.











## PRIORITISATION OF KEY FACTORS

PRIORITY	KEY FACTOR	JUSTIFICATION
1	The unit must incorporate bench and storage space, as well as cater for disposal of kitchen waste.	My stakeholder sorely lacks both food preparation and storage space for her kitchen utensils. Also for hygiene reasons it is vital to provide space for the disposal of kitchen waste.
2	It must be free-standing and the same height as the existing bench, with easily accessible storage space.	My stakeholder wants the unit to be a suitable height to fit in with the current benching and accessibility is also important for preparing food and serving to avoid bending.
3	The design must comply with OSH regulations	A storage unit that is unsafe or hazardous may cause accidents to visitors and children and regulatory issue for the stakeholder.
4	Budget has been set at a maximum of \$400	I must plan ahead, check costs and measure materials carefully before constructing also will be important. I am definitely constrained by budget, although I do have flexibility to review this with my stakeholder before finalising the design.
5	Must be made of non-corrosive materials	The environment that the unit is going to be situated in can get damp or wet so non-corrosive materials (such as wood) are essential.
6	Has to fit in with the rustic country style home	A plain and simple design rather than an ornamental one would fit in with the simple rustic country style of the house.
7	Unit should be easily transportable	The design cannot be wide or long otherwise it will be too hard to transport around the chosen kitchen environment

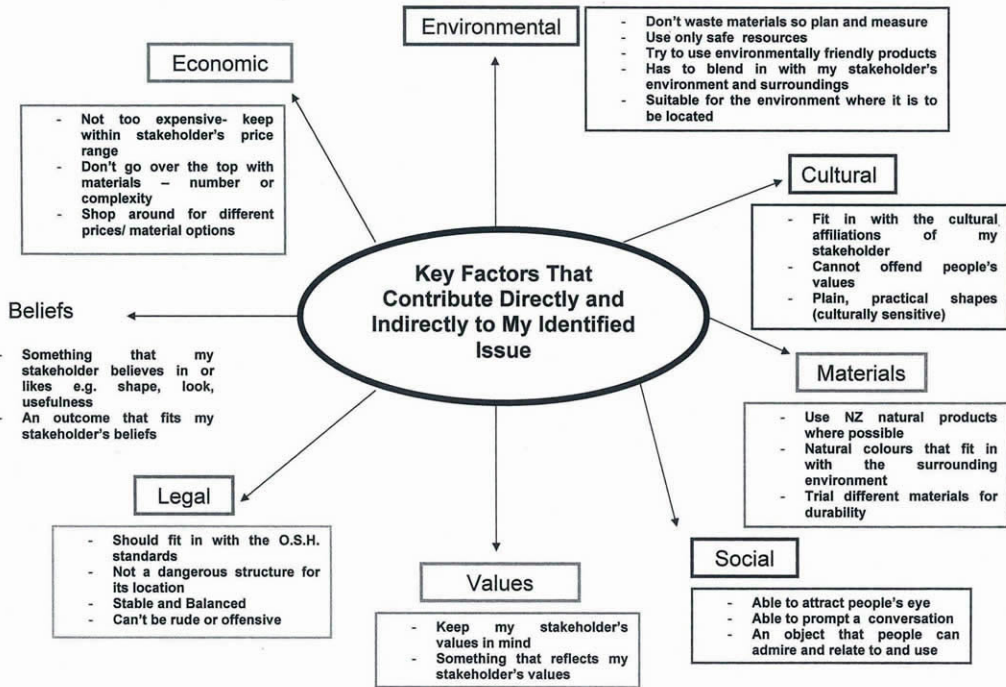
### JUSTIFICATION OF PRIORITIES:

