

DOING THE SUMS

The financial analysis of any major change to the farm system is a critical part of the planning process and an upgrade or the building of a new dairy is no exception. After all, the cheapest place to make mistakes is on paper, as capital invested in a dairy cannot readily be converted into cash should there be a change in circumstances.

The benefits of completing a comprehensive financial analysis before a major building project is undertaken include:

- better budget forecasts;
- improved understanding of the financial implications and the effect on the business; and
- awareness of the payback time – this might impact on those wishing to leave the dairy industry in the medium term.

This chapter contains information on:

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- **Analysing \$ implications** p222
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The information in this chapter provides an insight into the processes of analysing the financial implications of proposed changes to the milk harvesting system.

Key principles to keep in mind ...

Analysing the financial implications of proposed changes can be a time-consuming and complex task. A number of general principles apply when analysing the financial viability of a project:

- Keep current and future milk harvesting targets in mind when making choices.
- Thoroughly investigate the financial and management implications of proposed changes.
- Build in flexibility, so that it is possible to cope with unforeseen circumstances.
- Seek specialist advice from accountants and farm financial advisers.
- Revisit initial decisions and avoid 'locking in' too early – priorities may change as the financial 'reality' becomes clearer.

It is also important to keep in mind a number of key financial concepts.

Capital

Many dairy farmers understand the need to increase, expand and protect the capital base or wealth of a farm business. The dairy facility is a critical capital asset.

Some farmers focus attention on whether they can afford to repay debt associated with a major change and then operate as if the dairy will last forever. It is important to remember that even when a dairy has been paid off, money needs to be allocated for its future replacement to avoid eroding the capital base.

The beauty of putting money away regularly for this 'replacement' purpose is that this capital has the potential to grow over time (compound interest). Future borrowings may be reduced if this strategy is adopted.

Borrowing money to improve capital base

Many people see borrowed money as a means to an end – so they can afford to build a new dairy, for example. Thinking about borrowed money as a way to improve or grow a capital base is slightly different and is a strategy adopted by many businesses. Once repaid, this money forms part of the capital base of the business. In this way, borrowed money is seen as an additional investment of capital in the business.



If the amount of money borrowed can be used to fund a new dairy that will enable the farm to harvest more milk in less time using less labour, the investment and risk associated with taking on the debt may be worthwhile given the likely returns.

Thinking about a lump of borrowed cash as an investment encourages an analysis of investment performance – where will this money earn the most for the farm business?

Payback period

'Payback period' is an estimate of the time that it will take for the capital invested to be repaid given an opportunity cost of capital. Opportunity cost is the money that capital could earn in an alternative investment. Analysing the payback period provides important information. The payback period needs to be a lot shorter than the useful life of a dairy – the shorter the payback period, the sooner money starts flowing back into the farmer's pocket. Consider the following:

If the dairy has a useful life of 10 years but is paid off in just 4 years, the money that was going into servicing debt can now be redeployed. In this case, 6 years worth of payments can now be used to build-up reserves for future changes.

Of course, many farmers do not save in this way for their future dairies. Many spend elsewhere in the farm business or on lifestyle improvements. If this is the case, it is likely that larger amounts of money will need to be borrowed to finance new dairies.

Return on additional capital

Comparing rates of return is a useful way to see if investing in a dairy will be as profitable as investing the borrowed cash elsewhere. Analysing the return that an investment of additional capital is likely to earn helps sort out if the invested money could be better used elsewhere in the business.

The general principle is that if the rate of return is comparable or better than could be achieved by investing the money somewhere else, it should be sensible to proceed.

Opportunity cost

As stated above, the idea of opportunity cost involves analysing what would happen if the capital was in an alternative investment. It is the interest rate received from an alternative investment.

- If the capital is to be financed by debt, the opportunity cost is the interest rate of the loan.

Calver

The term 'calver' is used rather than 'cow' because increasing the size of the milking herd will require more cows to calve than the extra number of milking cows required. A calver has a small 'wastage' factor built in to account for cows calving but not entering the milking herd.

Analysing financial implications – the steps

The decision to invest in a new dairy or undertake a major upgrade is an important one for any farm business. The process of assessing the financial impact of a proposed change can be broken down into a series of steps. These steps can be broadly categorised and include analysing the financial implications of various options and completing budgets.

Steps 1 and 2 are dealt with in the section titled **Analysing \$ implications**.

