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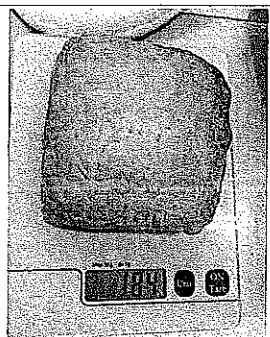
# EVALUATION

## RELATIONSHIP BETWEEN PERFORMANCE PROPERTIES AND PERFORMANCE SPECIFICATIONS

Brief specifications:

- Final product weight between 230g-250g
- 140g of filling and 90g of pastry
- Bottom pastry should have a thickness of 2-3mm
- Top pastry thickness 4mm
- Contain 15 – 20% of the RDI
- No soggy bottom
- Filling holds its shape

PERFORMANCE SPECIFICATION OF THE PIE	EXPECTED PERFORMANCE PROPERTIES OF THE INGREDIENTS USED IN THE PIE	HOW DO THE INGREDIENTS AND THEIR EXPECTED PRIORITIES RELATE TO THE PERFORMANCE SPECIFICATIONS OF THE PIE																																																																
Contains 15-20% of the RDI (Recommended Daily Intake)	<p><i>Recommended Daily Intake</i>            Energy – 8700kJ            Carbohydrate – 300g            Protein – 50g            Fat – 70g</p> <p><i>15-20% of the RDI</i>            Energy – 1305-1740kJ            Carbohydrate – 45-60g            Protein – 7.5-10g            Fat – 10.5-14g</p> <p><i>References:</i>  <a href="http://www.foodstandards.govt.nz/industry/npc/Pages/Nutrition-Panel-Calculator-introduction.aspx">http://www.foodstandards.govt.nz/industry/npc/Pages/Nutrition-Panel-Calculator-introduction.aspx</a>  <a href="http://www.mydailyintake.net/daily-intake-levels">http://www.mydailyintake.net/daily-intake-levels</a></p>	<p><b>NUTRITION INFORMATION</b></p> <p>Servings per package: 1.00            Serving size: 200.00 g</p> <table border="1"> <thead> <tr> <th></th> <th>Average Quantity per Serving</th> <th>Average Quantity per 100 g</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>1820 kJ</td> <td>910 kJ</td> </tr> <tr> <td>Protein</td> <td>16.5 g</td> <td>8.3 g</td> </tr> <tr> <td>Fat, total</td> <td>23.0 g</td> <td>11.5 g</td> </tr> <tr> <td>- saturated</td> <td>8.3 g</td> <td>4.1 g</td> </tr> <tr> <td>Carbohydrate</td> <td>37.5 g</td> <td>18.8 g</td> </tr> <tr> <td>- sugars</td> <td>10.4 g</td> <td>5.2 g</td> </tr> <tr> <td>Sodium</td> <td>318 mg</td> <td>159 mg</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Ingredient</th> <th>Energy (per 100g)</th> <th>Carbohydrates</th> <th>Protein</th> <th>Fat</th> </tr> </thead> <tbody> <tr> <td>Pork</td> <td>137.5kJ</td> <td>0g</td> <td>4.5g</td> <td>1.2g</td> </tr> <tr> <td>Brown Onion</td> <td>35.5kJ</td> <td>2.5g</td> <td>0.4g</td> <td>0.03g</td> </tr> <tr> <td>Celery</td> <td>10kJ</td> <td>0.5g</td> <td>0.1g</td> <td>0.015g</td> </tr> <tr> <td>Apple (red)</td> <td>41.5kJ</td> <td>4.1g</td> <td>0.04g</td> <td>0.03g</td> </tr> <tr> <td>Apple (granny smith)</td> <td>38kJ</td> <td>3.35g</td> <td>0.06g</td> <td>0.03g</td> </tr> <tr> <td>Flour</td> <td>250kJ</td> <td>12g</td> <td>1.6g</td> <td>0.2g</td> </tr> <tr> <td>Apple cider</td> <td>27.5kJ</td> <td>1g</td> <td>0g</td> <td>0g</td> </tr> </tbody> </table>		Average Quantity per Serving	Average Quantity per 100 g	Energy	1820 kJ	910 kJ	Protein	16.5 g	8.3 g	Fat, total	23.0 g	11.5 g	- saturated	8.3 g	4.1 g	Carbohydrate	37.5 g	18.8 g	- sugars	10.4 g	5.2 g	Sodium	318 mg	159 mg	Ingredient	Energy (per 100g)	Carbohydrates	Protein	Fat	Pork	137.5kJ	0g	4.5g	1.2g	Brown Onion	35.5kJ	2.5g	0.4g	0.03g	Celery	10kJ	0.5g	0.1g	0.015g	Apple (red)	41.5kJ	4.1g	0.04g	0.03g	Apple (granny smith)	38kJ	3.35g	0.06g	0.03g	Flour	250kJ	12g	1.6g	0.2g	Apple cider	27.5kJ	1g	0g	0g
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<p>Final product should weigh between 230-250g</p>	<p>To weigh no less than 230g or no more than 250g This weight is to provide my stakeholder with a product that will satisfy their hunger and provide enough energy for 15-20% of their RDI.</p>	<p>The final product I produced did not meet these parameters as it only weighed 184g.</p> 																				
<p>Should have the correct ratio of filling (60%) to pastry (40%).</p>	<p>Contains 140g of filling and 90g of pastry</p>	<p>My product didn't meet this specification purely because it only weighed 183g when the target was 230g therefore it must contain much less filling &amp; pastry than expected. The final ratio for my prototype was 100g of filling and 80g of pastry therefore increasing the size of my pie would get much closer to the expected property.</p>																				
<p>Bottom pastry has a thickness of 2-3mm</p>	<p>The bottom pastry may be no greater than 3mm thick</p>	<p>My product did meet this expected performance property as my bottom pastry was on average 3mm thick.</p>																				
<p>No soggy bottom</p>	<p>Bottom layer of pastry is cooked through to prevent leakage and should not look translucent or glassy. To determine the best method at preventing this from occurring we did an experiment to compare pies</p>	<p>This was achieved in my product by baking blind the pastry before adding the filling. Baking blind is when you cook the pastry without the filling for 15 minutes to dry out the bottom layer of pastry before adding the filling. I decided to bake blind my pastry to ensure I achieve a bottom pastry that is cooked. However, I had to carefully time how long I would bake blind. If I added the filling too soon the pastry would absorb moisture from the filling creating the</p>																				

