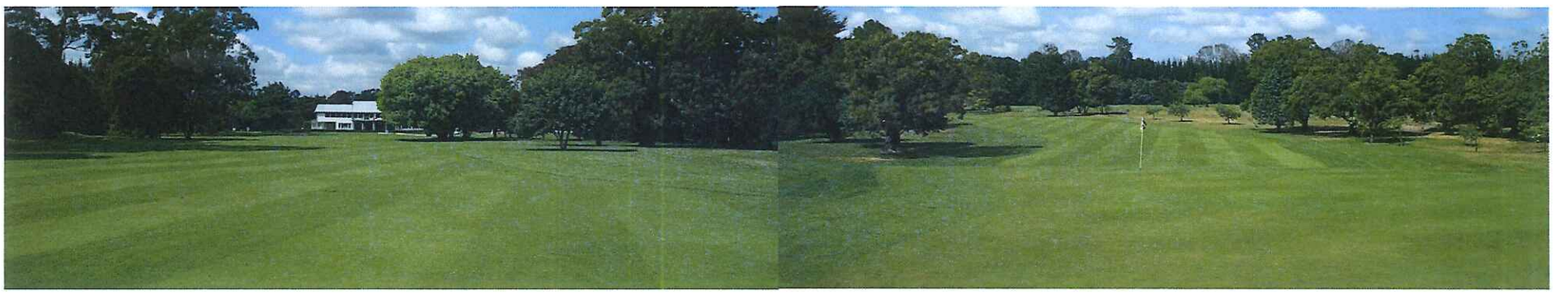
# Exploring the Context

## About Golf

First played in Scotland in the 15th Century, Golf is a precision sport in which golfers use many different types of clubs to hit a small, dimpled ball into a series of holes on a golf course, using the fewest number of strokes.

## Bridge Pa



The Hastings Golf Club is an 18-hole championship course, located within 10 minutes of the city centre. This club, also known both nationally and internationally as "Bridge Pa," was established in 1898. The Hastings Golf Club consistently features in the New Zealand TOP 10 Course Rankings.

## History

From its 1898 beginnings as a nightmarish dust bowl, the transition to the tree-lined golfing dream it is today was not achieved easily. At times progress was painfully slow.

- 1963 saw the first of the Wattie's professional tournaments. The first was won by Bob Charles, fresh from his success that year in the British Open. Charles went on to win four of the eight Wattie tournaments staged and establish himself as a great favourite of the Hawke's Bay crowd. Another terrific thrill for golf followers in Hawke's Bay during the Wattie tournament era came when Stuart Jones won the 1965 event which left a field which contained all the top professional marvelling at the skill of this talented amateur.
- The Bridge Pa course had undergone a number of changes of layout since its establishment in 1912 when in 1970 president Roy Skittrup spearheaded a plan which saw the course altered radically to provide the two even nines which exist today.
- While the changes to Bridge Pa initiated by Skittrup and Harold Christie took some time to develop (and for players to adjust to), by midway through the 1970's the Hastings course was being hailed as something special, not just by people from other parts of Hawke's Bay and New Zealand, but overseas as well.
- Through the 1980's the course continued to develop and to be recognised as one of the country's premier layouts.
- The Hastings Golf Club hosted the men's inter-provincial championships in 1989. Formerly known as the Freyberg Rosebowl, but subsequently renamed the Tower tournament for its main sponsor, this contest brought the cream of New Zealand's golfing talent to Bridge Pa.
- In 1997, Hastings hosted the men's North Island championship at Easter and in 1998 it staged the Freyberg Rosebowl Masters event for players aged 40 and over it will have been the venue for every major national tournament. This is a remarkable record for the club and the course and a tribute to the men and women who have been responsible for the organising of these many prestigious events.

## Dress Code

Being the former club captain Dennis is required to maintain the high expectations that the members hold of him. This means that he needs to be well presented at all times, in appropriate golf wear. To do this he must follow the course's dress code.

"The enjoyment of golf depends a great deal on the co-operation, consideration and courtesy exhibited by fellow competitors. What is true of the game also applies to Club Membership. The spirit and image of a golf club is projected by the way fellow members show respect, courtesy and consideration for one another. This courtesy and consideration should extend to the choice of dress generally, and the standard of conduct on the course and in the clubhouse.[1]"

### Dress Standard

The standards of a Golf Club may be judged by the etiquette of its members.
The Committee expects that members wishing to use the facilities of the club would dress accordingly to the regulations as listed in the clubhouse. This applies to the course as well as the lounge.


[1] http://www.hastingsgolfclub.co.nz/layouts/terraces/Template.aspx?page=Dress+Code&ComeFromCat=244

**Men:** Dress shorts, Trousers, Socks, Sports Shirt
**Women:** Dress shorts, Skirt, Trousers, Socks, Shirt or Blouse
**Prohibited:** Bare Feet, Workboots, Jandals, Rugby style shorts, Singlets, Dirty or unkempt clothing

**Please note:**
(i) That jandals, non-dress jeans, beachwear etc, are not regarded as respectable dress for the Golf Club.
(ii) That any member who brings a guest to the Club must ensure that he or she is dressed accordingly.
(iii) The General Manager is empowered to refuse access to persons incorrectly dressed.

## About Hawke's Bay:

Hawke's Bay (Maori: Heretaunga) is a region of New Zealand, located on the east coast of the country's North Island. Hawke's Bay is recognised on the world stage for its award-winning wines. The regional council sits in both the cities of Napier and Hastings. It derives from Hawke Bay which was named by Captain James Cook in honour of Admiral Edward Hawke who decisively defeated the French at the Battle of Quiberon Bay.[2]

## Climate

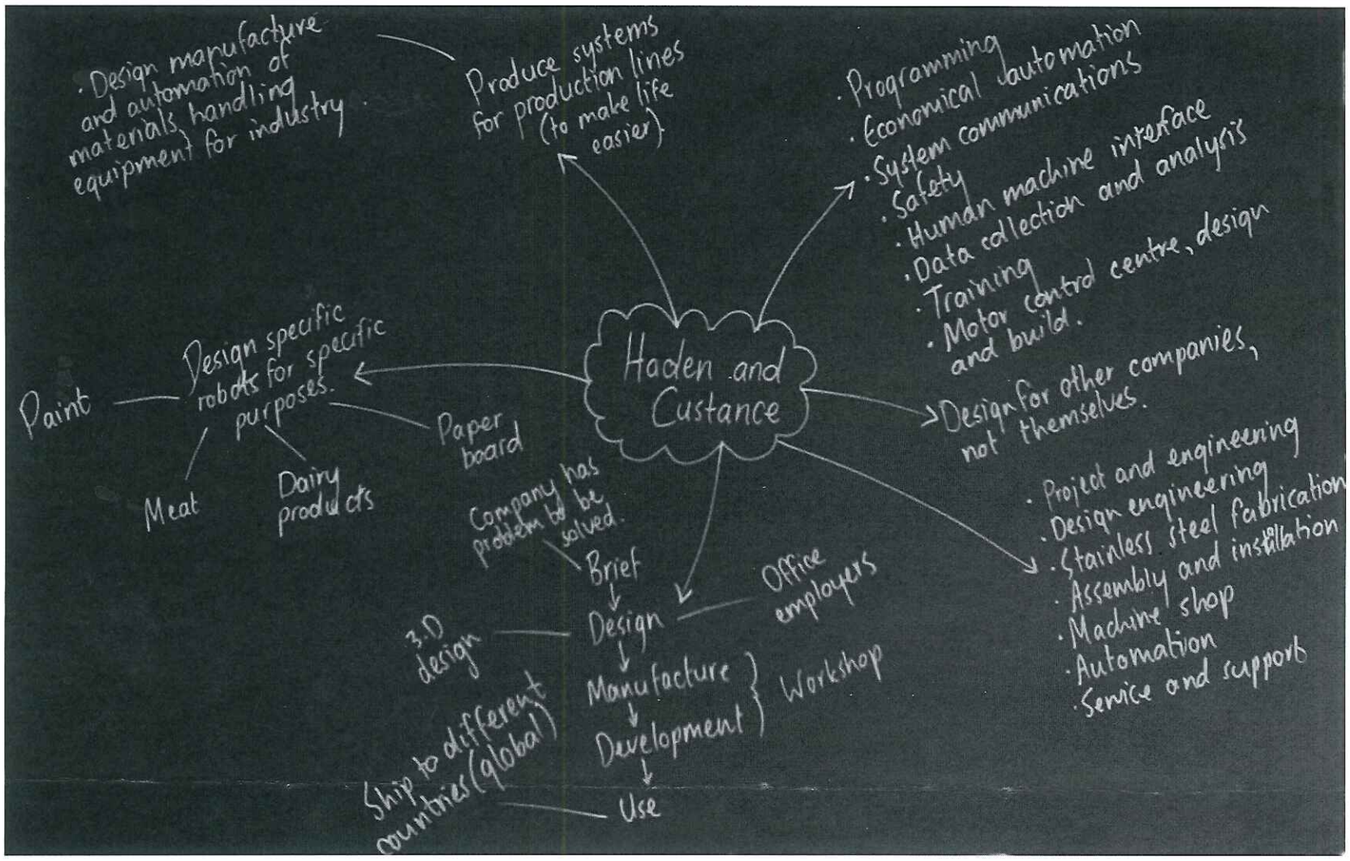

- Altitude; 2 m (7 ft).
- The average temperature in Hawke's Bay, New Zealand is 13.8 °C
- The range of average monthly temperatures is 12 °C.
- The warmest average max/ high temperature is 23 °C in January & February
- The coolest average min/ low temperature is 4 °C in July
- Hawke's Bay receives on average 793 mm of precipitation annually or 66 mm each month
- On balance there are 116 days annually on which greater than 0.1 mm of precipitation occurs or 10 days on an average month
- The month with the driest weather is September, October & November when on balánce 48 mm of rainfall (precipitation) occurs
- The month with the wettest weather is May when on balance 97 mm of rain or hail falls across 11 days
- Hours of sunshine range between 4.5 hours per day in July and 8.1 hours per day in January
- On balance there are 2281 sunshine hours annually and approximately 6.2 sunlight hours for each day
- On balance there are 6 days annually with measurable frost and in July there are on average 3 days with frost[3]

[2] http://en.wikipedia.org/wiki/Hawke's_Bay_region
[3] http://www.napier.climatemps.com/

# Haden and Custance

We went to see the workplace of the manufacturing firm Haden and Custance in Havelock North to see how practicing technologists work, and the things we could learn from them.

