Initial Brief
Tahi Spirulina is New Zealand's first spirulina farm and has recently started producing artisan spirulina in Himatangi. The company is marketing spirulina as a sustainable food with a reduced environmental footprint. They are currently looking to further develop a market for their product by investigating innovative uses for their premium spirulina product.

Specifications given:
- Be a premium product
- Be consistent with the Tahi Spirulina brand values
- Reflect current market trends relevant to superfoods
- Have a Health Star rating which appeals to your target market
- Have a shelf life beyond 9 months
- Appeal to a vegetarian, and possibly vegan, consumers
- Must consider the food safety risks and hazards that could affect the product

Research
- Spirulina holds vitamin A,B,C and E while also holding a lot of minerals like calcium, magnesium, zinc and selenium.
- A good source of iron for vegans giving 1.5mg per 5g of spirulina.
- A great source of protein content between 59-65%.
- Has a complete source of amino acid and omega-3.
- Main market of spirulina is tablets or powder and is commonly used in smoothies.
- Is grown throughout the world and has recently started producing a shelf life beyond 9 months.
- Is known as a superfood.
- Is vegetarian and vegan friendly product.
- Grown around the world e.g. China, France, Thailand and more.

Prototype development

Dried pasta
Our prototype to develop was dried pasta, to extend the product shelf life and to restrict water activity. At this stage we decided to remove egg to make our product vegan.

Drying process
We trialled air drying and dehydrator and found an optimal drying temperature is 50 degrees on bake in the oven. We also tried drying the pasta at a higher temperature which were 75 and 120 degrees only to find out that it slowly started to cook the pasta.

Fridge verses freezer
One of our big problems with our dough was how should we store our pasta dough before drying it. We just instinctively thought to put it into the freezer so it would freeze the water content making bacteria unable to grow, but in doing so we ruined the stability of the dough causing it to break apart while cooking it. So we thought of a way that we could stop this from happening was by putting it in the fridge, since it does the same as a freezer, stopping bacterial growth, and doesn’t freeze the water content, meaning the dough won’t lose its stability. Thus showing that the preferred way of storing our pasta is the fridge.

Extruder verses bench top pasta machine
We trialled both an extruder and bench top pasta machine and found that the bench top machine worked better at this stage and gave us a good idea of the texture required. Later we decided that the extruder worked best after all.

Packaging
Dried pasta
We trialled vacuum packaging and cardboard box and found the vacuum pack was too fragile.

Change to fresh pasta
We had issues with the dried pasta breaking apart during cooking. Our stakeholder advice was to change to fresh pasta instead of dry as this is seen as a more premium product and where he could see it fitting in the market.

Packaging fresh pasta
Our fresh product would require that the pasta be pasteurised in conjunction with Modified Atmosphere Packaging. The labelling would need to align with Tahi Spirulina’s brand as a companion product and to meet New Zealand packaging regulations.

Further development
- Investigation into development of a range of pasta products, for example:
  - Ratios or soda noodles
- The potential incorporation of other ingredients with known health benefits such as pulse flour
- Further trialling of binding additives such as xanthum gum or guar gum to increase the physical stability of the pasta.
- A recipe card for Moore Wilsons as many customers prefer to make pasta themselves

Final Evaluation
Our product meets our brief by showcasing spirulina as a characterising ingredient. It is vegan friendly and should appeal to the health conscious and sustainably-minded consumer. With the use of modified atmosphere packaging it would have an extended shelf life as a “fresh” product.