	<p>that had been baked blind with those that hadn't. We observed that the pies that had not been baked blind had a glassy look and a soggy bottom. These characteristics created a layer of partially uncooked pastry underneath which is not the performance property outlined.</p>	<p>soggy bottom. If I left it too long the pastry would burn therefore I trialed with different times and decided on 15min with the baking beans and then 5 minutes without. Because I did bake blind my pastry my pies did not have a soggy bottom therefore I met this specification.</p>
<p>Correct viscosity of filling</p>	<p>The filling of the pie must hold its shape when cut and not spill out everywhere. Therefore the filling must have some sort of pie thickener to ensure it doesn't run everywhere when bitten into.</p>	<p>My product did meet the performance property of the filling holding its shape. This was achieved by using a pie thickener my choices were: flour, cornflour, arrowroot, or a commercial pie thickener. These pie thickeners work as they add starch which when heated begins to bond with H<sub>2</sub>O molecules and then grows in size. When they reach a certain temperature the thickener has formed a net structure of starch and water this causes the filling to stabilise and thicken.  <a href="http://www.thekitchn.com/5-common-pie-thickeners-and-how-they-work-baking-guides-from-the-kitchn-212793">http://www.thekitchn.com/5-common-pie-thickeners-and-how-they-work-baking-guides-from-the-kitchn-212793</a></p> <p>For my product I went with the commercial pie thickener as it took little effort to thicken and maintained a normal taste and texture compared to its counter parts i.e. Arrowroot which created a slimy texture and an odd after taste.</p>