After visiting Haden and Custance as a group we decided to compile a brainstorm of the things we had learnt from the trip.




*Key Points*

- They have separate departments for each stage, meaning different people with specialisations in different areas are separated to do the job they would be the most productive in. This also shows that there are different resources and knowledge needed in different stages.
- Haden and Custance design their solutions for each product, showing that each design is unique in its functions.
- They use 3D Auto CAD (Computer Aided Design) to develop their solutions
- After the testing and trialling of the finished prototype the disassemble it, and pack it into a shipping container, parts are made specifically to fit, as this is the most efficient way of shipping the robotics, and the most cost effective.
- They use stainless steel for their products mostly, as it is hygienic, which is important as they manufacture solutions for food producers, and it is resistant against rust.
- Haden and Custance don't rely on patenting their technology to protect it from being copied, as they continue to make better solutions constantly.

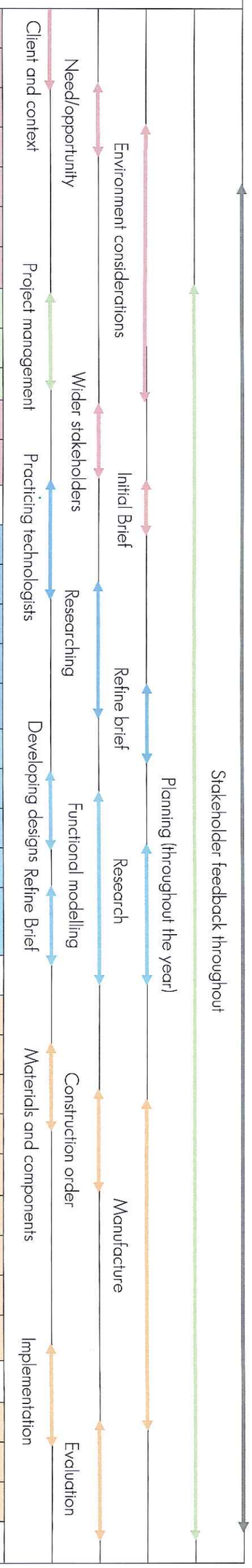
*How I can use this in my own work:*

- As I am going through all the processes by myself I can't delegate different jobs but if I need something done that a specialist company can produce the same product to a better quality or faster, like permanent pleating, I may be able to outsource this job to ensure my solution is of better quality.
- The fact that they manufacture different robotics for each different problem can apply to golfers and their clothing as each golfer will have individual needs, and I will just be focusing on Dennis'.

# Yearly Plan

| Milestone No. | |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |

| Week | Dates | Lessons | |
|---|---|---|---|
| **Term One** | | | |
| 1 | 28 - 1 Feb | 0 | Year 13 camp |
| 2 | 4 - 8 Feb | 1 | Waitangi day |
| 3 | 11 - 15 Feb | 4 | |
| 4 | 18 - 22 Feb | 4 | Swimming sports |
| 5 | 25 - 1 Feb/Mar | 3 | Athletic sports |
| 6 | 4 - 8 Mar | 3 | |
| 7 | 11 - 15 Mar | 4 | |
| 8 | 18 - 22 Mar | 4 | |
| 9 | 25 - 29 Mar | 3 | Open Evening, House Quiz, Good Friday |
| 10 | 1 - 5 Apr | 3 | Easter Monday &Tuesday |
| 11 | 8 - 12 Apr | 4 | School production starts |
| 12 | 15 - 19 Apr | 4 | School production ends — Critical Review Point 1 |
| **Term Two** | | | |
| 1 | 6 - 10 May | 3 | School Ball |
| 2 | 13 - 17 May | 4 | |
| 3 | 20 - 24 May | 4 | Practice Exams |
| 4 | 27 - 31 May | 4 | |
| 5 | 3 - 7 Jun | 3 | Queen's Birthday — Critical Review Point 2 |
| 6 | 10 - 14 Jun | 4 | House Kapa Haka |
| 7 | 17 - 21 Jun | 4 | |
| 8 | 24 - 28 Jun | 3 | |
| 9 | 1 - 5 Jul | 5 | |
| 10 | 8 - 12 Jul | 3 | Critical Review Point 3 |
| **Term Three** | | | |
| 1 | 29 - 2 Jul/Aug | 4 | |
| 2 | 5 - 9 Aug | 5 | |
| 3 | 12 - 16 Aug | 4 | |
| 4 | 19 - 23 Aug | 3 | |
| 5 | 26 - 30 Aug | 4 | Victoria University Open Day (Wellington) |
| 6 | 2 - 6 Sept | 4 | |
| 7 | 9 - 13 Sept | 4 | |
| 8 | 16 - 20 Sept | 3 | Benchmark Examinations, 2hr Technology Workshop |
| 9 | 23 - 27 Sept | 5 | Technology Showcase, Garments due — Critical Review Point 4 |
| **Term Four** | | | |
| 1 | 14 - 18 Oct | 4 | Portfolios Due |
| 2 | 21 - 25 Oct | 3 | Hawke's Bay Anniversary Day |
| 3 | 28 - 1 Nov | 3 | Labour Day |
| 4 | 4 - 8 Nov | 4 | Scholarship Report Due, End of School for Years 11-13 |



# Milestone Stages

One:

Issue and context

- Client and context
- Need or opportunity
- Social and physical environment research and considerations
- Wider stakeholders
- Initial brief

As the first stage, this will involve establishing my need/opportunity. These steps will help to build comprehensive background information and knowledge of the issue, client and context the issue resides in.

Two:

Project management/planning

- Analysing project management practices
- Plan milestones
- Justify planning tools
- Plan milestone stage 1

This will help me to develop a schedule that reflects the social and physical environment in which the outcome will be developed and implemented in. I will be able to establish milestone stages that I will undertake throughout the development and completion of the outcome.

Three:

Researching existing solutions and processes

- Practicing technologists
- Existing solutions
- Historic research
- Mass production
- Refine brief

This will help me to draw possible ideas from a range of sources and evaluate key features, linking them to the issue and considerations of the context, and refine my brief and specifications.

Four:

Designing/testing/trialling

- Design ideas
- Stakeholder feedback
- Develop designs
- Functional modelling
- Materials and components list
- Final brief

This will help my brief to develop along with my specifications as my conceptual range develops. This stage will also help me to establish key ideas about my design and show these through photographs and explanations.

Five:

Manufacture and evaluation

- Manufacture
- Techniques and processes
- Mass production
- Prepare for implementation
- Feedback
- Evaluation

This will allow me to justify the outcome's fitness for purpose in its broadest sense. As well as how the final brief and specifications and the outcome reflect the context considerations.

# Critical Review Points

1: reviewing research into context and issue so far, evaluating time management. This will help me to establish what kind of a planning system I need to integrate into my work in the future to ensure I stick to deadlines.

2: making sure my planning templates and methods are working and evaluating my project management research as reflecting on this will help to make my work more efficient.

3: looking back to see if my designs, research into existing solutions, and tests give conclusive results, and are in-depth enough for me to produce a quality solution.

4: making sure I'm ready to evaluate and implement my final product and evaluating my work to this point.

# Questions for my Client

## General

What are the clothes you wear for golfing in:

- Tidy trousers
- Shorts
- Polo shirts
- Sweaters
- Rain gear
- Hats

## Physical aspects

Movement

*> do you find that your swing is affected by the clothes you wear?*
Yes, at times

Practicality

*> do all of the tools you use regularly in golf fit in your pockets of your pants?*
Yes, but sometimes it is hard to find a place for everything

*> how long do you golf clothes last - is durability ever a problem?*
Clothes fade because of the sun, which makes them look old. As well as this they can also snag on branches and rip

## Natural aspects

Sun

*> how do you protect yourself from the sun when you are golfing*
I wear a hat and lots of sunscreen

*> are your golf clothes made from UV resistant materials?*
Some, but not all of them

Wind/Rain

*> does the wind or the rain affect your golf?*
It can, depending on what I'm wearing

*> do you have particular clothes that you wear in bad weather?*
Yes, warmer clothes as well as waterproof over-pants and jacket

*> what makes these clothes different to your usual golf wear?*
They're made from waterproof materials

*> do you find that your clothes get very heavy when they are wet?*
Yes, and this makes movement difficult

## Social aspects

Reputation

*> do you feel pressured by the people you golf with to wear branded golf wear?*
Definitely, it does impact on what kind of clothes I buy for golfing in

*> does your reputation affect how you present yourself on the golf course?*
Yes, as well as abiding by the club's dress code

## Personal preferences

Colours

*> do you have specific colours that you prefer to wear?*
Cooler colours in winter and warmer colours in summer

*> what are Bridge Pa's club colours and does this affect the colours of clothes you buy?*
Red and black
Yes, and because I play in club tournaments and competitions this means I am required to have black trousers and shorts, as well as a club jersey and shirt

*> do you like patterned golf clothing?*
I don't own any but I would be open to it

*> would you be open to wearing brightly coloured clothing?*
Yes

Styles

*> how do your clothes change seasonally?*
I wear different clothes for the different weather

*> do you usually wear shorts rather than pants in summer?*
Yes I do, because it is too hot for pants most days, although I would rather wear pants due to the sun protection they give.

While there were lots of great women's fashions, Birdy & Grace easily stole the show with their Skyfall collection. The collection features a lot of unique prints that make bold statements. Additionally, the company has options for women who want more coverage than traditional golf clothing offers. For instance, the Victoria shirt has long sleeves and more coverage around the neck.

Men's Fashion

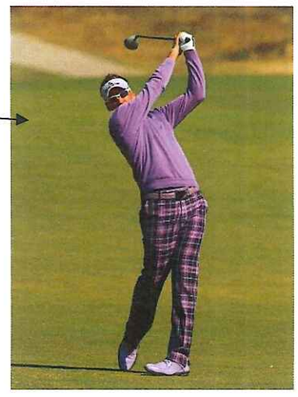
It looks like 2013 is going to be the year of colour when it comes to men's fashions. While there were lots of different fashions available, Puma generated a great deal of attention thanks to its colourful offerings. While golf is usually known for clothes with solid colours, Puma mixed things up quite a bit and created quite a stir.[3]

INSIGHTS INTO GOLF TRENDS 2013

**The apparel styles were full of colour, contrast and lots of great fabrications.**

In recent years, there has been a commitment to break the boundaries between fashion and golf. Yes, there are truly technical pieces but at the same time there are plenty of choices that can also be worn off the course. Brands know they have to offer more of a lifestyle look in order to increase sales.