- Step 1: Analysis of profitability and viability of the current business and detailed understanding of costs of production.
- Step 2: Return on capital and payback period.

Steps 3 and 4 are dealt with in the section called **Preparing budgets**.

- Step 3: Year-in-year-out budget.
- Step 4: Preparation of cash flow budget.

These form the basic steps in analysing investments that will reach their full earning capacity in less than 3-4 years. There are other analyses that can be useful in assessing longer-term investments, but these are outside the scope of these guidelines.

Making changes

Generally, a change in the milk harvesting system cannot be assessed in isolation from the rest of the farm business. A major upgrade or a new dairy is not 'just a shed' but has implications for the whole farm system.

Analyse motivation

The motivation for undertaking a major change may come from a number of sources.

- The current system may be working well, but may be too small to cope with future goals, i.e. milking more cows, boosting milk yield, employing more or less labour.
- The current system may not be working well, i.e. labour is idle or the milker is flat out, dairy is too cramped or it takes too long to milk.
- Sometimes the motivation for change may be a combination of both, for example, milking may be taking too long and extra income may be needed to cover increasing expenses.

Other reasons for seeking changes include the desire to improve the working environment to get benefits such as:

- reduced OH&S risks;
- improved attitudes to the milking job and farming in general; and
- more time to spend on management tasks or being able to attract (and keep) high-calibre staff to take over the day-to-day operational tasks.



Whatever the motivation for change, it is critical to consider the financial implications. Some changes may make milking more pleasant, but if they are not financially sustainable it is easy to end up worse off financially.

Check goals

It is important to be clear about what is motivating the desire for a change and to have a focused picture of the farm goals.

For example, many people get to a stage where they need extra cash to fund off-farm and retirement investments, to have more holidays, a nicer car or send the children to a more-expensive school. Some may wish to employ someone to have more time for leisure or community activities.

- If the primary goal is to increase disposable income, there may be other ways to achieve this without undertaking a major building project.



Not all of a farmer's goals will be purely financial, but every decision made on the farm has a financial implication. The implications of building a new dairy need to be analysed from many different angles, so that the risks of financial failure are kept to a minimum and financial targets are reached.

Consider life stage

Just as goals and priorities change over time, a farmer's stage of life has to be considered when making major financial investments. For example,

- Farmers under 35 with young children may have as many as 3 dairies or major upgrades before retiring in their 60s.
- Funding major changes in the dairy with a houseful of expensive teenagers requires some careful planning.
- A person in their late 50s will need to think long and hard before building a large and costly dairy, to avoid serious financial problems in retirement.

Borrower beware!

Unfortunately, some people are so distracted by the physical benefits or status of having a flash, new dairy that they do not fully analyse the financial implications of investing in a major change.

- Building a new dairy often involves borrowing money. Borrowing money exposes a business to risk. This risk should only be undertaken if the financial returns outweigh these risks.
- Ideally, borrowing money to invest in a new dairy should be analysed in the same way any other investment is assessed.



Looks can be deceiving! A new and efficient dairy is not a guarantee that a farmer's capital is being used wisely.

Get help with analysis

Many farmers have never undertaken a comprehensive financial analysis of their farm business.

- Sometimes farmers are unclear about what such an analysis can reveal about their business and the benefits these insights can offer.
- Farmers often lack the specialist skills needed to undertake a detailed financial analysis – using accountants and farm financial advisers is strongly recommended.
- Crunching the numbers is only one part of the task. Ask accountants and financial advisers to explain what the information means to the business.
- The results of this analysis (cash flow budgets, etc) can often be used in subsequent finance applications and so is well worth the cost.



Use experts to shine a spotlight on the business' current and future profitability, costs of production and return on capital.

Upgrade or new dairy?

Once a commitment to change is made, the next task is to work out if the change will be an upgrade or a whole new dairy.

Table 10.1: Comparing an upgrade with a new dairy.

Upgrade	New dairy
<ul style="list-style-type: none"> ⌘ Short-to-medium term investment – the bigger the upgrade, the longer the term ⌘ Cheaper than building a new dairy – can buy a business time in the short term ⌘ May be sensible if succession issues are unresolved ⌘ May be a good interim step if management is inexperienced ⌘ If the increase in herd size will be too slow to 'make the numbers work' for a new dairy, an upgrade may be a better option 	<ul style="list-style-type: none"> ⌘ Longer-term investment ⌘ Less disruption and loss of income, as can continue to milk in the old dairy until the new site is ready ⌘ Chance to make fundamental changes and improvements to the milk harvesting system ⌘ Opportunity to improve the working environment to make the milking task more pleasant

Source: National Milk Harvesting Centre.