## MATERIAL EVALUATION PROCEDURES UNDERTAKEN

INGREDIENTS IN OUTCOME	INGREDIENTS TRIALLED	FUNCTIONAL PROPERTIES OF EACH OF THE INGREDIENTS	JUSTIFICATION OF SUITABILITY OF INGREDIENTS	PROCESSES UNDERTAKEN TO DETERMINE SUITABILITY OF INGREDIENTS IN THE PIE
Pastry types	<p>During the conceptual process I trialled a variety of pastry types to determine the most suitable for the pie this included:</p> <ul style="list-style-type: none"> <li>-Puff pastry</li> <li>-Short pastry (homemade and bought)</li> <li>-Flaky pastry</li> </ul>	<p>The pastry is an essential component in my pie as it is what encases the filling and provides the majority of the carbohydrates in my 15-20% RDI. The bottom pastry purpose is just to encase the filling and ensure there are no leakages the top pastry has to look visually appealing.</p>	<p>While developing my prototype I trialled different pastry types for my bottom and top pastry. Puff pastry was a favourite on the top as it gave a golden, flaky lid to the pie. Puff on the bottom wasn't very suitable as it "puffed" up create lots of air bubbles leaving less room for filling which changed my pastry to filling ratio. Short crust pastry was the most suitable pastry to go on the bottom layer of my pie as it didn't rise and created a solid barrier when baked blind. When comparing the homemade pastry and bought pastry the bought pastry turned out better as it was more time efficient and easier to get a thin layer. Other impacting factors included my inexperience when making pastry and the butter didn't end up evenly distributed causing the pastry to have an unappealing blotchy look.</p>	<p>To determine the most suitable pastry I carried out a variety of trials to figure out the fitness for purpose. I decided to go with bought short crust pastry as it was time effective and provided more carbohydrates for my 15-20% RDI than puff or flaky. Puff pastry was used for the lid of my product as it was the most visually appealing and didn't create such a mess for my stakeholder when being consumed as flaky pastry did.</p>

<p>Thickener</p>	<p>For my product I did some testing on different aspects of pie thickeners to determine which would produce a thick filling without affecting consistency or taste. These included:                  -Commercial pie thickener                  -Arrowroot                  -Cornflour</p>	<p>In my specifications I require the pie filling to be the correct viscosity so it doesn't run everywhere while being consumed by my stakeholders. Therefore my filling must contain a thickener to make the gravy more solid and less liquid.</p>	<p>For the tests I used a mince filling and the three different thickeners. I discovered that the commercial thickener was easy to use and instantly thickened the filling without dramatically changing the taste or consistency. Flour and cornflour had much the same qualities as the commercial pie thickener however they did have distinctive wheat or chalky flavours. Arrowroot was definitely not suitable as when it thickened it created a slimy/ stringy texture and had an odd aftertaste.</p>	<p>When deciding the suitability, I did a series of tests on each one:</p> <ul style="list-style-type: none"> <li>- Visual appeal</li> <li>- Taste</li> <li>- Viscosity</li> </ul> <p>For my final product I used flour in the middle of preparing the filling and at the end commercial pie thickener to ensure that there would be no chance of a runny filling. Although all-purpose flour when used as a thicken often has a strong wheat taste my stakeholders stated they didn't mind this.</p>
<p>Apples</p>	<p>I trialled different apples to decide which gave the best added flavour to my final product:                  -Granny smith (green)                  -Royal gala (red)</p>	<p>Being an apple, pork and cider the types of apple I used was an essential part. The apples also helped by adding more energy in the product from carbohydrates. In terms of taste the apples help by creating a balance of sweet to savoury.</p>	<p>Using just granny smith apples in my pie created a tarter flavour whereas using royal gala provided a sweeter flavour. Because I want to have a mixture of these flavours I decided to use a ratio of both types of apples. This ratio was 1:2 of eating apples to cooking apples.</p>	<p>While trialling I created different concepts with different ratios of the red and green apples. When getting feedback from my stakeholders they preferred having the combination of flavours as it enhanced the apple flavour which otherwise was overpowered by the other components.</p>