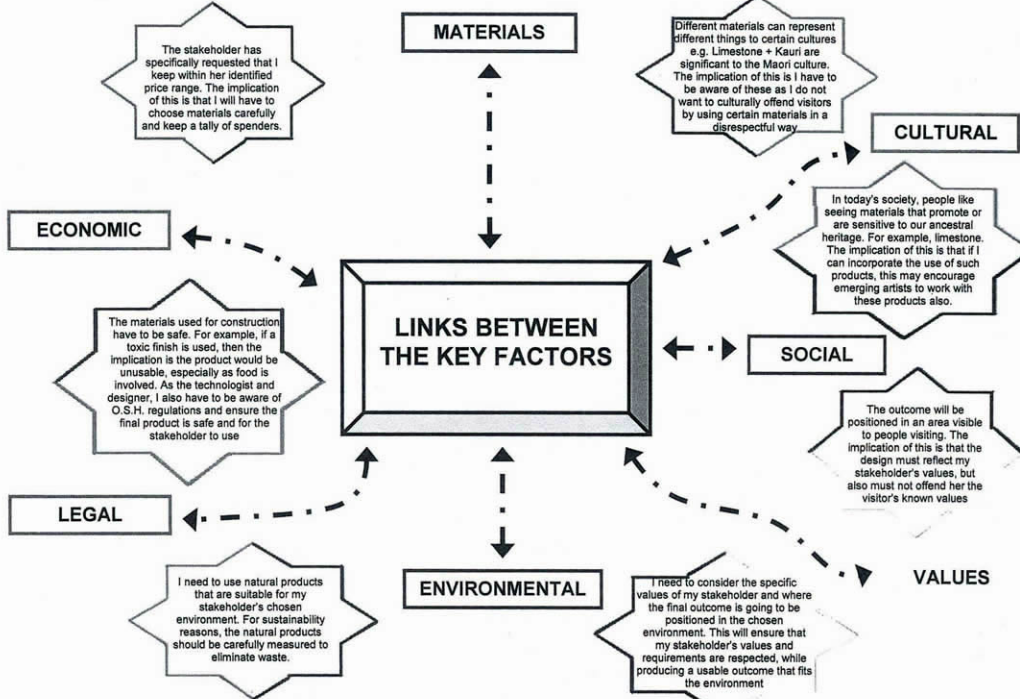
I have prioritised the key factors in this order because I think that the shape, size and useability requirements unit are the most important ones in this situation. This is because my stakeholder's main issue is based around having a shortage of preparation storage space because of her small kitchen environment. I have given high priority to the OSH regulations as the chosen environment that the storage unit will be situated in is a place where people visit often to prepare and serve food, so if the installation is hazardous it could be very dangerous. Although budget is currently prioritised as number four, a cost blow-out is not acceptable for this stakeholder. I need to prepare a forecast costing for the design early in the process for validation with my stakeholder. If not accepted this factor will increase in priority. I then prioritised materials fifth as it is very important that they are non-corrosive and durable. My stakeholder wants the unit to remain useful for many years. I put the stakeholder's requirements for a plain design and transportability as sixth and seventh in priority as a heavy, large more ornamental unit can be still moved, and could look good.