Colour was in full force at the PGA show, often with a more vintage appeal. Many brands are aiming to appeal to younger golfers. Pocketed polos are not for Gramps anymore!



**One very strong colour trend across all brands was shades of purple.** Lavender/purples are the new blue!

Colourful belts and large branded buckles were everywhere. Most were a mix and match option and one size belt-cut to fit.

Golf shoes continue to evolve, getting lighter and closer to the ground, for good contact. Also available in a wide array of colours, the golf shoe is looking more like an athletic shoe.

**There is also a trend for fabric to be as lightweight as possible - nothing to weigh the golfer down.**

Even pants are made out of a lightweight, sublimated poly/spandex to provide ease of movement for an unrestricted swing.

The woven wind shirt is fading into the bunker! If any golf garment is woven it incorporates stretch. Jackets typically are seam sealed to protect you from the elements, and many technical fabrics that regulate your body temp and are designed to NOT inhibit your swing. Wicking and perforated fabric provide relief from the heat. Many garments also offer UPF protection.

Trends I noticed in polos included sublimations of graphics from bold to tone-on-tone. Colorblocking was prevalent, and there was a nice mixture of textures on pieced shirts. These performance pieces are more "engineered" than designed, from the placement of the seams to the type of fabric used in certain parts of the shirt.

The ½ zip pullover reigns supreme with lots of stretch fabric, reflective trim and contrast zippers.[4]

[3] http://hamptongolfclubs.com/spring-trends-in-golf-clothes/

[4] http://www.yourbrandpartner.com/promo-insights/top-pga-fashion-trends-2013

# Golfwear Survey

I have decided to put together a selection of questions in the form of a survey and give it to golfers at Dennis' golf course; this will help me to gain better understanding golfers' needs regarding their golfwear. This will be a form of market research as well as to help me understand Dennis' needs.

What do I want to find out?

- Problems golfers face with their clothes
- Suggestions
- Preferences e.g. polo shirts or dress shirts
- Awareness of sun protection
- Special features they already have

## GOLFWEAR SURVEY

1

Which type of pants do you usually wear while golfing?

- ☐ Branded golf pants e.g. Nike, Puma
- ☐ Dress pants
- ☐ Other _____

2

Which top do you prefer to wear while golfing?

- ☐ Polo shirts
- ☐ Dress shirts
- ☐ Other _____

3

Do you encounter any of these problems with your current golfwear while playing golf? (Please tick any that apply)

- ☐ Not enough space for tools i.e. divot tools, tees, glove
- ☐ Poor fit
- ☐ Noisy when moving/swinging
- ☐ Too hot/stuffy
- ☐ Clothes get heavy when wet
- ☐ Other _____

4

How expensive would you consider golfwear to be?

- ☐ Inexpensive
- ☐ Affordable
- ☐ Expensive
- ☐ Unreasonably expensive

5

Is Sun Protection a factor in your choice of golf apparel?

- ☐ Yes
- ☐ No

6

Do you have golfwear with any of these special features? (Please tick any that apply)

- ☐ Perforations for breathability
- ☐ Odour reducing fabric
- ☐ Specific pockets, e.g. scorecard pocket
- ☐ Slit at ankle on hem of pant
- ☐ Recycled materials
- ☐ Waterproof pockets
- ☐ Other: _____

Thank you!

I will be using this information as part of my research around the needs of modern golfers, which will be put towards my Textiles Technology portfolio.

# History of Men's Golfwear

Here is a brief history of the evolution of golf apparel and the more extreme statements that have been made in the name of golfing fashions:[1] [2]

**1700s and 1800s**
In the early days of the game in Great Britain, golfers played wearing kilts and animal skins. By the time the European nobility developed a liking for the game, the apparel had changed to reflect the fashions popular amongst those who most frequently played the game. Golfers wore knee length breeches over stockings, sported tailcoats, and wore ruffled cravats around their necks.

**Early 1900s**
In the early modern era of golf, long trousers had become the most popular item of clothing in all sectors of society and rather than embrace this change, golfers decided to mask it by tucking their trousers into long socks. Players often wore long trousers and full morning jackets with ties while golfing. How the golfers coped with hot conditions is unknown, as few would have dared to discard their heavy jackets and ties, even under the muggiest of conditions. The golfers dressed formally to match the conservative attitudes of the time and the gentlemanly reputation of the sport.

**Between the Wars**
Golfers abandoned the suit jackets of the pre-war years in favour of sleeved shirts with bow ties. They still tucked their trousers into their long stockings. It was at this time that the bow ties became a popular accessory for many golfers as well as the V-neck sweater which became popular amongst those golfers prone to taking a chill.

**1950s and 1960s**
Thanks to golfers like Arnold Palmer and Gary Player, golf moved from ultra-conservative fashions to the much looser khaki pants and light polos.

**1970s and 1980s**
Golfers around the world such as Jack Nicklaus, Nick Faldo and Steve Ballesteros, began sporting exuberant colours, which became popular in sweaters, trousers, socks and polos. The colours prominently included bright pinks, blues, oranges and yellows.

**21st Century**
Golfers began to wear clothes produced by sports companies such as Nike, Adidas and Callaway. Form-fitting polos and mock tee shirts have become popular on many professional tours.

# Classic vs Modern

The choice between classic and contemporary will depend on preference for the classic golfing look, and careful maintenance versus easier maintenance.

## Classic Golf Clothes

Classic golf jumpers such as the Argyle knit style and lambswool fabrics have a longstanding association with golfing, and its origins in St Andrews. The natural fibres in a woollen jumper or jacket are natural insulators, and keep the golf player cool in warm weather and warm in colder climes. Natural wool requires specific care to avoid damaging the fabrics, as the wool can felt or shrink if due care is not taken. A woollen garment will last for a long time if properly cared for, and feels luxurious and comfortable. Woollen items come in a range of styles and colours, from bright Argyle style knits to plainer and more muted tones.

## Modern

Modern golfing clothes made by popular mainstream sports brands use a fabric technology designed to "wick" excess moisture away from the skin keeping the player comfortable, warm and dry. Synthetic fabrics designed by leading sports manufacturers use specially designed substances to keep the garments fresh smelling for as long as possible, and allow the fabric to breathe. In general, choosing a golf garment with the latest fabric technologies will allow for easier washing. A woollen jumper requires hand washing or very careful machine-washing with specific detergents, but a synthetic fabric is less delicate and may prove easier for a busy lifestyle.[3]

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[1] http://www.golflink.com/facts_4910_history-golf-clothes.html
[2] http://heritage-classic-golf.com/golf-fashion-history/
[3] http://www.ebay.co.uk/gds/Mens-Golf-Clothes-Buying-Guide-/10000000177321585/g.html

# TRASH TO TREND

Trash To Trend is a concept to help push the idea of reusing materials in the production process. The idea behind the Trash to Trend platform grew out of the doctoral research of Reet Aus, a designer who has been experimenting with upcycling in fashion and theatre costume design since 2005. I feel that looking into this concept will help me to gain a greater understanding of what it means to be sustainable in practice, especially in terms of producing garments on a wider scale. I feel I can take a lot from this and use it to improve my own practice.

## Concept

Upcycling means taking waste materials back to production by adapting the material cycle processes with the help of design. Trash to Trend aims to work as a meeting point between sources of secondary materials, designers, producers and customers to enable upcycling textile materials throughout their all life-cycles.

While the platform is initiated by the need to offer a solution for the ever-growing waste problem, it focuses on sharing design ideas that have the four merits:

- **Upcycled** - at least 70% of the product should be made of secondary materials meaning that the product offers a new value for the material which conventionally could be called waste. It means that materials are valued in the form that they already have and no shredding or chemical recycling is necessary to produce new items out of leftover materials.

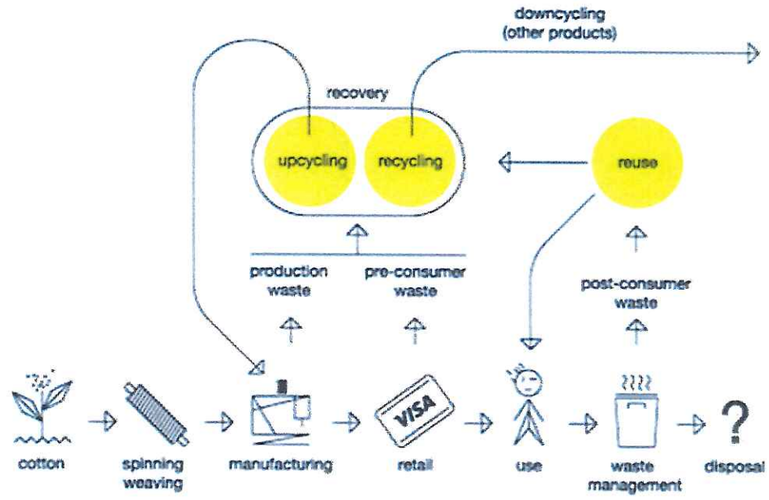
- **Repeatable** - each product should be designed in a way that the production can be repeated either by (1) bringing leftovers back into the existing production cycle, (2) using leftover materials by other producers in their production cycles (i.e. as industrial symbiosis) or (3) offering high-quality DIY instructions for making personalized product out of local secondary materials.

- **With high design quality** - each product is highly functional and long lasting. With enough tailoring and craft skills and following the DIY instructions it should be possible to make the product with professional looks and feels.

- **Transparent** - each product has its story about what materials have been used, who made it and where does it come from. Having the three merits described above means that it is also possible to give facts and figures about how much and in which way the environmental impact is reduced with the product.

There are three methods to manufacture clothes and accessories:
- Individual sewing at home (DIY)
- Independent designer or a small producer working in a studio (one-off or small-scale manufacturing)
- Mass production

Upcycling can be applied to all three methods. Even more, with all three methods post-consumer, pre-consumer as well as post-industrial waste materials can be used.




## Upcycling in mass-production

Most leftovers in mass-production are related to:

- The maximum efficiency of pattern layout calculated by special computer programs which can raise the use of fabric up to 85%
- From that point forward, cutting edges and fabric roll ends are usually wasted;
- Over-production which is necessary for every production company to reduce its risks but which is usually kept as a secret from the subcontracted brand.