<p>Pork</p>	<p>To determine the best recipe for my final product I trialled mince pork and steak pork to figure out the best option</p>	<p>For the minced pork the pork was very finely diced and created a very thin filling. For the pork steak I cut it up into chunks which provided a heavier meat filling. The pork's functional property is to provide protein. Proteins are used in our bodies as they are broken down into amino acids and used as catalysts, communication purposes and transporting particles. When there are little carbohydrates or fats they can be used as a source of energy.</p> <p><a href="http://www.diabetesforecast.org/2011/mar/how-the-body-uses-carbohydrates-proteins-and-fats.html?referrer=https://www.google.co.nz/">http://www.diabetesforecast.org/2011/mar/how-the-body-uses-carbohydrates-proteins-and-fats.html?referrer=https://www.google.co.nz/</a></p> <p>Another contributing factor for choosing pork was that it was a very lean meat therefore contains very little fat which links to my social impacts on the community. To be defined as a lean meat it must contain less than 10g of fat per serving.</p> <p><a href="http://www.porkbeinspired.com/nutrition/compare-pork/">http://www.porkbeinspired.com/nutrition/compare-pork/</a></p>	<p>Pork steak was the best option for my product as it provided less total fat than pork mince would which is a significant part of my RDI. Using the same quantity of pork mince would have caused the total fat content to be 32.4g per serving compared to 23g with pork steak. (This was calculated using:</p> <p><a href="http://www.foodstandards.govt.nz/industry/npc/Pages/Nutrition-Panel-Calculator-">http://www.foodstandards.govt.nz/industry/npc/Pages/Nutrition-Panel-Calculator-</a></p> <p>Pork steak cut into chunks was also a more suitable ingredient choice as it was easier to make the meat tender.</p> <p>From my stakeholder they preferred the pork chunks as the mince was flavourless causing apple to overpower the pork flavour.</p>	<p>To determine which type of pork to use I used a nutritional calculator to figure out the nutritional values of either options. I also trialled both options for my filling to my stakeholders they mentioned that the pork mince was dry and didn't have a strong pork flavour.</p>
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LIST THE TECHNIQUES USED TO DETERMINE THE SUITABILITY OF INGREDIENTS AND EXPLAIN HOW YOU USED THESE EVALUATIVE TECHNIQUES TO DETERMINE THE SUITABILITY OF THE INGREDIENT USED	AT WHAT STAGES DID YOU PERFORM EACH OF THESE PARTICULAR TESTS AND EXPLAIN THE IMPORTANCE OF THESE TESTS IN THE DEVELOPMENT OF YOUR PRODUCT
<p>SUBJECTIVE EVALUATION TECHNIQUES: Subjective tests are defined as an evaluation that has no right or wrong answer and is based entirely on each individual's interpretation.</p> <p><a href="https://www.vocabulary.com/articles/chooseyourwords/objective-subjective/">https://www.vocabulary.com/articles/chooseyourwords/objective-subjective/</a></p> <p>The subjective tests I carried out were:</p> <ul style="list-style-type: none"> <li>- Star charts</li> <li>- Descriptive tests</li> <li>- Discrimination tests</li> </ul>	
<p>Star charts Throughout my conceptual process I used star charts to get feedback for sensory aspects of each filling concept which allowed me to compare and contrast each recipe to determine what to work on.</p>	<p>After producing a concept, I would give samples to a variety of my stakeholders alongside a star chart with six aspects to rate out of five i.e. texture, taste, visual appeal, etc. This was a key component to the development of my product as it allowed me to compare each concept on the same aspects with the same rating system. The star charts were a visual system to evaluate each concepts merits and what needs to be worked on. Based on this feedback I was able to make relevant ingredient changes and with this valuable feedback I wouldn't be able to develop my product and make changes appropriate for my stakeholders.</p>
<p>Descriptive tests I used a questionnaire as my descriptive test to gather information about what flavours would be suitable for the teenage demographic.</p>	<p>I would use a questionnaire at the very start of product development to survey my prospective stakeholders on what ingredients would be appealing to them. This was important at this stage as it gave me a starting point to develop my product. As I started with a list of foods my stakeholders liked I wouldn't waste time, money, or resources producing products they don't like.</p>