Some upgrades may be paid for by reducing a labour unit or improving milk yield, but building a new dairy will probably mean milking more cows to pay for it. Milking more cows generates cash that can be used to pay off debt. Of course, milking more cows also takes extra time and means increased costs and management. Depending on lifestyle goals and milk harvesting targets for the future, farmers may or may not find the idea of milking extra cows attractive.

In many instances, the new dairy investment needs to be considered in the light of changes in herd size, additional infrastructure (e.g. vats, laneways, fencing, water) and, sometimes, the employment of labour.

Implications of more cows

With major dairy upgrades costing in excess of \$60,000 and new dairies costing in excess of \$250,000, extra income from more cows is generally required to make the investment pay.

- The costs and management implications of running the extra cows need to be considered carefully.
- Often, time and energies are focused on the dairy at the expense of considering other factors. These other factors often make or break the particular investment.

The implications of running more cows effects a number of aspects of the business, including the herd, feed, management, labour, infrastructure and debt.

Herd

The planning process should be able to answer the following questions relating to herd expansion.

- What herd size is required for the business to be profitable and viable with or without the upgrade or new dairy?
- How will the herd be expanded – purchase, natural increase, reduced culling? What is the impact on milk yield per calver and milk quality?
- How long will it take to get to the target herd size? Is this a suitable timeframe?

Feed

An expanded herd means additional feed costs. Consider the following points:

- What is the impact of the expanded herd, including replacement heifers, on feed budgets and feed costs?
- When will non-milking herd numbers (e.g. heifers and/or steers) be reduced?

Management

More cows also have an impact on the general management of the herd.

- Does the management team have the skills required to operate the new farm system?
- Will more cows increase 'stress' levels?

Labour

Additional labour may be required. Cost and management issues need to be considered carefully.

- Will contractors be used (and at what cost) to ensure critical deadlines are met?
- Can labour be used to replace capital expenditure or vice versa?
- Do other projects (e.g. lasering) have to occur at the same time?
- Are senior partners trying to wind down at the same time?

Infrastructure

Building a new dairy may also require upgrading existing infrastructure. Other costs may also rise due to the changes.

- Will the existing infrastructure meet the requirements of the expanded herd (effluent, fencing/laneways and water)?

Debt

The existing debt commitments must also be examined, to ensure that the new project does not compromise the ability to service debt.

- What is the existing debt to farm income ratio and borrowing capacity of the business?



Before upgrading or building a new dairy, the business should have a plan that includes short, medium and long-term business and personal goals. It should also be based on an understanding of the herd size required for the business to be profitable and viable in the medium term, and what has to be done to achieve this.

Benefits of analysis

The benefits of a detailed analysis of financial and management implications include answers to the following questions:

- How profitable is the business now?
- Is money on hand to fund the change?
- Is it possible to raise the finance for the 'dream' dairy?
- Can costs of production be reduced?
- How will such a major change impact on management and future finances?
- Is the bank likely to lend the money? Can the debt be serviced?
- Will cash flow be a problem over the life of the loan? How will it be managed?



A full financial analysis is not simple, but it is worthwhile – especially for large investments. It is impossible to be fully aware of the implications and risks without one.

Analysing \$ implications

Key steps

Once an overview of the type of change has been reached, it is time to start looking at the figures in earnest. The first step is to analyse the current situation. Developing an in-depth understanding of the current financial shape of a business reveals whether it is even worthwhile considering a major change.

By following key steps in turn, it is possible to quickly focus on investment options that will enable the business to meet its goals. The results of each step determine whether to continue to the next step.



Farmers are encouraged to seek independent professional advice while working through these steps, and assistance in the preparation of analyses and budgets.

There are two main steps involved in analysing the financial implications of a proposed major change to the milk harvesting system.

Step 1: Assess the current business profitability and viability, including a detailed understanding of costs of production.

Step 2: Determine 'return on additional capital' and 'payback period', including a sensitivity analysis on each.

The preparation of budgets relating to the results of these analyses (Steps 3 and 4) are discussed in the next section.

As it is impossible to include all the factors that need to be considered by individual businesses, only the main steps are outlined. Where appropriate, 'rules of thumb' are provided regarding key indicators. These indicators should be used with care and financial expertise consulted.