As a result, even a highly efficient production company generates 10-20% of waste out of all the fabric it uses, although the material still has good material qualities. The most common waste management solutions globally are land filling and incineration.
It is growingly common also to implement closed loop production or industrial symbiosis. It usually means using the leftovers from one product/industry as an input material in another product/industry, for example using textile leftovers in upholstery or isolation. It is often solved as downcycling - the materials are shredded for better usability in their second lifetime.

Industrial upcycling on the other hand means giving additional design input (in the production processes or in the form of industrial symbiosis) to maximize the life cycle of materials without reprocessing them. It helps creating new products with less energy, water and other resources used per product by not producing more materials for that.
Trash to Trend aims to create a contact point between producers and designers to share their material information and good design ideas as well as find a market place here to meet the customers and get direct feedback.

## Upcycling as part of your organisation's culture

One of the most practical and well-known application of upcycling is creating new products or company gifts out of old working clothes or company textiles (e.g. hospital linens) - the quantity of similar materials is big but the materials still have high quality after they become discarded from their first use.

Another option how to implement upcycling in organisation culture is to choose upcycling when ordering a new outfit for the employees. Either an office outfit, a workman's outfit or a t-shirt for a sports event - all could be done in an upcycled way.

Example:


## Evaluation

I think Trash To Trend is a great idea and helps to introduce possible designers and manufacturers to the other side of production, the side of wastage and under-utilisation of resources. This concept has really opened my eyes to the different ways we could think about the environment and the waste created when looking into mass production for the garments I have designed.

The main points I will take from this are:

- Ideally, I will want any product I design to follow the four merits outlined in the website of Trash To Trend;
  - Upcycled
    - While I may not be able to use fully recycled materials, or even any, I will consider environmentally friendly alternatives, as well as learning from existing designs to create a more user friendly design that makes the most of the materials used.
  - Repeatable
    - The garments being first designed and prototyped means that DIY instructions would be a possibility to this and these may be able to be available online. The way that I will test the garment(s) means that they will be highly repeatable in the sense that they will meet needs of golfers, and so do not need to be altered. The use of paper patterns means that a variety of sizes can be made to fit a wide variety of golfers.
  - High design quality
    - Through my own testing, trialing, and development, I believe that the end garment(s) would be a high quality design, as this is my intention for Dennis' garments. As well as this, the materials chosen will ideally be of highest quality as affordable. The garments will be made carefully, as I am looking at producing the first garments locally, in Hastings; I trust the quality of manufacture will be high.
  - Transparent
    - Most of the information about the range would be on the website. This means the opportunity to have an information page on the processes used as well as any environmental benefits and a story on how this line came about through my own desire to develop garments for my father that had the user in mind rather than lowest cost and maximum profits like most sportswear manufacturers.

www.trash-to-trend.shopify.com

About Soma President

Soma is a New Zealand-owned company that manufactures clothing. Their specialty is the manufacture of 100% merino clothing, including fashion, sports and children's garments for both the local and export market.

Efficient Processes:

*CMT = Cut, Make, Trim process*

They use CAD, (computer aided design) and then print the pattern. After this they cut out material with small band saw from printed pattern. Notches in material through heated notch maker, rather than triangular notches, easier to cut and is the most efficient way to reduce material scraps where possible. When there are large scraps Soma recycles them and makes beanies, scarves, boxers, baby wear, fully utilising the material.

Facilities for:

- Elasticating (over-locking and flat-locking)
- Heavy duty bar-tacking
- Doming
- Flat-locking
- Binding
- Flat Seaming
- Button-hole and button-sew
- Blind hemming
- Fronting

In addition, they also have a tensionless laying up machine, garment cutting, CAD systems for pattern making and full examining, pressing and packing. This equipment is essential for the production of quality garments made from superfine and fine merino jersey.

People they produce garments for:

42 Below - T Shirts, Baby Baby - breast feeding pillows, CanTeen - hooded T's and polypropylene thermals, Chocolate Fish (UK) - merino wear, Canine Spirit - merino dog coats, Designer Textiles - Howie, Ortovox and MEC merino underwear, Hallensteins - T Shirts for NZ Music Month, Heiniger (NZ & Switzerland) - Shearing singlets, Honey Child - cloth nappies, Icebreaker - next to the skin merino, Karen Cole (UK) - merino women's fashion, Karen Walker - fashion tops, Kathmandu - polypropylene thermals, Kilt - young fashion, Krank Dirtwear - mountain biking clothing, Mini Merino - children's merino, Nature Baby - baby and children's merino, Pac Brands - Liberty merino underwear, Thermatech, Pumpkin Patch - children's clothing, Sonsie - women's swimwear, Starfish - women's fashion, Swazi - robust outdoor clothing, Zambesi - fashion boxers & tops

What makes them different from Chinese manufacturers?

Soma have shaped themselves to the demand in the market, shifting from underwear manufacture to producing small run garments for niche markets and with low minimums, suitable for small businesses. This diversification was necessary so as to not be a direct competitor with large manufacturing plants in Asia with low cost structures not attainable in New Zealand. Soma tries to minimise their environmental footprint by recycling packaging, paper, plastic and fabric off-cuts wherever they can. Based in New Zealand, 70% of their energy comes from renewable resources, giving their products and garments one of the lowest carbon footprints in the world.

# Summary

After speaking with Harold Trigg from Soma, I feel it is important to reflect on some key points that I can take from this to incorporate into my own technological practice.

I think that Soma's success has come from its ability to be:

- Innovative and flexible
- Receptive of their customers' needs.
- Conscious of quality finishes
- Focused on a quick turnaround
- Dependable

# Designing for Mass Production

## Things to Consider:

- Suitability of Style

  The current style of the garments I have designed and made and their suitability for mass production in terms of efficiency of pattern layouts and time it takes to make the garments.

- Colour/Pattern Range for Future Stock

  Range of different colours and the availability of these materials. I will need to look into getting material in bulk, rather than how I did for my garments, in small quantities, this will involve a lot more material.

- Ability to be Graded

  If the patterns I have chosen are easily graded (produced in more than one size), they should be as the patterns used come in a variety of different sizes.

- Care

  Do the materials and techniques used mean that the garments are easy to care for and easily laundered, as well as not needing dry cleaning etc.

I believe that these can all be taken through to my refined specifications as they are essentially criteria that my designs need to meet in order to be fit for the purpose of mass manufacture.

## Things I will need to Research:

- Costing

  I will need to estimate pricing for the line. I may need to learn how to create cost sheets to ensure that I am on target with what the customer will pay for garments so I how much it will cost to produce the line, find out how many pieces of the line to produce, and when to produce them. My prior knowledge from taking Accounting as a subject at school will help me here.

- Sourcing

  To find all of the resources I will need to produce the line whether its small or large quantities, such as fabric stores for woven, knits, trim suppliers (buttons, zippers, hardware, lining, labels, etc), cutting rooms, patternmakers, sample makers, marking and grading.

- Dealing with Factories/Suppliers

  I will need to learn how to negotiate contracts and pricing with factories, learn about how factories charge (Cut & Make; Cut, Make, & Trim; FOB; LDP), deal with minimums, make sure factories and suppliers meet my deliveries and provide the quality I require, and learn what factories expect from me.

- Local Production vs. Overseas Production

  I will need to decide between outsourcing and locally producing. Things to consider are quotas, tariffs, taxes, and fees that need to be paid to import goods, when shipping by ocean or air: I would need to learn how to set up the shipments and to complete the necessary paperwork to move goods, and learn how to clear goods from customs. Alternatively, choose a reliable manufacturer locally.

These things above will all really be things that I need to research after prototyping and so I will revisit these after that.

# Refined Context Considerations

After researching various existing solutions, I have decided to go back to my context considerations so that I can reflect on them and add new considerations that have come from my research. This is very important at this stage as it is where I am really beginning to consider the possibility of my design(s) going in to mass production. I will need to look closely at current trends and build upon them by analysing the key concepts that they have in common. In doing this I will need to widen my considerations from being solely about Dennis' needs, to about needs of golfers in New Zealand as a whole. While Dennis' opinions are a perfectly adequate representation of the desires of golfers, the research I have done towards the needs and feelings of Bridge Pa golfers has helped me to build a more clear picture of what is needed and expected from current golfwear sold in New Zealand. By analysing this data, it will show me what I need to incorporate in my design(s) to make it a viable solution in the market.

# Physical Considerations

Key
New: Green Text
Existing: Black Text
Removed: ~~Strikethrough Text~~

## AESTHETIC

There are a variety of things that can be considered when developing any garment, especially when it comes to aesthetics as the garment will be first judged by the way it looks, feels and then later how it performs.

I know, from the questions I asked Dennis, that:

- He doesn't mind colour in his golf wear
- He is open to trying different patterns or textures
- The Bridge Pa golf club colours are red and black

I now know from my research of golfers at Bridge Pa, that:

- Most golfers tend to wear dress pants while golfing and because of this they are not taking advantage of the new performance features available in many golf pants (this is possibly because of the high cost of these performance golf clothes)

I know that from my research of current golfwear that:

- There is a high supply of performance golfwear by big brand names like Nike or Oakley, these clothes are very expensive, ranging from US$60 - US$90 (NZ$70 - NZ$110)
- Most solutions I have researched have shown a bold use of colour that is rather popular at the moment
- As well as performance techniques used there has been a wide variety of different performance materials used in these garments, most have been given a particular name by each brand, e.g. Oakley's "O Hydrolix fabric"

From my research of the history of golfwear, I know:

- Colourful, 'out-there' clothes have always been fashionable in golf, and throughout the 1970's-1980's there were a lot of bright colours such as pinks, blues, oranges and yellows
- Form-fitting polo shirts are very popular currently due to sports companies like Adidas.

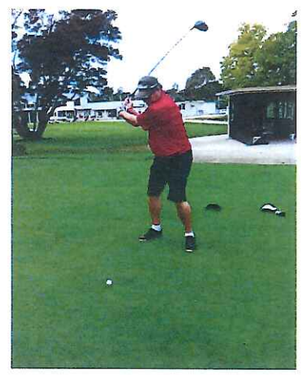
## FUNCTIONAL

*Movement* is very important in golf wear as restrictive clothing may negatively affect the golfer's technique. In golf, the swinging of the clubs needs to be considered.