<p><b>Discrimination tests</b>                  Discrimination tests were used to evaluate the suitability of my ingredients by getting my stakeholder to compare and contrast concepts or more specific attributes of my filling such as the thickener.</p>	<p>I performed discrimination tests after every concept by gaining either verbal or written feedback when being trialled by the stakeholders. A specific example of my discriminating testing was figuring out which thickener was most suitable. I carried out this test by only changing the type of thickener and then myself and the stakeholder trialled each outcome. The thickeners I compared were arrowroot, cornflour and commercial pie thickener. Doing so allowed me to gain knowledge on what thickener was the most appealing for my stakeholder as they got to compare these thickeners</p>
<p><b>OBJECTIVE EVALUATION TECHNIQUES:</b>                  Objective tests are an evaluation technique that have a right or wrong answer which allows you to compare the product to set guidelines. Often the results are very short answers allowing the evaluator to quickly mark whether the product met the criteria or not.  <a href="http://www.dictionary.com/browse/objective-test">http://www.dictionary.com/browse/objective-test</a>                  The objective tests I carried out were:</p> <ul style="list-style-type: none"> <li>- RDI</li> <li>- Meet spec's</li> <li>- Viscosity of filling</li> </ul>	
<p><b>RDI and Nutritional Panel</b>                  My specifications for my pie was to produce a product that contained 15-20% of the average persons recommended daily intake so I calculated, using a nutritional panel calculator, whether one serving of my pie would provide the correct amount of energy in the correct ratio of carbohydrate: protein: fat.   <a href="http://www.foodstandards.govt.nz/industry/npc/Pages/Nutrition-Panel-Calculator-introduction.aspx">http://www.foodstandards.govt.nz/industry/npc/Pages/Nutrition-Panel-Calculator-introduction.aspx</a></p>	<p>I performed this testing after producing my final prototype using the final recipe after the whole conceptual process. Doing so allowed me to make a better conclusion on whether I accepted or rejected the prototype. This was an essential part of my development of the product as it allowed me to evaluate what areas of nutrition needed improvement. Key aspects that needed work was the percentage of fat and protein which were both over my goal and the lack in carbohydrates. From here I figured out what ingredient amounts I needed to tweak without altering the flavours.</p>
<p><b>Viscosity test</b>                  To evaluate the viscosity of my filling I carried out two types of testing which allowed me to evaluate not only which pie thickener to use but also if the amount of thickener was correct. First when comparing the different types using white board markers on the stainless steel bench I would draw targets and place a teaspoon of filling (with the different thickeners) in each target and if it exceeded the inner circle it would fail the viscosity test. The second involved cutting open the pie to see whether the filling would run out or hold its shape.</p>	<p>I carried out this testing during the conceptual process. It was completed at this stage as it was when the most trialling was conducted before getting to my final prototypes recipe. It was important to decide what thickener I would be using because depending on what I chose would affect the taste and texture of my overall pie. The second test was performed after I had produced my first prototype to be certain that the thickener I had chosen was working and in the right quantity.</p>



## KNOWLEDGE AND TECHNIQUES UNDERPINNING MATERIAL EVALUATION PROCEDURES TO SUPPORT MATERIAL DECISIONS

### SOCIAL IMPACT ON SOCIETY

During my developmental process I had to make the key decision on whether I was producing a sweet or savoury pie filling. At the beginning of my concepts I had two main ideas for the filling the first was the Pork, Apple and Cider savour filling and the second a Passionfruit Curd and Chocolate sweet filling. After producing a couple of concepts for both ideas I decided to reject the sweet filling. This came after evaluating stakeholder feedback and comparing both concepts against my tasks specifications. I found that stakeholder feedback was more in favour of the savoury option as it was easier to picture as a pie and the sweet filling was too rich. In comparison to my specifications it didn't meet up with my RDI.