## Brainstorming Factors for my Issue

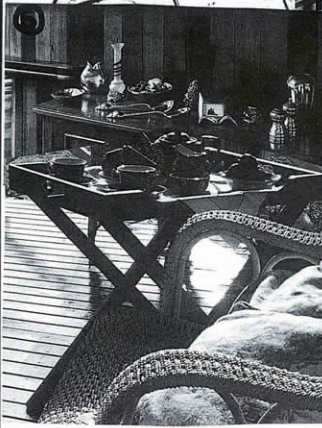
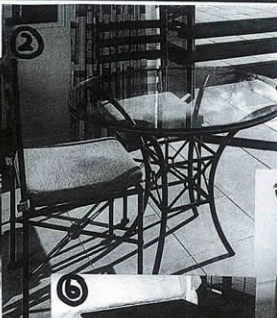
Resource Based Factors The how and what from the field related to the given issue.	Stakeholder Factors People who are either directly or indirectly affected by the issue.	Broader Factors These encompass a wider environment.
<p><b>SKILLS/EXPERTISE</b></p>  <ul style="list-style-type: none"> <li>- Something that can be produced in the time available</li> <li>- Something that is within my skill level or can be easily learnt</li> <li>- Appropriate expertise available to communicate with</li> </ul>	<p><b><u>DIRECT STAKEHOLDERS</u></b></p> <p>LIBBY ASHTON</p> <p>MRS ASHTON</p> <p>LIBBY'S HUSBAND</p> <p>MYSELF</p> <p><b><u>INDIRECT STAKEHOLDERS</u></b></p> <p>MR BENNETT</p> <p>MRS BROWN</p> <p>LIBBY'S VISITORS</p> <p>CLASSMATES</p> <p>O.S.H</p> <p>PARENTS</p>	<p><b>SOCIAL</b></p>  <ul style="list-style-type: none"> <li>- Should not offend people</li> <li>- Create a unit that is aesthetic and people can admire</li> <li>- Ensure outcome serves useful purpose(s)</li> </ul>
<p><b>EQUIPMENT</b></p>  <ul style="list-style-type: none"> <li>- Learn how to operate equipment safely and correctly</li> <li>- If do not know how to operate the equipment ask for appropriate assistance/guidance</li> <li>- Use the correct equipment for each part of the job</li> </ul>		<p><b>CULTURAL</b></p>  <ul style="list-style-type: none"> <li>- Fit in with my stakeholders' cultural priorities</li> <li>- Should not offend people's values, or morals or racial beliefs</li> <li>- Not too hard for my skill level</li> </ul>
<p><b>MATERIALS</b></p>  <ul style="list-style-type: none"> <li>- Try to use natural NZ products</li> <li>- Trial different materials for durability</li> <li>- Materials have to be safe e.g. no toxic finishes</li> <li>- Use non-corrosive and long lasting metals and woods</li> </ul>		<p><b>ENVIRONMENTAL</b></p>  <ul style="list-style-type: none"> <li>- Rustic style home</li> <li>- Outcome must blend in with the chosen environment</li> <li>- Use sustainable, environmentally friendly materials</li> <li>- Do not waste the materials</li> <li>- The final outcome has to be suitable for the environment</li> </ul>
<p><b>TIME</b></p>  <ul style="list-style-type: none"> <li>- Something that can be completed in the time available (by the end of Term 3)</li> <li>- Cannot be too complex otherwise it will be hard to finish within the time frame</li> <li>- Do not waste time.</li> <li>- Allocate important tasks across the year</li> </ul>		<p><b>LEGAL</b></p>  <ul style="list-style-type: none"> <li>- Should comply with O.S.H standards</li> <li>- Has to be stable and sturdy</li> <li>- Should not be dangerous or hazardous for small children users and visitors</li> </ul>
<p><b>MONEY</b></p>  <ul style="list-style-type: none"> <li>- Have to stick to the stakeholder's budget</li> <li>- Prepare a costing in advance</li> <li>- Plan ahead and work out what materials I will need</li> <li>- Do not go over the top with materials</li> </ul>		<p><b>INNOVATIONS AND FUTURE TRENDS</b></p>  <ul style="list-style-type: none"> <li>- People are becoming more aware of future trends through advertising – Materials and Commercials</li> <li>- Materials need to be long lasting and safe for the future</li> <li>- Research use of innovative accessories</li> </ul>







EXISTING PRODUCTS



## EXISTING PRODUCT ATTRIBUTES

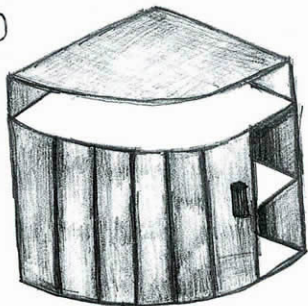
PICTURE	ATTRIBUTE 1	ATTRIBUTE 2	ATTRIBUTE 3
1/2/3/5	These products each have a wide top that is stable and level. This would suit my primary stakeholder's needs well as she needs a space that she can easily prepare and serve food on.	A negative of these products is that they are either made of corrosive materials (metal) or are fragile (glass) making them unsuitable for the chosen environment.	These products would be too low and therefore not as easily accessible and useful for my stakeholder.
4/9	An island in the kitchen environment provides suitable preparation space.	It would be hard for my stakeholder to move around the kitchen easily as it is quite long and wide.	These outcomes do not have suitable storage space, which would mean they would not meet all of the key factors.
6	This kind of product has a lot of storage space; this would therefore benefit my stakeholder as she needs an efficient amount of space to store her kitchen items.	A negative is that the top is bumpy and rigid which would make it hard for my stakeholder to prepare and serve food.	The unit is very stable and would not be hazardous in the chosen environment as it has no sharp edges.
7/8	These products are suitable as they are stable and are an appropriate height for the preparation and serving of food.	The wood used for these two designs would fit in with the stakeholder's environment and suit the Rustic Country style of home.	A negative of these designs is that they have limited storage space, and would need to incorporate some sort of shelving
10	This outcome is quite large, wide and tall, so would be quite hard for my stakeholder to transport around the chosen environment.	This design could store a number of items but larger items would be hard to store.	The materials this unit is made out from are sturdy and would not get easily dented. A unit like this would be long lasting and durable.