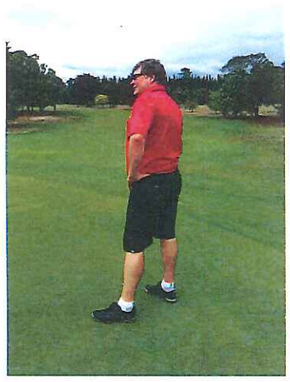
Getting a tee
Bending over to get things from his golf bag, including clubs, tees and a pen to fill in his scorecard is necessary throughout the game

First shot - off the tee
Dennis needs to be able to bend over and put the tee in the ground for the first shot of a hole

Hitting the ball
Seen in the illustration above of a golf swing, Dennis needs to be able to swing the club easily in order to get the best result



Looking for the ball
After hitting the ball Dennis needs to know where it is in order to plan his next shot



Bunker shot
If his ball lands in a bunker he needs to hit directly under it so that he can get it out of the sand

Putting
In order to gauge how much power to put behind the putt Dennis sometimes needs to get level to the ball

### Things to consider in golfwear around movement

Range of movement experienced while golfing:

- Bending
- Walking long distances
- Swinging clubs (twisting movement)

By surveying local golfers, I know that the majority have:

- Poor fit of the golfwear they buy
- Insufficient pocket space available to store the necessary tools used in golf
- A disregard for sun protection factor in their clothing

## LOCATION

*Protection from the elements*; sun, wind and rain, as well as considering the current climate, warm or cold is very important. As a joke between golfers is said that it never rains at Bridge Pa, but when it does Dennis needs to consider how he will protect himself from it. He does that by wearing wet weather gear, like waterproof pants and a jacket. While these keep him mostly protected from the rain they do affect his movement, as well as making a considerable amount of noise when he swings.
Hawke's Bay is known for its warm, dry summers.

### Possible ways to offset effects of the weather/location:

From my research, I have encountered several different ways existing golfwear acts to protect the golfer from the effects of weather:

- Waterproof pockets - these are used so that if it starts to rain the golf
- Water-resistant/moisture absorbent materials so as to either absorb water or detract it
- Odour controlling materials for hot days
- Naturally temperature regulating fibres (like Merino wool)
- Mesh for ventilation and moisture management

# Social Considerations

### Standards on a Golf Course

Members and visitors are expected to act respectfully and uphold a high standard of dress at Bridge Pa and as the former club captain Dennis really needs to consider this in the clothes he wears when golfing.

Golfers are expected to take their golf hats off when entering the clubhouse, which has maintained a level of formality from back when the golf course was started. This means Dennis also needs to consider this in his dress, as he usually goes up to the clubhouse after golf to socialise.

> "The spirit and image of a golf club is projected by the way fellow members show respect, courtesy and consideration for one another. This courtesy and consideration should extend to the choice of dress generally, and the standard of conduct on the course and in the clubhouse."
>
> - http://www.hastingsgolfclub.co.nz

## GOLF ETIQUETTE

As a game, golf is one with many rules and obligations regarding etiquette. These reflect the formality of the sport in the way of dress and consideration of others.

#### THE SPIRIT OF THE GAME

Golf is played, for the most part, without the supervision of a referee or umpire. The game relies on the integrity of the individual to show consideration for other players and to abide by the Rules. All players should conduct themselves in a disciplined manner, demonstrating courtesy and sportsmanship at all times, irrespective of how competitive they may be. This is the spirit of the game of golf.

#### CONSIDERATION FOR OTHERS

Disturbance or distraction:
Players should always show consideration for other players on the course and should not disturb their play by moving, talking or making unnecessary noise.
Players should ensure that any electronic device taken onto the course does not distract other players.
On the teeing ground:
A player should not tee his ball until it is his turn to play.
Players should not stand close to or directly behind the ball, or directly behind the hole, when a player is about to play.
On the putting green:
On the putting green, players should not stand on another player's line of putt or, when he is making a stroke, cast a shadow over his line of putt.
Players should remain on or close to the putting green until all other players in the group have holed out.
Scoring:
In stroke play, a player who is acting as a marker should, if necessary, on the way to the next tee, check the score with the player concerned and record it.

#### PRIORITY ON THE COURSE

Unless otherwise determined by the Committee, priority on the course is determined by a group's pace of play. Any group playing a whole round is entitled to pass a group playing a shorter round. The term "group" includes a single player.

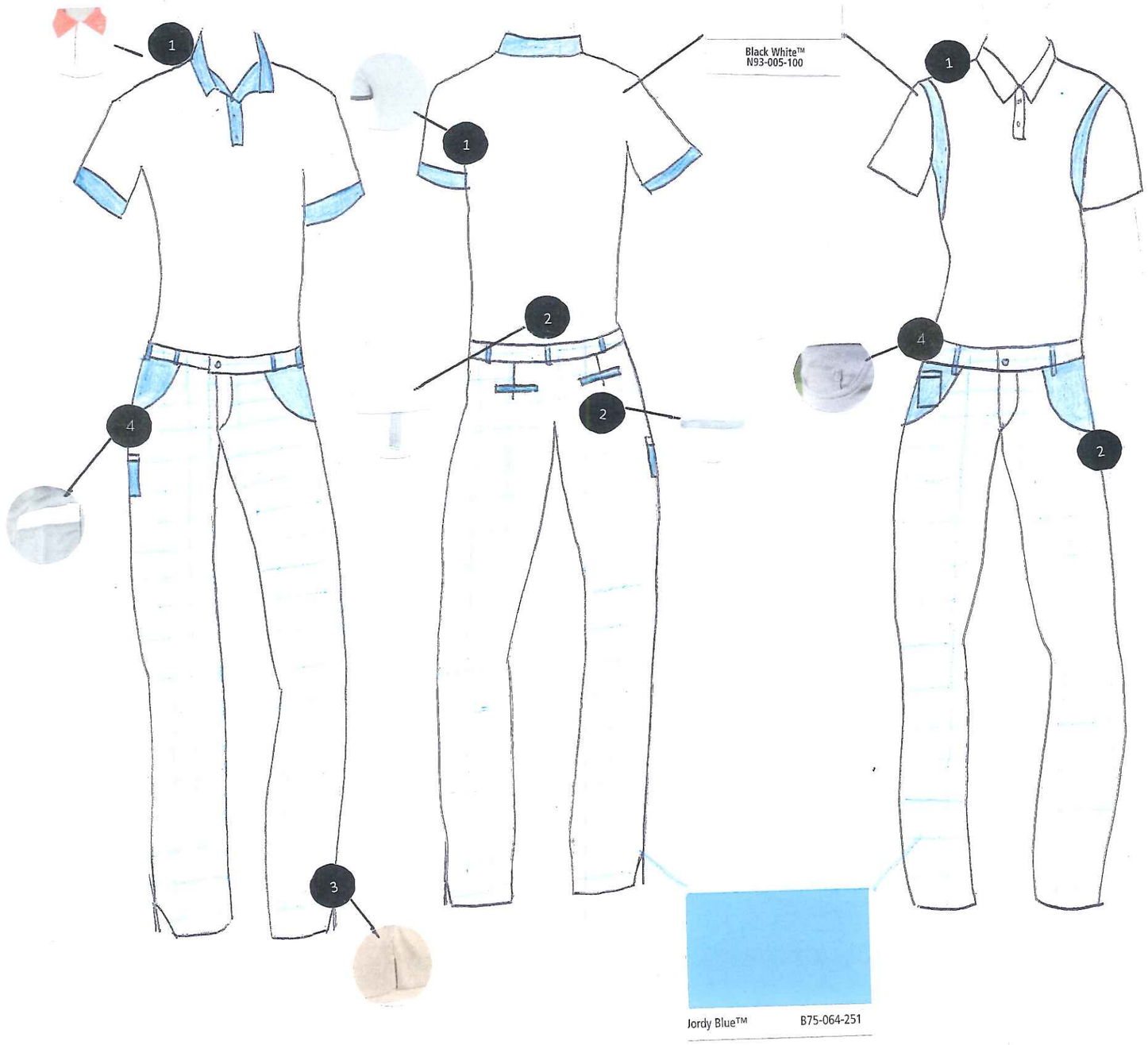
#### CARE OF THE COURSE

Bunkers:
Before leaving a bunker, players should carefully fill up and smooth over all holes and footprints made by them and any nearby made by others. If a rake is within reasonable proximity of the bunker, the rake should be used for this purpose.
Repair of divots, ball-marks and damage by shoes:
Players should carefully repair any divot holes made by them and any damage to the putting green made by the impact of a ball (whether or not made by the player himself). On completion of the hole by all players in the group, damage to the putting green caused by golf shoes should be repaired.
Preventing unnecessary damage:
Players should avoid causing damage to the course by removing divots when taking practice swings or by hitting the head of a club into the ground, whether in anger or for any other reason.
Players should ensure that no damage is done to the putting green when putting down bags or the flagstick.
In order to avoid damaging the hole, players and caddies should not stand too close to the hole and should take care during the handling of the flagstick and the removal of a ball from the hole. The head of a club should not be used to remove a ball from the hole.
Players should not lean on their clubs when on the putting green, particularly when removing the ball from the hole.
The flagstick should be properly replaced in the hole before the players leave the putting green.

I believe that these considerations/regulations overall reflect the nature of golf as a sport. As it is played over a long period of time (around 4-6 hours) and one played socially, there are many expectations of the players themselves, due to the lack of an umpire or official, to regard the rules carefully. I believe that this is really reflected in the overall standard of dress of golfers and the way the regulations around dress have not changed in the same way the rules of golf have not. This shows the way golfers dress is fundamental to the game maintaining its prestige and relevancy.

By abiding by dress codes at golf courses, golfers are showing their willingness to abide by rules regarding the game, in this respect I will need to consider restrictions around the dress code when developing my designs.

# Developments



## Before Alterations

The pants were visibly too big and baggy around the legs.



## Altering the Pants

I took the pants in gradually


## After Alterations

The pants fit Dennis nicely after being taken in, therefore the adjustments of 3cm in on the outer of both legs 2cm in on the inner of both legs need to be made in the prototype.



# Material Content and Colour

In selecting materials I will need to consider the fabric content and also the pattern of the material. These two components of the materials I choose are very important as they will impact the way the garments look and feel in a big way. Essentially well-chosen fabrics will mean my garments are fit for purpose in its broadest sense.