Rates of obesity have been constantly increasing in New Zealand and in the 2014/2015 New Zealand health survey it found that 31% of adults are obese. The amount of sugar and saturated fats within our food products is a major factor on obesity making the ingredients used have an impact on our social community. Using ingredients that are healthier is more economically efficient as in 2012 Auckland university estimated that obesity is costing New Zealand between \$722 million and \$849 million which includes health care costs and the loss of productivity. Therefore, we must use ingredients with less sugar and saturated fats to encourage society to eat healthier, otherwise we end up costing our society more in paying for hospital trips and using sick days in the work force. This is why I concluded to producing a savoury product as it would provide essential protein and energy without exceeding the expected daily intake of sugar (which is 90g) in one serving as my sweet concept would have.

<http://www.health.govt.nz/nz-health-statistics/health-statistics-and-data-sets/obesity-data-and-stats>

<https://www.fmhs.auckland.ac.nz/en/faculty/about/news-and-events/news/2012/12/11/the-cost-of.html>

### CULTURAL IMPACTS ON SOCIETY

A major cultural aspect in New Zealand is of the beliefs and values of the Maori community. One component of their beliefs is the idea of how much food is wasted and that had to be taken into consideration while producing my product. This impacted my decision on how much food I would produce for each concept to ensure that all of it would be consumed to minimise any food wasted. In terms of my ingredients I had to carefully calculate as accurate amount of each ingredient for example I decided to use one eating apple and two cooking apples to make sure that part of the apples wasn't wasted. Keeping this in mind allowed me to ensure that all aspects of our community were thought off during the process. To prevent the need of disposing any left-over food after I had completed all the research and notes I would offer it to my friends to prevent it from just going in the bin. I had to consider everyone to prevent my product from being seen as culturally insensitive.

Many religions forbid the consumption of meat sourced from the pig as they have a list of dietary laws. The two main religions who deem eating pork as a taboo are Judaism and Islam. Both of these religions outline restrictions on food that do not chew their cud or have divided/ cloven hooves. Under these guidelines it is deemed "unclean" to eat pigs. In the Hebrew Bible it states, "Of their flesh you shall not eat, and their carcase you shall not touch; they are unclean to you." Due to these taboos I had to consider whether I should include meat supplied from a pig in my pie as if I did it could restrict the amount of possible stakeholders. I decided to go with a pork filling as the no one in the community I reached out to as possible stakeholders identified as a Muslim or Jew. This means I didn't have to consider eliminating pork or bacon from my product.

<http://peopleof.oureyverydaylife.com/religious-beliefs-eating-pork-6568.html>

### ENVIRONMENTAL IMPACTS ON SOCIETY

Environmental issues are starting to become more of a concern in our modern society as we try to minimise the problems we have created for Earth. So when deciding how to go about producing my pie I had to take several things into account concerning the environment. First of all, where I was sourcing my ingredients from. One of the biggest issues facing us at the moment is climate change. A big factor on climate change is the greenhouse

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effect which is the trapping of greenhouse gases such as methane, and carbon dioxide in the Earth's atmosphere. Trapping these gasses warms up the atmosphere causing our average climates temperature to increase which creates a myriad of issues. While sourcing ingredients I was vigilant to ensure that they were locally source to decrease the carbon foot print created. This minimises my carbon foot print as it prevents me from using ingredients shipped or flown from overseas burning lots of fossil fuels which produces carbon monoxide and nitrogen oxides.

Another factor I had to evaluate was what resources to use and how I use. For example, I had to make the key decision to whether I should use metal or disposable aluminium pie dishes. On deciding I not only evaluated the impact on my final product but also how it will affect the environmental factors on our society. Using reusable non disposable decrease your carbon foot print as you waste the energy used to make and transport the product used. Therefore, if I use reusable products, such as the metal pie dish, I will decrease the amount of energy I waste.