**STAKEHODLER REQUIREMENTS OR ATTRIBUTES**  
**TO BE DEMONSTRATED BY THE SOLUTION**

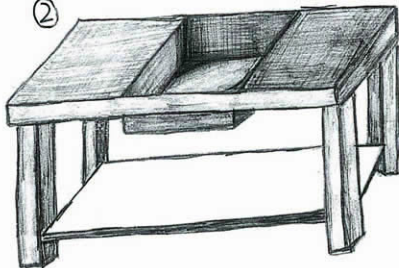
	<b>WHAT IS REQUIRED/ATTRIBUTE</b>
<b>TECHNICAL</b>	<ul style="list-style-type: none"><li>- Outcome must be built + finished (professional)</li><li>- Stable and Sturdy</li><li>- Not hazardous or dangerous</li><li>- Has to create both storage and preparing space</li><li>- Compliance with O.S.H. Standards</li><li>- Design to fit the space</li></ul>
<b>ENVIRONMENTAL</b>	<ul style="list-style-type: none"><li>- No wastage of materials – plan + measure</li><li>- Blend in with and be suitable for the chosen environment</li><li>- Has to blend in with the style (old fashioned)</li><li>- As little impact on the environment as possible</li><li>- Environmentally friendly sustainable products</li></ul>
<b>SOCIAL</b>	<ul style="list-style-type: none"><li>- Should not offend people who come into the room (cannot be rude or offensive)</li><li>- Create a social focal point</li><li>- An outcome that people can relate to and admire</li></ul>
<b>ECONOMIC</b>	<ul style="list-style-type: none"><li>- Cut out materials economically</li><li>- Do not exceed stakeholder's required budget</li><li>- Don't go over the top with materials (complexity)</li><li>- Shop around for different prices/options</li></ul>
<b>CULTURAL</b>	<ul style="list-style-type: none"><li>- Must not be culturally offensive</li><li>- Must fit in well with NZ rustic, practical, DIY culture</li></ul>

CONCEPTUAL IDEAS

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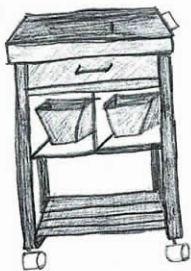
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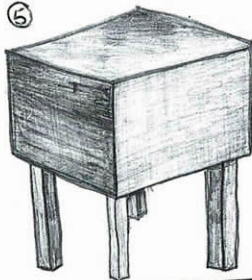
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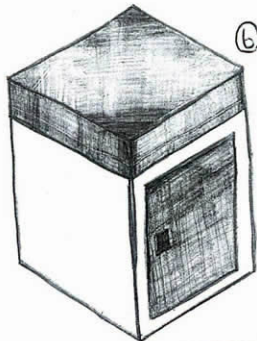
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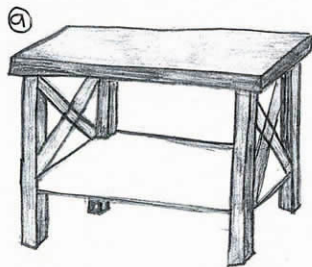
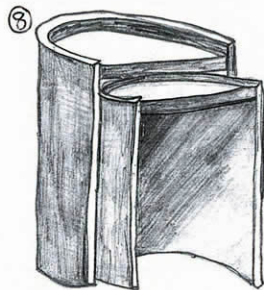
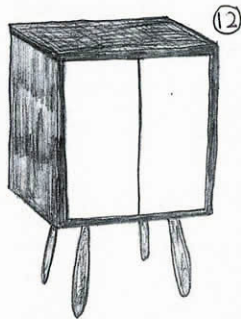
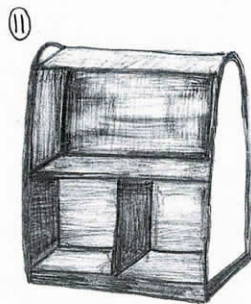
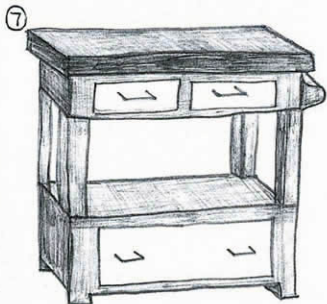
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CONCEPTUAL IDEAS



