

Future-proofing is the process of anticipating the future and developing methods of minimizing the effects of shocks and stresses of future events.

Fortuna dairy group is a southland based dairy group formed in 2012 after buying assets and resources from the Dodunskis who were a successful local farming family based in Southland. The Fortuna farms run all year round and over a total of 4,345ha of land have upwards of 12,000 cows across the 18 farms, roughly 5.6 million kgs of milk solids are produced across the 18 farms annually. Fortuna have some, if not the majority of the control over all these farms and also have a secondary source of income from other businesses they are involved with. One of these secondary businesses the Fortuna group is involved in is rent-a-bull. This company hires out bulls with desired genetics whose sperm are then used for artificial insemination for cows on other farms. Another business they own is an engineering firm and their own labour force which contributes to increasing their profits into the future. Fortuna groups vision/ values are “making the most of ourselves and others, looking after our environment for today and future generations and generating business returns that allow everyone associated with the business to grow their own wealth”. They believe by focusing on these goals it will help them to become a leader in NZ pasture based dairy farming.

In order to ensure that their farms are able to continue to run efficiently, Fortuna group, as well as all other farms, must future proof themselves economically. This involves decreasing production costs or increasing revenue to ensure the business continues to have sufficient funds to continue to run in the future and through hard times such as COVID-19. Future proofing is an important thing for any business to do as it allows them to adapt and change their processes to prevent them falling behind the competition and going out of business. Fortuna group, in order to economically future proof themselves, could do things like the Le Prou dairy farm. In order to future proof themselves, they have started to grow their own crops as opposed to buying PKE when there is not sufficient pasture levels. This is something farms typically do in order to supplement the pasture feed and ensure cows are getting enough dry matter to aid in milk production. By growing their own crops on 25% of their land it means they are less susceptible to feed prices on the open market meaning in times where supplement feed is increasingly expensive and other farms may see profit reductions, this farm will continue to see relatively steady profits into the future.[5] Another benefit of using less PKE is more consumers will purchase their products as they are using more ethically sourced feed.

Something else the Le Prou have done is invest in installing a bridge from the paddocks to the milking shed which has decreased milk run times by 66% from 1 hour to 20 minutes.[5] This greatly improves productivity by decreasing the amount of energy required to walk to the milking sheds, also increases the time they are in the paddock to be grazing and both of these factors contribute towards increasing milk production. This then in turn results in increased revenue and profits into the future allowing them to continue to invest more in other things that will allow them to increase productivity and profits. And continue to run in the long term.



In order to keep up with the competition, Fortuna group must invest in technological advancements to future proof their business. Another possibility to ensure the Fortuna group farms are able to continue to run into the future is to install an automatic milking system. Although there is a large upfront cost involved with purchase and installation of the new equipment it will decrease costs as only 1 or 2 workers will be needed rather than 3 or 4, reducing labour costs by 40000-50000 per farmhand, therefore increasing profits into the future. It is also faster than milking cows by hand which increases productivity which is another factor contributing towards increased profits into the future. For example, installing an automatic milking system on a farm with 60 cows would cost \$1000 per cow, therefore \$60000 in total[1]. According to careersNZ [4] a relatively inexperienced farm hand has a salary of around \$42000 annually and with an automatic milking system this worker would not be required, saving the farm \$42000 a year. If the milking system is taken into consideration, although there would be a decrease in profits after 1 year, the investment would not take long to be paid off as after 2 years the decreased labour costs outweigh the increased cost associated with the milking system resulting in a \$22000 increase in profits and then savings of \$42000 per year every year into the future. Although the farms would most likely take out a loan to purchase this equipment and wouldn't pay it off as fast, it is definitely an effective investment and future proofing strategy and farms that have invested in this will fare better economically into the future compared to farms who are still milking manually. This results in the farm being more profitable and economically stable continuing into the future meaning they are much more likely to stay up and running in the long term.

Fortuna group must invest in other technological advancements to future proof their business. One of the farms in the Fortuna group, Miraka dairies, still uses a herringbone milking shed as opposed to a more advanced and efficient rotary shed. An example of the benefits of this change in technology is greatly improved efficiency. Peter Risi recently installed a rotary shed on his farm in Cambridge and said that it "is one of the best things he has done to increase his efficiency" and has allowed him to milk twice as many cows in the same time period. [5] By installing this new technology it would allow Fortuna groups farms to greatly improve efficiency and therefore double productivity resulting in greater profitability for the collective meaning they are able to continue to run into the future as they have modern technology and aren't falling behind their competition. Technological advances to future proof a business aren't always big, expensive machines and sometimes just small innovations can have large positive impacts on the business. An example of these simple, cost effective machines is CR-1 automatic cup removers.[3] These automatic cup removers have multiple benefits, first being decreased labour costs as less workers are required to milk the cows and also increased productivity. The Cr-1's also have the ability to trigger teat sprayers which can clean the udder and assist in preventing mastitis which is an udder infection that can greatly affect production and can cause some whole batches of milk to have to be thrown out. DairyNZ estimates total costs of mastitis for an average herd of 300 mixed age cows to be \$54,500 per year or \$180 per cow. [6] This is a large sum of money, a lot of which can be saved by the installation of teat sprayers. By decreasing costs of treating sick animals and minimising the amount of milk wastage, the businesses profits will be impacted positively and continue to grow into the future as less and less cows are getting