<http://www.gaiam.com/discover/305/article/carbon-footprint-impact-climate-change/>

[http://www.bbc.co.uk/schools/gcsebitesize/science/ocr\\_gateway/energy\\_resources/global\\_warmingrev1.shtml](http://www.bbc.co.uk/schools/gcsebitesize/science/ocr_gateway/energy_resources/global_warmingrev1.shtml)

<http://www.ucsusa.org/clean-vehicles/vehicles-air-pollution-and-human-health/cars-trucks-air-pollution#.WAWffZN94b0>

#### **OTHER IMPORTANT DECISIONS MADE:**

Another important decision I had to make was whether I would use a thickener and if I did what type to use. This was important decision as depending on what type I would use could affect the whole pies taste, texture and practicality. The biggest impact if the filling didn't meet the correct viscosity is the functionality of consuming my pie in the environment. This is because the physical environment for my pie was outside without any cutlery and if the filling didn't hold its shape it would create a mess for those eating it. This is why I chose to use the commercial pie thickener to ensure that my pie filling is functional.

#### **DECISION TO ACCEPT/ REJECT THE PROTOTYPE**

After completing this final evaluation, I have decided to reject my final prototype of my Pork, Cider and Apple pie due to it not meeting my set specifications. Upon evaluation I discovered that I only met a couple of the specifications and this included:

- Enough energy for 15-20% of my RDI
- No soggy bottom
- Filling holds its shape
- 2-3mm bottom pastry thickness

Unfortunately, the rest of my specifications outlined by my stakeholder (The French Bakery) were not met by this prototype. One of the major issues was that it didn't weigh between 230-250g as it only weighed 183g because of this I will use a pie tin that is slightly larger to ensure it has the weight of a standard New Zealand pie. Due to the pie not weighing the correct weight it didn't meet correct ratio of filling to pastry however increasing the overall weight should even out the ratio. A major specification that I didn't meet was not enough carbohydrates to reach 15-20% of the RDI on the other hand I exceeded, quite significantly, the content of fats and protein.

My stakeholder's feedback was very positive about the flavours and texture of the final prototype. Each of the sensory evaluations I received back from my secondary stakeholders were extremely positive one even stated, "The flavours were perfect!" Although all this feedback was positive I still had to reject this prototype as it didn't meet my requirements in my specifications. Therefore, next time I will increase the size of the pie and to fix the lack of carbohydrates by adding in something carbohydrate rich (e.g. increasing amount of apple or flour which would also support the thickening of my filling) and lower the ingredients with high protein and fat content such as the pork. As I would also be increasing the size of the pie this will add to the amount of pastry which is another source of carbohydrates in my pie.

**Assessment Schedule. AS 91359**

**Demonstrate understanding of the role of material evaluation in product development**

Final grades will be decided using professional judgement based on a holistic examination of the evidence provided against the criteria.

**Issues from the Specifications**

Where a candidate has provided a brief answer, the answer should not be penalised because of length.

Candidate work in excess of 14 pages must not be marked.

Where a candidate has used a small font markers should make a judgement about where to stop marking. This judgement should be made relative to 14 pages at Ariel font

Where work is illegible, it cannot be marked.

Digital submissions that cannot be read cannot be marked.

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of the role of material evaluation in product development involves:	Demonstrate in-depth understanding of the role of material evaluation in product development involves:	Demonstrate comprehensive understanding of the role of material evaluation in product development involves:
explaining the relationship between the performance properties of materials selected and the performance specifications of a product describing different material evaluation procedures undertaken to determine the suitability of materials for use in the development of a product describing the knowledge and techniques underpinning the material evaluation procedures that were used to support the material selection decisions in the development of a product. Refer to exemplar #	explaining why different material evaluation procedures were undertaken to determine the suitability of materials for use in the development of a product explaining how knowledge and techniques underpinning material evaluation procedures were used to support the material selection decisions in the development of a product. Refer to exemplar #	discussing how the relationship between the evaluation of materials and a product's design (including maintenance and disposal considerations) influenced material selection decisions during the development of the product. Refer to exemplar #

Student explained why different material procedures were undertaken with the use of 'thickeners' and the properties these brought to the project.  
 The student explained how this supported the material (ingredient) selection in the development of the product.