### COMMENTS ON CONCEPTUAL IDEAS

- (1) This concept would be suitable as a corner unit. It has good storage for utensils and a large space for the preparation of food. A negative of this design is that it would be hard to prepare and serve food from because of the rounded shape. It also needs to be situated in a corner to fit well.
- (2) A positive of this design is that it would meet the key requirement for my stakeholder – it would be easy to prepare food on because of the large, long top and removable bin in the centre. It would also be easy to clean. Negatives are its length (given the space available) and lack of transportability.
- (3,4) Concepts (3) and (4) each have a large food preparation space and would be easily transportable because of the wheels attached to the legs. These are positives for my stakeholder as she prefers a design with bench space that can be moved easily around her chosen environment, as well as outdoors. Concept 4 also has good storage space.
- (5) This design is very stable and sturdy providing sustainability and long use. However, a negative is that it does not have any kind of storage space. If this design is developed further, it would need to include some sort of storage system in order to meet one of my stakeholder's key expectations.
- (6) This unit would provide the necessary storage for my stakeholder's kitchen utensils. Another benefit is the closeable door, providing security, tidiness and order. Wheels could also be added.
- (7) This design is large and has excellent storage space. This would benefit my stakeholder as currently she does not have sufficient space or facilities to store her kitchen items. This makes the area cluttered, untidy and hard to prepare food.
- (8/9/10) All three of these conceptual drawings have a suitable surface for preparing and serving food. However, a negative of these designs is that there is very little provision for storage of my stakeholder's kitchen utensils.
- (11) A positive of this design is that it has a lot of storage space. However, it does not have a large top to prepare food on, so does not satisfy one of my stakeholder's key requirements for bench space.
- (12) This design would be suitable for my stakeholder as it has efficient storage and preparation space. A negative is that it is quite large, so may not fit in my stakeholder's allocated space.



## 2<sup>ND</sup> INTERVIEW: PRIMARY STAKEHOLDER

(LIBBY ASHTON)



1. **WHAT SHAPE WOULD YOU PREFER FOR THE BUTCHERS BLOCK UNIT?**

I would prefer the unit to be a rectangular shape, and not too large so that it fits into the space available in my kitchen. The unit needs to fit in at the end of my bench and make it easier, not harder to move around the kitchen area.

2. **WHICH OF THE TEN DRAWINGS WOULD BEST SOLVE THE IDENTIFIED ISSUES FOR YOU? WHY?**

Number 4 concept would be best because this sort of unit would fit into the chosen space, it is moveable and it also meets most of my requirements.

3. **WOULD YOU MAKE ANY CHANGES TO THIS CHOSEN DRAWING?**

Maybe add a place to hang objects e.g. tea towel and put a chopping board. Also, ensure there are separate spaces for collection of compost and normal rubbish.

4. **YOU HAVE INDICATED THAT YOU WOULD PREFER THE STORAGE UNIT TO BE MADE OF WOOD? WHAT KIND OF WOOD WOULD YOU LIKE? WOULD LIGHT OR DARK WOOD BE BEST SUITED IN THE ENVIRONMENT?**

I would prefer the wood used to be recycled and environmentally friendly, as I believe in being as sustainable as I possibly can. A light to medium toned wood finish would be best as this would fit in with the existing fixtures.

5. **HOW OFTEN WOULD YOU NEED TO ACCESS THE STORAGE SYSTEM AND WHAT ITEMS NEED TO BE THE MOST ACCESSIBLE?**

Because the unit will be placed in the most central part of my home, the kitchen, I will need to access the unit everyday when preparing and serving meals. I need easy access to chopping boards, compost containers and utensils.

6. **WOULD YOU LIKE THE BUTCHER'S BLOCK UNIT TO BE PAINTED OR OILED?**

I think the storage unit would suit and fit in with my environment better if it was oiled.