sick and milk wastage is being reduced. Although technology can have great benefits on a farm, some technologies have costs that outweigh their benefits. An example of this is fully robotic milking machines. These fully automated milking shed are extremely costly at around \$250,000 for one unit that can only milk 70 cows so a farm with 340 cows, which is the north island average, would require an investment of \$1,250,000 which is an insane amount of money for a milking shed and a rotary shed + workers is much more cost effective. These state of the art milking machines have been available for over 10 years yet only 0.2% of farms in NZ have them suggesting they aren't as effective as they are in other countries due to NZs pasture based system as opposed to the other countries where the cows spend a lot of time indoors.[2] These systems most often require changes to the farm layout and management practices as well as other small changes which can mean the price can even be upwards of the already steep purchase and installation fee. With any complicated machine like this there is always the possibility there will be problems and malfunctions and due to the rare nature of these machines finding a specialist who can fix it may be difficult which could greatly impact milking ability for a few days resulting in wasted milk. These machines may be the way of the future but at the moment they just aren't effective/ beneficial enough to outweigh their massive costs which is why so little farms have them.

In the world today global warming is seen as a major global issue and has continued to worsen over the past few decades. It has the potential to greatly affect the earth's climate and weather having many negative impacts on a range of industries and nations. Dairy farming is a large contributor to the issue due to the extensive amount of methane produced by the cows belching. It is likely that a methane tax will be implemented for dairy farms in the near future due to their large negative environmental impacts. In order to future proof from these legislations when they arrive and also just reduce the farms emissions to benefit the environment, the farmers will need to start implementing methods of reducing methane emissions. One way to reduce methane emissions is to reduce herd size. To do this they would need to cull inefficient cows that don't produce much milk. By making their herd smaller and more efficient, their production won't reduce by too much but their methane emissions will be brought way down. To do this even more effectively selective breeding and genetics can be used to find cows that produce the most milk and the least methane to get the best of both worlds by minimising costs and maximising revenue. It is now possible to shop for 'eco-friendly' bull semen to use for artificial insemination "Typically, they're looking for high milk production in the bull's daughters, and cows of the right size and attributes for their farm - at a price they can afford. But this year, farmers can also select lower-methane cattle from the menu, as well as ones that produce less river-polluting nitrogen for each litre of milk." [7] This way they aren't losing much revenue, if any, but will also mean they will have to pay less when the methane tax is introduced therefore ensuring their business is able to continue to operate in the long term. Another methane reducing strategy is alternative feed additives to reduce methane production within the cow. "*Asparagopsis taxiformis* -- a red seaweed that grows in the tropics -- in short-term studies in lactating dairy cows decreased methane emission by 80 percent and had no effect on feed intake or milk yield, when fed at up to 0.5 percent of feed dry-matter intake,". [8] By adding some of this seaweed to cows' feed while they are being milked it can greatly reduce the farms methane emissions from



one small simple strategy. This will decrease the amount the farm has to pay when/if a methane tax is introduced meaning their costs will be lower than rival farms who haven't adopted this strategy meaning they will be more profitable in the future allowing them to continue to operate in the long run. The Fortuna group is already doing something to try and minimise their methane levels by collecting methane from the effluent ponds and then pumping that gas out and using it to produce electricity for the farm. "Dairy Green agricultural and engineering consultant Quinton Scandrett said the farm was producing "more than enough" gas to run the dairy shed and hot water." [9] This not only has benefits on reducing the farms environmental impact but also helps decrease their costs by creating their own electricity meaning they will be more profitable in the long term.

Another environmental factor that dairy farms need future proofing for is the increasing levels of water pollution from farm runoff into streams. The runoff and effluent that leeches into the streams contains cow urine and faeces. The urine is rich in nitrogen which causes toxic algae to grow damaging the rivers ecosystems and the cow faeces contain bacteria such as E coli and campylobacter which can cause serious health problems and unfortunately New Zealanders are twice as likely to fall ill from this bacteria than Brits and three times more likely compared to Aussies or Canadians. Something the farmers can do to combat this problem is by introducing dung beetles to their farms. "Dung beetles are a natural answer to rebalancing the environmental impact of livestock. They tunnel through soil and bury livestock dung, which aerates soil, improves the nutrient cycle and helps manage water absorption and dispersion." [10] By burying the cows poo they prevent the poo from running off into the stream when it rains and means more urine is absorbed into the soil. It also makes the pasture more efficient as there is more grass available for the cows to eat as there are no longer zones of repugnance where the cows won't eat. Zones of repugnance are areas around the cows faces, often 5x the size of the poo, where the cows won't eat the grass as it is too close to their poo. By introducing dung beetles not only are they solving their runoff problem but also increasing productivity therefore increasing profits. It is proven that dung beetles are more effective than riparian planting and fencing so if/when a clean water tax is introduced, farmers that have invested in dung beetles will be much better off and be able to continue to run at the same level they did pre-tax unlike other farms. These insects not only reduce runoff but can have impact on effluent management as the farmers will need to use less fertilizer and effluent as the soil quality is being improved by not only the aeration of the soil from the tunneling, but because the buried dung acts as a natural fertiliser improving pasture growth. This means that they are having to purchase less chemical rich fertilizer to spray on their pasture which then runs off into streams, again reducing costs and water pollution level at the same time.