## Polo Shirt

Fibre Content:

Polo shirts are usually made of knitted cloth (rather than woven cloth)[1]

| Polo Type | Description |
|---|---|
| Blended | Blended material shirts bring the affordability of cotton and the resilience of synthetic materials together. They are comfortable, affordable, wrinkle resistant, and stain resistant. |
| Jersey Knit | Jersey knit shirts do not wrinkle and are made with an elastic-like material. They breathe easily but do not last as long as performance shirts. |
| Merino | Merino polo shirts are quality shirts that have features such as UV protection and odor resistance. They are stain resistant, durable, and they are easy to care for. |
| Polyester | Polyester polo shirts are resistant to stains and don't wrinkle or shrink. Their price is higher than cotton because the shirts are resilient and last a long time. |
| Pure Cotton | Cotton is comfortable, absorbs moisture, and is very inexpensive. Cotton wrinkles, stains easily and shrinks. |
| Silk | Silk polo shirts are for more dressy occasions. The silk makes the shirt shimmer while staying light and comfortable. Silk wrinkles easily, is not breathable and is very expensive. |

I am very interested in the possibility of Merino for a polo shirt, due to its amazing properties that would be very beneficial to Dennis while golfing. Because of the range of merino blends I think this could be something to research so that I can make a more informed decision.

Colour:

Polo shirts can be any colour or pattern. Ideally I will want something very versatile and easy to pair with other garments in Dennis' wardrobe. Possibilities include using a bold patterned material for the pants and a coloured polo that ties in with a colour in the pants material. Another option would be to use a classic polo shirt colour in black or white ensuring versatility.

The majority of golfers in my golfwear survey at Bridge Pa wore polo shirts in the colours of white or black so this would definitely be acceptable, as would a coloured polo shirt. I think that by moving from a dress shirt to a polo shirt was a good decision as it will allow me to be a bit more creative with the pants.

## Pants

Fibre Content:

The ideal material should not be overly heavy but must be sturdy. It should also be wrinkle free for easy ironing and have gone through a colour-lock treatment so that it does not fade after only a few washes.[2]

| Material | Features | Care |
|---|---|---|
| Cotton | Classic look; can come in prints or solid colours; breathable; sometimes blended with spandex for stretch or polyester for easy care | Usually machine-washable; usually needs to be ironed |
| Linen | Classic, lightweight summer material; breathable; sometimes blended with cotton | Wrinkles easily; less durable; often requires dry cleaning |
| Wool | Classic look; often in plaid prints; warm yet breathable; available in different weights for a variety of weather conditions | Requires dry cleaning |
| Polyester | Breathable fabric used in performance active wear; has some stretch; shapes to the body | Washable; usually wrinkle and pill resistant |
| Microfiber | Blend of synthetic fabrics such as nylon and polyester; drapes nicely; breathable; dries quickly | Usually machine washable |

There are many advantages to these materials, but I believe that possibly a blend of materials may ensure me the best fit and feel for Dennis' pants. Wool would be very interesting to work with but as it is dry clean only this is a major negative point to it. Machine washable and the absence of the need to iron synthetic materials make them very attractive. It will be very important finding the right weight, the material should probably include some stretch for ease of movement also.

Colour:

Depending on the occasion golf pant patterns and colours can change.

- If the occasion is formal, neutral colors are suitable: black or navy, or lighter shades of grey, khaki, or beige
- Plaid prints come back to the golf kilts traditionally worn in Scotland
- Bold designs like those made by Loudmouth Golf are an option to stand out on the golf course

From observing golfers at Bridge Pa, Dennis' golf course, and looking at his existing golf attire, I believe that any of these types of materials would be suitable for wearing there, although bold patterns may be seen as too outrageous so a toned down version of these may be more acceptable.

[1] http://www.ebay.com/gds/The-Complete-Mens-Polo-Shirt-Buying-Guide-/10000000177630023/g.html
[2] http://www.ebay.com/gds/Your-Guide-to-Buying-Comfortable-Stylish-Golf-Pants-/10000000177631532/g.html

# Chosen Material

## Polyester Viscose Rayon

The material I have chosen is 60% Viscose and 40% Polyester.

## Fitness for Purpose:

For the material I have chosen to be fit for purpose it needs to meet the specifications I have set for the pant material.

✓ **Easily laundered**
- Care

This fibre blend can be washed in the washing machine, making it easy care.

✓ **Absorbs moisture**
- Polyester[1]

It is hydrophobic in nature and quick drying. It can be used for insulation by manufacturing hollow fibres.
- Viscose[2]

Has high moisture absorption.

✓ **Soft texture**
- Viscose

The viscose content in this material makes it very soft to the skin.

✓ **Stretch**
- Viscose

There is a slight amount of stretch in viscose.

✓ **Colour**
- Black Watch Plaid

The print is a green, blue and black plaid called Black Watch. This is very traditional as it goes back to golf's Scottish origins where golfers first played golf in kilts.
- Viscose

Articles made in viscose can be dyed and printed extremely well and exhibit exceptionally brilliant colours.

✓ **Durable**
- High quality materials

Good quality materials mean they are durable and last a long time before wearing out.
- Polyester

This material is very durable: resistant to most chemicals, stretching and shrinking, wrinkle resistant, mildew and abrasion resistant.

## Viscose/polyester blend properties:

- Durability
- Resilience
- Shape retention
- Absorbency
- Soft texture

The wet strength of the resultant fabric is also improved; viscose provides absorbency, soft texture and variety of colour. Blend of polyester and viscose generally ranges from 65% of polyester and 35% viscose to 55/45, 45/55, 48/52 respectively. Among these blend levels 48/52 and 65/35 are commonly used for school uniforms and suiting materials.[3]
The negative points in each material are balanced by the other, meaning that this blend is very suitable for golf pants. The ease of laundering, crease resistance and strength from the polyester coupled with the soft feel and temperature regulation make this blend perfect for golf pants. The weight of the material is idea for pants.

## Stakeholder feedback:

Dennis and I chose this fabric together and he gave verbal feedback.
"It feels nice to touch. I like the dark colours and it's not too bold."

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1 http://www.whatispolyester.com/
2 http://www.ivc-ev.de/live/index.php?page_id=179
3 http://www.textileschool.com/School/Fabrics/BlendedFabrics.aspx#sthash.fQ9GIEZz.dpuf

# Chosen Material

## 100% Merino Blend

The merino blend I have chosen is what Levana (the fabric company I bought the fabric from) call a La Costa blend. This is a particular blend appropriate for polo shirts inspired by the golfer Bob Charles. I thought this was ideal for my polo shirt and the performance properties of merino are very appropriate.

## Fitness for Purpose:

For the material I have chosen to be fit for its purpose it needs to meet the specifications I had set for my polo shirt material:

✓ **Durable**

- Durability

Merino wool is durable, making it suitable for use on high friction areas such as the feet. Wool is also flame-resistant so it will not readily burn if exposed to an ember.

✓ **Easily laundered**

- Care

Merino wool can be washed normally in a washing machine with cold water, but it should be air dried on a clothes line rather than in a dryer. Drying wool in a dryer can cause a garment to shrink.[1]

✓ **Performance properties**

- Moisture

Merino wool is a moisture wicking fiber, meaning it draws moisture away from the skin. This makes wool useful in athletic gear as it can allow sweat to travel away from the body into the clothing and eventually out into the air as it evaporates from the clothing. Wool does not dry especially quickly, but it can still keep the body warm even when wet and will not chafe the body. Wet cotton tends to cool the body and will tend to stick to the body which can cause chafing. Wool can also be mixed with other fibers to provide a blend of favorable moisture wicking and drying properties.

- Odor

Merino wool is an anti-microbial material and as a result has natural resistance to odor. This is another reason it is often used in athletic gear, since sweat and body odor tends to be absorbed into non-odor-resistant gear, causing it to smell for days or longer. In contrast, merino wool gear that is sodden with sweat during exercise will dry and may not smell or even need to be washed.

✓ **Suitable colour**

- Black

A colour in the plaid as well as a colour that goes with most clothes means it will be very versatile.

## Extras

- Warmth

Similar to other types of wool, merino wool provides insulation that allows the body to retain heat. A wool garment will keep the body feeling warmer than cotton and many other synthetic materials.

- Texture

One of the most important properties of merino wool is that the fibers are not coarse like other types of wool. This means that merino wool feels soft to the touch and does not cause an itchy feeling when placed against dry skin. This may be a significant advantage for those with sensitive skin that are bothered by other types of wool.

- 100% Organic

Certified organic Merino is supplied by farmers who must provide an approved third party certification verifying the use of methods and materials allowed in organic production. This means that no synthetic inputs, such as chemicals, pesticides or fertilizers can be used during production, reducing the environmental impact. Merino is 100% natural, renewable, sustainable and biodegradable. Merino is unique in its ability to keep you warm in the cold of a snowy winter, and cool in the heat of a humid summer, protecting the microclimate next-to-skin in changing conditions by absorbing and releasing moisture. The natural handle, drape, crease recovery and comfort next-to-skin make it one of nature's best fibers.[2]

## Why Merino?

Merino wool provides superb temperature regulation and breathability whilst being silky soft against skin and odour resistant. This is ideal for use as polo shirt material and the price of it ($15/m) was very reasonable.

## Stakeholder feedback:

Dennis and I chose this fabric together and he gave verbal feedback.

"I really like wearing merino, it's soft and controls temperature well. I like the blend because of the texture."

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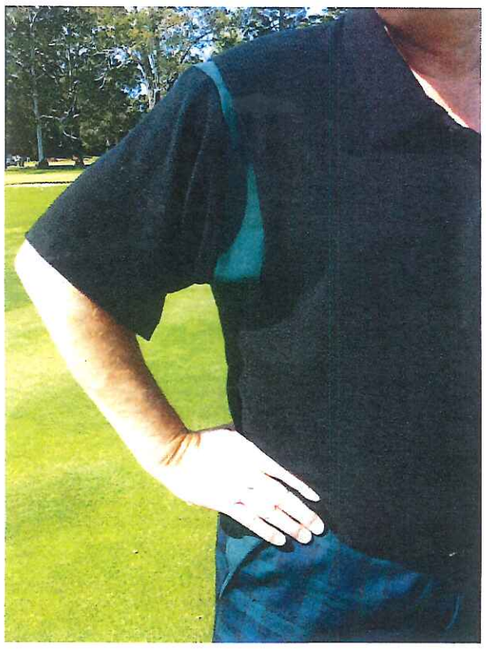
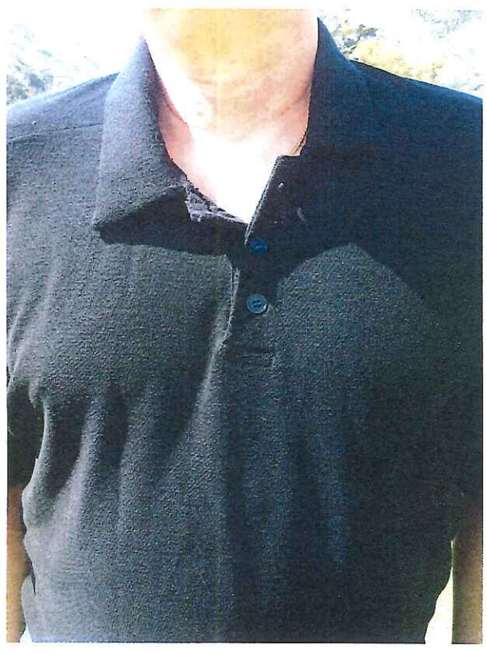
1 http://www.ehow.com/list_6919001_properties-merino-wool.html#ixzz2dIbNHX4A

2 http://www.levana.co.nz/planet-c-110.html

# Polo Shirt

Made using a specialty Merino polo shirt blend for durability and UV resistance, Merino is 100% natural, renewable, sustainable and biodegradable. It is unique in its ability to keep you warm in the cold of a snowy winter, and cool in the heat of a humid summer, meaning it is perfect for any weather. This shirt features a green band under the arm for breathability. Along with buttons attached using green thread, it is designed to tie into the green plaid of the pants and complete the outfit.