### ANALYSIS OF PRIMARY STAKEHOLDER INTERVIEW

(LIBBY ASHTON)

- ◆ The outcome needs to be rectangular shape and fit in the gap between the existing bench and the fridge.
- ◆ In the design, there needs to be a place to hang tea towels and also somewhere for my stakeholder to store cutting boards and kitchen utensils and containers to separate her compost rubbish from her recyclable rubbish.
- ◆ My primary stakeholder would prefer the outcome to be made out of recycled and untreated wood.
- ◆ My stakeholder needs to use the unit every day for preparing and serving food on, so kitchen utensils and chopping boards must be easily accessible.
- ◆ The stakeholder would prefer the unit to be finished in a light to medium shade oil, so it brings out the natural grain of the wood.

### KEY FACTOR ARISING FROM THE INTERVIEW

One key factor is the optimum required dimensions of the unit. The unit should be rectangular – 46 mm (bench width) by no more than 52.5 mm (so the fridge door will open) and 97.4 mm high so Libby can work comfortably at the unit, without straining her back. I will also carefully measure the shelves that I position at the bottom of the unit to give Libby the option of storing a broom underneath.



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Options ▾

Pertinent questions that allow the client to answer in-depth, allowing the student to analyse feedback that will inform future practice.

### 3-D MODELS



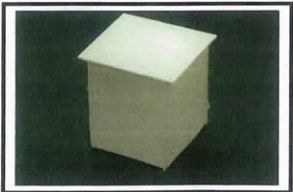
This model would be an efficient unit for food preparation but would only store a limited range of items because there is only one open shelf underneath. Another negative of this model is that it would be hard to transport as the items stored underneath could easily fall out.



A positive of this design is that the top is quite large for food preparation. This would solve one of my stakeholder's key factors. However, there is no storage space other than on this surface.

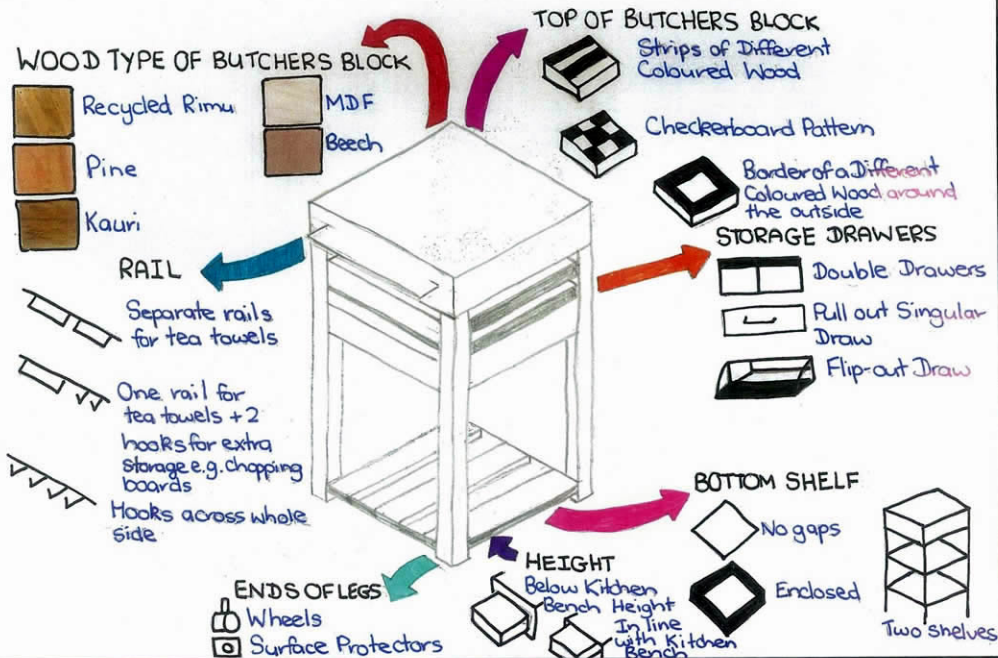


This 3D model would be a suitable height and would be easily accessible for my stakeholder to prepare food on without having to bend down. It is ergonomically friendly. However again, there is no storage space other than on the top.



This design is very sturdy and stable, making it easy for my stakeholder to prepare food on. However, if I was going to develop this design further I would have to add some sort of storage system by incorporating shelving underneath the top of the unit.