There are also other factors that Fortuna group need to take into consideration for future proofing. The first example of this is biosecurity. This is an important factor to protect yourself against bringing diseases such as M. Bovis and foot and mouth disease onto your farm which can greatly affect your cows health and therefore production and therefore profits. Another factor farmers need to consider is ethical/ cultural meaning they need to treat their animals well and have good ethics around the operating of their farms as consumers are becoming more



conscientious and won't purchase products produced by companies that abuse their animals/ treat them poorly. If the farmers don't take this into consideration then they will lose revenue as less consumers purchase their products.

Although all future proofing aspects are important to keep the business viable in the long term, in my opinion, the economic factor is the most important out of all of them. I believe this because the main function of every business is to make and maximise profits, and using future proofing to ensure this continues to happen, is the most important thing a business can do. Whether it be through investing in capital or altering management/ operational practices, it is crucial for a business to future proof economically/ financially. It is also the most important as increased profits are what allow the business to future proof in all other areas and it is extremely important to do so, as a business (farm) that has prepared for all possible risks (environmental legislations, biosecurity risks, pest control) and is using new and improved farming practices (technological advancements) is much more likely to survive and succeed as opposed to a farm that has future proofed for some/none of these factors. These technological investments and environmental strategies, such as rotary cow sheds, automatic cup removers, creating power from effluent ponds and using methane-reducing feed additives are strategies implemented by a farmer to remain as competitive and productive as possible, and would not be possible without the business being economically sound through the use of good economic future proofing. The same goes for protecting against biosecurity risks. If the farm can not afford to put effective preventative measures in place then they are more susceptible to being exposed to diseases such as M.bovis which can seriously harm the viability of the business. Without the business being economically sound in the long term, not only will the business struggle to operate effectively, but also won't have the money/ resources to future proof in these other areas of the business, which as discussed earlier, can result in further hindrances for the business and eventually the particular business will begin to fall behind the competition until they can no longer continue to operate. All aspects of future proofing are inter-related in one way or another such as using new technologies to reduce environmental impacts, and changing environmental strategies to align with ethical factors consumers may see as important, but at the heart of all these relations is economic as the changes/ investments require money to start and maintain. Economic future proofing is the backbone of all future proofing strategies that a business may undertake. Therefore, for these reasons, ensuring that the business is economically viable in the long term, through the use of future proofing, is the most important strategy for a business.

By ensuring that a farm is 'future proof' it greatly benefits the businesses viability and reduces the risk of going bankrupt. Factors concerning the long term sustainability must not be ignored as it is likely that the business will fall too far behind its competitors to even remain competitive. Fortuna group undertakes a range of strategies and initiatives to ensure long term viability for the business. These future proofing strategies cover most of the areas previously discussed such as technological, environmental and economic. They have a great track record when concerning environmental sustainability and have collected multiple accolades for these achievements and also, their reputation when it comes to health and safety for both livestock



and staff is one to be proud of. These factors combined are great contributors to ensuring the businesses success and survival in the long run and will allow them to continue to meet present and future needs. All these factors, again, contribute to the economic wellbeing of the business and provide them with an increasing level of economic sustainability giving them the opportunity to expand and grow their business on these fronts. This is another reason why I believe economic future proofing is the most important as it is a chain reaction because by being economically stable it allows them to invest and grow, in turn, increasing the level of economic stability into the future.

[1]

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[2] <https://www.stuff.co.nz/business/farming/advice/91720423/robotic-milking--does-it-compute>

[3] <https://www.ruralnewsgroup.co.nz/dairy-news/dairy-machinery-products/retro-fitted-cup-remover-s-lift-yield-save-labour-costs>

[4] <https://www.careers.govt.nz/jobs-database/farming-fishing-forestry-and-mining/agriculture-horticulture/dairy-farm-assistant/>

[5] <https://nzfarmlife.co.nz/future-proofing-farm-development/>

[6] [https://www.nzherald.co.nz/business/news/article.cfm?c\\_id=3&objectid=10814089](https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10814089)

[7]

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