# Plaid Performance Golf Pants

The blend of polyester and viscose materials in a bold but subtle Black Watch plaid make for a pair of pants that are ideal for any weather. The crease resistance and strength from the polyester coupled with the soft feel and temperature regulation of viscose make this blend perfect for golf pants. The features of green throughout the pants in the belt loops and pockets mean the plaid is not overwhelming and adds personality. The slit of 6cm at the ankle means the golf pant does not catch on the shoe. Waterproof back pockets provide protection from water as well as making it easy to put in and remove items without pulling out the pocket lining.

Back pockets hold Dennis' wallet without it affecting the look of the pants

# Final Brief

Key
New: Green Text
Existing: Black Text
Removed: ~~Strikethrough Text~~

I will be making a garment or garments for Dennis Hirschman. He is the former club captain of The Hastings Golf Club, also known as Bridge Pa, and because of this, he is expected to be well presented. There is an opportunity to design a prototype outfit for him to wear on the golf course on Thursdays and Saturdays when he plays golf. Dennis is also looking to expand his golf business to selling golf clothes as well, this means that my designs could be put into production and sold nationwide. From my research around the needs of local golfers I have found that there is a need for high tech golfwear. Black Merino will be used for the polo shirt, and a green, blue and black plaid material for the pants. It will be made in school and completed by the end of Term 3.

# Refined Specifications

- Colourful and unique

I would like to make something bold and loud for Dennis because the clothes he has for golf now are very bland; with no pattern and little colour. I want to follow golf fashions as I've seen golf pros wearing more colourful outfits while golfing and I think this is a great way to show personality. Dennis has said to me that he wants something that will allow him to stand out in a positive way, but without drawing too much attention. The colour of the material needs to go well with the pants, as well as other pants in Dennis' existing wardrobe for flexibility. Dennis has specified he wants something different to the golf pants he has currently, which include colours like beige and black. Options include bold patterns or plaids. This is necessary, as it is a requirement from the client.

- Easy to move in

Dennis has problems with movement in the dress pants he wears currently, as they are not designed specifically for golfing in and there is not a wide range of reasonably priced golf garments available to him, although, from my research of the pro shop at his golf course I have found that they do stock a small range of golf clothes, including pants that have added features, the problem with these is that they do not fit Dennis in a way that would mean they would benefit his golf game. I would like for him to be able to play golf with ease in garments designed specifically for golfing in. Dennis' problems with this have been reflected in my survey as being in line with the views of most golfers at Bridge Pa.

- Appropriate to Dennis' Social Status at the Golf Club

I want to design something that will be in keeping with the golf club's dress code and regulations, as Dennis is required to abide by these rules as a member and especially so as the former club captain. I have used the dress code against my concepts to ensure that they are suitable to be worn there.

- Suitable for Mass Production

The current style of the garments I have designed and made and their suitability for mass production in terms of efficiency of pattern layouts and time it takes to make the garments.

- Colour/Pattern Range for Future Stock

Range of different colours and the availability of these materials. I will need to look into getting material in bulk, rather than how I did for my garments, in small quantities, this will involve a lot more material.

- Able to be Graded

If the patterns I have chosen are easily graded (produced in more than one size), they should be as the patterns used come in a variety of different sizes.

- Easy Care

Do the materials and techniques used mean that the garments are easy to care for and easily laundered, as well as not needing dry cleaning etc. Shirts that are wrinkle resistant and do not require ironing or dry cleaning are a must as these are not only bad for the planet in terms of energy used but also means it takes extra time. Dennis has specified he does not like golf pants or polo's that require extra care, so material that is easily laundered is a strong requirement. If the material was quick drying this would be a bonus.

- Durable

I think that for Dennis this is a major factor. He doesn't like buying new golf clothes frequently and these garments should last. Quality material will ensure this and mean he can get the most out of it as possible. This is also better for the environment as it doesn't require him to purchase new items or throw things away so soon. This may make the material more expensive but as long as it is still relatively affordable, it will be worth the extra cost.

- Performance Properties

Added properties such as odour resistance, UV protective and stain resistant would be very desirable in the material chosen; this would add benefits to the shirt and make it better in terms of the polo shirts Dennis already owns.

- Absorbent

The pants may be worn in the rain so need to be able to absorb amounts of water and dry quickly to allow for comfort while playing golf. An element of temperature regulation in the material would be useful as the pants could then be worn in different situations - cold or warm.

- Soft texture

If the pants feel good against the skin they will feel good on and comfort is a major factor in material choice.

- Stretchy

An element of stretch in the pants will allow for ease of movement while swinging. Stretch is important to both the fit of the pants as well as how they feel on and for functionality.

# Production Ideals

(Ideal specifications/requirements of my garment(s) when mass manufactured)

Ideally, I will want any product I design to follow the four merits outlined in the website of Trash To Trend;

- Upcycled

While I may not be able to use fully recycled materials, or even any, I will consider environmentally friendly alternatives, as well as learning from existing designs to create a more user friendly design that makes the most of the materials used.

- Repeatable

The garments being first designed and prototyped means that DIY instructions would be a possibility to this and these may be able to be available online. The way that I will test the garment(s) means that they will be highly repeatable in the sense that they will meet needs of golfers, and so do not need to be altered. The use of paper patterns means that a variety of sizes can be made to fit a wide variety of golfers.

- High Design Quality

Through my own testing, trailing, and development, I believe that the end garment(s) would be a high quality design, as this is my intention for Dennis' garments. As well as this, the materials chosen will ideally be of highest quality as affordable. The garments will be made carefully, as I am looking at producing the first garments locally, in Hastings; I trust the quality of manufacture will be high.

- Transparent

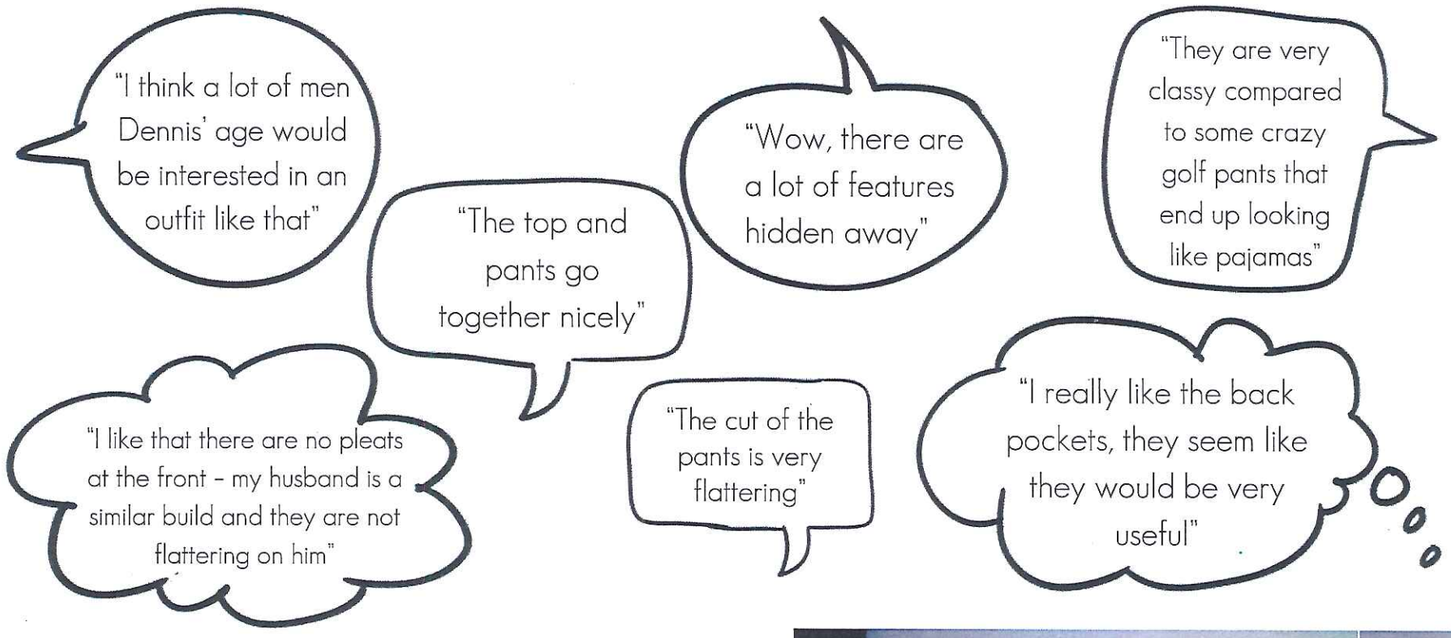
Most of the information about the range would be on the website. This means the opportunity to have an information page on the processes used as well as any environmental benefits and a story on how this line came about through my own desire to develop garments for my father that had the user in mind rather than lowest cost and maximum profits like most sportswear manufacturers.

# Feedback

As part of Dennis wearing the clothes we received a variety of positive comments from people on the golf course on Dennis' outfit, I will be compiling a range of these comments, as well as getting feedback from my wider stakeholders and Dennis himself.