# DESIGN DEVELOPMENT




## SITUATING THE OUTCOME IN THE ENVIRONMENT





## RESEARCH ON MATERIALS

### WOOD MATERIALS


#### NZ NATURAL TIMBERS = RIMU, KAURI + PINE

<b>NAME :</b> 	Recycled Rimu
<b>SOURCE:</b>	The timber is taken from demolished old buildings. The wood has nail holes and knots on its surface. Rimu is used commonly throughout New Zealand for furniture making.
<b>ADVANTAGES:</b>	<ul style="list-style-type: none"><li>- Recycled Rimu is hard and dense. This wood therefore would be suitable as my stakeholder would prefer a wood that does not get damaged as easily.</li><li>- More economically sustainable than using Heart Rimu or OB Rimu as the wood has already been used.</li><li>- Affordable and easy to work with as it is easy to finish and mould.</li><li>- Because Recycled Rimu has knots and nails holes on the surface of it, this would suit my stakeholder's Rustic style home.</li></ul>
<b>DISADVANTAGES:</b>	<ul style="list-style-type: none"><li>- Takes a long time to 'dress' the Rimu because of the nail holes and knots.</li><li>- Quite hard to source suitable quality wood (availability issue)</li></ul>

<b>NAME:</b> 	Kauri
<b>SOURCE:</b>	Kauri timber is renowned for its perfect straight grain with only a few knots. The timber is light and durable and has a straw or amber colour. Today New Zealand's kauri resources are depleted and logs are being removed from swamps and forest floors.
<b>ADVANTAGES:</b>	<ul style="list-style-type: none"><li>- Durable and long lasting (in the early days, kauri timber was used for boatbuilding).</li><li>- Stable timber so it machines well and is ideal for turning and carving.</li><li>- Great character found in the timber as it can be from head logs or stumps.</li></ul>
<b>DISADVANTAGES:</b>	<ul style="list-style-type: none"><li>- Can blacken around the edges from nail holes.</li><li>- Is softer and lighter than Rimu so the wood can get damaged and scratches easily if it is being transported.</li><li>- Becoming rare and hard to source.</li></ul>


<b>NAME :</b> 	New Zealand Pine (Pinus Radiata)
<b>SOURCE:</b>	Pine is a strong, economical and versatile light – coloured timber. The tall clear trunks of the pine tree produce timber which is highly suited for furniture and all forms of wood applications.
<b>ADVANTAGES:</b>	<ul style="list-style-type: none"> <li>- Easily sourced as New Zealand has a growing volume of plantation forests that are available for harvest.</li> <li>- Because pine is a versatile and light coloured wood, it can be stained easily to look like other timbers.</li> <li>- Good gluing properties with excellent stability so is ideal for furniture making.</li> <li>- Has easy mould and turning properties.</li> </ul>
<b>DISADVANTAGES:</b>	<ul style="list-style-type: none"> <li>- Is a relatively soft wood, so Pine timber produces a sapwood which can be hard to treat</li> <li>- If not kiln dried properly then can be hazardous if the timber gets wet.</li> </ul>


#### OTHER TIMBERS = MDF


<b>NAME :</b> 	Medium Density Fibre
<b>SOURCE:</b>	Made from wood that has been reduced to its basic fibre elements and reconstituted to make a stable material. Boards of various densities are produced.
<b>ADVANTAGES:</b>	<ul style="list-style-type: none"> <li>- Cheap material as is a man-made and not naturally grown.</li> <li>- Can be easily painted and paint finish looks good.</li> <li>- Standard density which has been coated with resin and oil to produce a stronger material.</li> <li>- Comes in a range of thicknesses ranging from 6 to 32mm.</li> <li>- Can get different sizes to suit needs.</li> </ul>
<b>DISADVANTAGES:</b>	<ul style="list-style-type: none"> <li>- Is a soft wood so could get damaged easily.</li> <li>- If it gets wet, it goes soggy.</li> <li>- Not easy to mould.</li> </ul>

After comparing the properties of each type of timber, I believe Recycled Rimu would best suit my primary stakeholder's needs as it complies with all of the factors that are important to her. For example, Recycled Rimu is hard and dense compared to the soft properties of MDF. This would mean that the finished unit would not get damaged easily when it is in use and would also be longer lasting. Another reason indicating Recycled Rimu as the preferred principal material is the colour of the wood compared to the lighter coloured Pine. A wood like Recycled Rimu, would fit in with the rustic style home as it is a plain, but effective and durable wood.

## JOINTS FOR INTERLOCKING THE WOOD

<b>NAME :</b> 	Edge to Edge Joints
<b>SOURCE:</b>	Edge Joints are used to join narrow boards to make up wider boards for table tops and panels.
<b>ADVANTAGES:</b>	<ul style="list-style-type: none"> <li>- Can easily make wood bigger by joining pieces together.</li> <li>- When wood is joined together will be stronger than the original wood.</li> </ul>
<b>DISADVANTAGES:</b>	<ul style="list-style-type: none"> <li>- If not joined together with strong glue can split apart easily.</li> <li>- If wood plank edges are not straight can cause gaps between the joints.</li> </ul>

<b>NAME :</b> 	Dowel Joints
<b>SOURCE:</b>	Relatively simple and quick to cut. Dowel joints are basically a butt joint but are reinforced with wooden pegs drilled into both parts of the wood being joined. Dowel joints are used by furniture makers.
<b>ADVANTAGES:</b>	<ul style="list-style-type: none"> <li>- Cheap to apply.</li> <li>- Joins the wood easily.</li> <li>- Strong and long lasting.</li> </ul>
<b>DISADVANTAGES:</b>	<ul style="list-style-type: none"> <li>- Boring of the holes for the dowels is more difficult as have to be drilled equally.</li> </ul>


<b>NAME :</b> 	Domino Joining
<b>SOURCE:</b>	The new technology machinery for Domino Joining allows for one piece of machinery to be used to complete panel, frame and rack joints. The routing handheld machine allows for easy, accurate work to be produced and can be easily adjusted to suit the job. There are 5 domino sizes that can be used for different material thickness and applications allowing flexibility
<b>ADVANTAGES:</b>	<ul style="list-style-type: none"> <li>- Less time consuming</li> <li>- Strong and long lasting</li> <li>- Versatile</li> <li>- Stable - shape of the domino joints allow more surface area</li> <li>- Precise measurements and accuracies</li> </ul>
<b>DISADVANTAGES:</b>	<ul style="list-style-type: none"> <li>- Machinery and Equipment quite expensive to purchase</li> </ul>


The best way to join my recycled wood together would be to use the Domino Joining Method. This will be easy and neat because of the new machine technology available. Also it will be less time consuming as by using a machine that is specially designed and made for this type of joining, I do not have to spend time drilling holes and worry about making sure the holes are equal like in Dowel Joints .

However, I will use the Edge to Edge Joining system throughout the construction process of the final outcome.

## JOINERY MATERIALS

### WOODSCREWS

<b>NAME :</b> 	Stainless Steel Screws
<b>SOURCE:</b>	Primarily used for joining wood to wood, they provide an extremely strong joint that can be easily dismantled. They are used commonly to attach fittings such as hinges, locks and handles.
<b>ADVANTAGES:</b>	<ul style="list-style-type: none"><li>- The chromium content used to coat the screws prevents corrosion.</li><li>- Sharp end and thread.</li><li>- When comes in contact with water, does not rust.</li><li>- Tough and long lasting.</li></ul>
<b>DISADVANTAGES:</b>	<ul style="list-style-type: none"><li>- Takes a long time to 'dress' the Rimu because of the nail holes and knots.</li><li>- Quite hard to source (availability).</li></ul>

<b>NAME :</b> 	Galvanised Nails
<b>SOURCE:</b>	A wide variety of nails are available and used by the building industry but woodworkers use only a limited range. Nails are mainly used for mocks – ups and nailing man-made boards. Galvanised Nails are used mainly for indoor projects because the zinc coating over the nail wears off when used outdoors.
<b>ADVANTAGES:</b>	<ul style="list-style-type: none"><li>- Come in a range of different sizes.</li><li>- Different types of nails for different jobs.</li><li>- Makes a strong and sturdy joint.</li></ul>
<b>DISADVANTAGES:</b>	<ul style="list-style-type: none"><li>- Can ruin timber because of the black rust that comes off the nail head.</li><li>- Zinc coating disappears quickly if exposed to weather.</li><li>- React with untreated wood, leaving a rust stain.</li></ul>

Overall, using Stainless Steel Screws would be the best option for the joining the wood as they are long lasting, strong and sharp making them easy to insert into timber. The chromium coating also prevents corrosion, which is essential given the often damp kitchen environment and occasional use of the unit outdoors. Also, because I will be affixing (rails and drawers) these screws are easy to work with.