## Feedback from Bridge Pa Members

While taking implementation photos, friends of Dennis and fellow Bridge Pa members commented on his golfwear. Their comments were all very positive and most were surprised to hear that I had made the garments. Some of the comments included:




## Feedback from the Public

As a part of Technology at our school, we hold a Fabrics Technology Showcase each year. It involves modelling the garments that have been made each year. As I had made something for my Dad, he modelled these for me. At the end, two golfers came up to Dennis and me and expressed interested in their own outfit like Dennis'. I was able to tell them about the possibility of producing my design for sale and the men both agreed that they would definitely love a pair of pants like the ones I have made for Dennis. They were interested in the extra features to the pants and loved the strip of green under the arm. This was very positive overall and made me more confident in my design after receiving such great feedback from golfers.

## Question Format

I have decided to a range of questions as a format to my evaluation, as I believe that they will allow me to consider a wide variety of criteria that my design either did or did not meet.[1] I will use some of the same questions when evaluating the garments myself.

## Feedback from Dennis

*1. What do you think of the overall design? What changes would you make?*

I think the overall design was a success, it seemed to cover all of the points that I saw as being as essential for the New Zealand environment, for a golfer. I would possibly make the contrast fabrics more visible and maybe include contrasting coloured stitching in places. I might carry the contrast band down the side of the waist more as a more stand out feature.

*2. Are you happy with the materials that were chosen? Would you make adjustments next time?*

Having now played golf in the garments I think the fabrics chosen and the way they were put together are exactly what we were looking for, and I have had numerous positive comments made about them. I don't believe there would be anything I would change.

*3. Is the colour scheme exactly what you expected? What alterations would you make?*

Totally, it is not outrageous but not conservative either. I think that over time we could experiment with bolder colour schemes, but the conservative nature of New Zealand golfers may mean that it takes time before those kinds of ideas catch on though.

*4. Did the project take too long to make? Would this alter the cost of manufacture?*

That's hard to say because the amount of testing for fit and the avenues explored were probably exaggerated compared to what a normal business would explore. Ultimately, condensing the time would not necessarily change the end cost factor.

*5. Is the solution the right size/shape?*

For me, yes. It was made for me. It is comfortable, flexible for all of my golfing requirements.

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[1] http://www.technologystudent.com/designpro/eval1.htm

*6. Does it work? What changes are required?*
Yes, they work very well. Very easy to wear and easy to care for also. They fit every need that I have for my golf clothing. Apart from those changes mentioned above, I cannot think of any other changes that could be required. The clothing was a success so there is no real reason to make changes.

## Feedback from Brett

*1. What do you think of the overall design?*
I thought it was refreshing to see this opportunity to be explored by a student and a local New Zealand company. The design that I have seen could be very successful, in my view.

*2. Do you like the materials that were chosen?*
I do, they enhanced the clothes and made them practical golf attire.

*3. Is the colour scheme exactly what you expected?*
Not necessarily, some people may have taken a much more radical approach that wouldn't have worked as well.

*4. Is the solution the right size/shape?*
I presume it would be available in all sizes if it went into production, but the prototypes fit Dennis well.

*5. Does it work?*
From what I have seen it works very well. Dennis has said it is very comfortable and makes movement very easy.

## Feedback from Jane

*1. What do you think of the overall design?*
I think it is fabulous; it is stylish and appropriate. It is practical and sporty yet formal enough for the golf club. It was well thought through and achieved the solution needed. All of Dennis' mates want some pants like his!

*2. Do you like the materials that were chosen?*
Yes - the polo shirt has washed well and looks great. I love that they don't need ironing. The trousers look good and feel very nice. I love that merino was used because it is very natural and very much a New Zealand made material.

*3. Is the colour scheme exactly what you expected?*
I expected it to be brighter, but that was limited by the materials available and Dennis' preferences. The trousers are subtle but different to the usual black/cream of pants around the golf club. The green in the shirt really links the outfit together well.

*4. Is the solution the right size/shape?*
Yes! The mock up works well for sizing as not everyone is the same size and it took into account individual differences. It looks good on Dennis' frame and the looser shirt hides his stomach.

*5. Does it work?*
Yes. It works well for me, as I do the washing and the materials make them easy to care for. Dennis loves wearing the clothes and he loves the comments he gets when he wears them!

# My Evaluation

In order to evaluate whether the garments I have designed and prototyped for Dennis are fit for purpose in the broadest sense I will need to look back at the main goals/objectives of the outcome. This can be done by looking at my final brief and reflecting on each specification that I had set for the garments.

- Colourful and unique

The green, blue and black plaid is something I have not seen on any golfing websites, and the colours work well with the golfing environment.

- Easy to move in

Dennis has a range of movement in the pants and top, and this is made possible because of the degree of stretch in the materials used, as well as the great fit.

- Appropriate to Dennis' Social Status at the Golf Club

The number of compliments Dennis has received while wearing the garments means that they are widely acceptable at the golf course.

- Suitable for Mass Production

From feedback from golfers, many would seriously consider buying the garments if they were mass produced, indicating high demand, and I believe the design of the garments means they would be relatively easy to produce.

- Colour/Pattern Range for Future Stock

Sourcing materials would be hard but there is a real degree of flexibility to the design, where a range of bold materials could be used, and colours taken from them as accents (e.g. I used accents of green throughout).

- Able to be Graded

The patterns used come in a variety of sizes making it very easy for the garments to be produced in a range of sizes.

- Easy Care

Materials selected meet this criteria as merino and polyester viscose are both machine washable.

- Durable

High quality materials used means the garments will last a long time.

- Performance Properties

Many properties of the merino make the garments different from regular dress pants or polo shirts.

- Absorbent

Both merino and cotton gabardine are known for their moisture retention properties and this makes them ideal fabric choices for the shirt.

- Soft texture

Viscose in the pants means they feel great against the skin, and merino is very soft to the touch and is used in a variety of babies garments, known for its gentleness on the skin.

- Stretchy

While none of the materials I have chosen are particularly stretchy there is definitely a degree of give in all of them.

- Upcycled

I have tried my best to use materials that are relatively sustainable, including merino which is biodegradable and very natural.

- Repeatable

The patterns I have used allow the garments to be repeated in a range of different sizes.

- High Design Quality

I have made sure that the quality of the garments is excellent as I want Dennis to be able to enjoy wearing them for a long time.

- Transparent

I believe that the garments could be considered transparent as I have documented all of the things along the way including manufacture and research.

*1. What do you think of the overall design? What changes would you make?*

I love the overall design of the garments. I think that the green material under the arm makes the shirt look sporty, and I think it ties in beautifully with the pants, in a very subtle way. Through watching Dennis go through his routines at the golf course, and watching him play golf, I have seen how well the pants hold the many things he likes to be easily accessible in his pockets. I think the slit in the ankle of the pants sits very well over his shoe, I am glad I included this feature because the straight leg would have easily been caught on the shoe when Dennis is swinging. The back pockets turned out very well and the navy blue waterproof material used as a lining has many positive points, it makes it very easy to remove things from the pockets, the blue adds a nice break from the predominantly green accents used throughout the pants and the waterproof aspect will be very useful in rainy conditions.

*2. Are you happy with the materials you chose? Would you make adjustments next time?*

I think the quality of the materials we chose was key to producing a high quality prototype. The large amount of research I had done around different materials for golf pants, and polo shirts, including different patterns and also material types, meant that I was able to make informed choices when it came to selecting the fabrics. The combined properties of the viscose and polyester in the plaid pant material meant that the material was a perfect choice. Dennis particularly loves the softness the viscose gives, as it makes the pants very nice against the skin. Merino was my first choice for a polo shirt, having previously researched it I knew of its amazing performance properties and its ability to keep the wearer warm in winter and cool in summer matched my desire for the polo shirt to be able to be worn all year round. Choosing the blend of merino was an important decision, and I am glad I went with a polo blend, rather than a normal merino blend, as this is more breathable, which is important for the hot summers in Hawke's Bay. Overall I am extremely happy with the materials I chose and I wouldn't change anything if I were to make the garments again.

*3. Is the colour scheme exactly what you expected? What alterations would you make?*

When observing Dennis on the golf course I was really thrilled with how nice the green, blue and black plaid looked against the backdrop of the golf course. The colour scheme along with the plaid pattern work really well. I think that the black background of the plaid means that it ties really well to the black of the merino. Black is known to be a slimming colour and this was also something to be considered, due to Dennis' build, and I think that the predominantly black colour scheme does have a slimming effect. I would really love to experiment with other colours and patterns if I were to make these again, or if they were to be mass produced, because there is flexibility in the design and the opportunity to play around with some really bold patterns and colours that would not have been fit for the purpose of Dennis wearing them, but may something other golfers would want to wear.

*4. Did the project take too long to make? Would this alter the cost of manufacture?*

I think that the prototypes actually did not take too long to make – not including the time it took to test and trial the mock up for size and fit – the actual time spent on manufacture of the prototype was reasonable. I think if we look to mass production I would possibly look back to the construction of the garments, mainly the pants, to see if the construction could be simplified in any way, but overall I don't think it would be too costly.

*5. Would it be easy to set up a production line for the manufacture of your solution?*

I believe it would, the only place where I see this being difficult is at the points of the more advanced techniques used in the construction of these garments, including the back pockets and the variety of different materials used. But overall I don't think it would be too tricky or costly.

*6. Is your solution safe? Could it be made safer?*

Ethically it was not tested on animals, and only trialled on Dennis for shape and size. I mainly followed the instructions of a pattern and there are no sharp edges and all of the raw edges were finished by overlocking.

*7. Are the techniques you used to make your solution adequate or would you use a different range of manufacturing techniques?*

I think that the technique that I used to make the placket for the polo shirt could be improved on, as it did not instruct me how to finish the top edges of the placket, meaning I had to hand stitch these. This took time and there would probably be a more efficient process.

*8. Is the solution the right size/shape?*

The garments were made to fit Dennis' measurements exactly, and through testing the fit in the mocking up stage this ensured the garments fit him perfectly. By checking the fit throughout the prototype, I ensured that it still fit him well.

*9. What are the views of other people regarding your design?*

We have had amazing feedback from the public about the garments and this has been really great. To me, it really reinforces that the garments are fit for purpose in the way that they are innovative and suit Dennis well.

*10. Does it work? What changes are required?*

The garments work well. They have provided Dennis with less hassle when he golfs and he gets compliments on them regularly. I think they will be ideal in that they have the ability to be worn in the summer as well as in the winter, because of the material properties. Overall I think that the garments do fit the purpose they were made for in every aspect, from the range of movement they allow to the aesthetically pleasing design and colours.

Overall I really believe that the garments I have produced are fit for purpose in the broadest sense and Dennis has already enjoyed wearing them on countless occasions.