Financial case study farmers 'Rose and Joe' are mentioned throughout these sections to provide a further insight into the decision-making and analysis process.

Step 1: Current profitability and viability

This step involves assessing the current business profitability and viability and includes developing a detailed understanding of costs of production.

Many farmers look at the bigger picture of overall farm profitability and viability, while ignoring the detail of actual costs of production. It is important to identify the strengths and weakness of the business using the costs of production and key ratios.

- If analysis reveals that costs of production are high, it may be possible to lower these and get a financial gain. If the goal is improved finances, there may be no need to build a new dairy to achieve this.

- Increasing productivity by upgrading or building a new dairy will not address the fundamental problems of some businesses. For example, if there is a major problem with variable costs (herd, dairy and feed costs), herd expansion and building a new dairy does not automatically equate to increased profit.



Talk to a farm financial adviser to get a sense of what is reasonable in terms of costs of production.

The information from Step 1 is used as a starting point to plan and assess the future farm system that best fits the farm and lifestyle goals.

Financial case study:

Rose and Joe (both 46) currently milk 200 cows in a 15-year-old dairy, originally designed for 100.

They are keen to replace the existing dairy for at least two reasons.

The old dairy is on its last legs and both are sick of the time and energy it takes to milk. They also need more cash for education expenses and to begin an off-farm investment strategy.

They have minimal cash reserves and so will have to borrow to fund the new dairy.

As part of the 'snapshot' of their current situation, Rose and Joe survey their business in terms of debt first. They currently owe \$300,000. Rose doesn't like to think about this huge amount, but the accountant assured her that the debt ratios were within acceptable limits – they are not overcommitted at the moment:

- *equity exceeds 75%;*
- *debt to income ratio is less than 1 to 1.0; and*
- *debt-servicing costs are less than 20% of total farm income (TFI).*

At the moment, operating profit (which includes their living allowance) is currently less than 15% of their income and cash surpluses at the end of each year are generally less than \$5000 or 1% TFI.

It is obvious that they don't have the cash up front to achieve their goals without milking more cows. Rose and Joe run a pretty tight ship, and so have good control over costs of production, but this review identifies the fact that they could increase pasture utilisation by increasing stocking rates.

Step 2: Return on additional capital

Step 2 focuses on determining the 'return on additional capital' and 'payback period', and includes a sensitivity analysis on each. The return on additional capital and payback period give a quick guide as to whether the new investment is likely to give a return. This step quickly brings into focus the 'extra' income that must be generated from the additional capital expenditure to make it pay.

A sensitivity analysis shows the effect that errors in estimates or changes in income and/or costs may have on the return on additional capital or payback period – it will also show the degree of risk associated with the investment.

- Include a sensitivity analysis when calculating 'return on additional capital' and 'payback period'.

Return on additional capital

An investment should show a return on additional capital of about 20-35% for the investment to be considered worthwhile. It is worked out by looking at the change in income, less additional costs/savings, divided by additional capital expenditure.

For example: if \$50,000 is invested to upgrade a dairy and the annual net farm income is increased by \$10,000, the return on capital is 20% ($\$10,000 / \$50,000 \times 100$).

- The amount of time taken before reaching full earning capacity determines the appropriate return – the longer the period, the higher the return on additional capital required.
- A return on additional capital of 20-25% is appropriate for an immediate return.
- A return of 25-35% is appropriate where the return is expected in 3-4 years.
- The return on additional capital is used to evaluate investments that will reach their potential in less than 3-4 years.
- This partial budget analysis assumes the investment is already at its potential and calculates the return at this point.



Why do the returns need to be this high? The return has to be high enough to cover the risks associated with the investment. Risks can include changes in price and/or interest rates and milk production estimates. In addition, the return is before debt-servicing costs and tax.

It is a useful exercise to do some calculations on 'return on additional capital' using the current gross margin per calver before starting any detailed dairy costing or planning.

A gross margin is the income less the variable costs.

It is useful for a farmer to know what the gross margin per calver is because it gives an idea of what is available to pay fixed costs, debt, taxes, living expenses, etc.

In dairy farming terms, a gross margin is often expressed as 'cents per litre' or as a percentage.

- Most farmers are surprised at the number of extra calvers that are required to make the capital invested in a new dairy or major upgrade pay.
- This analysis quickly develops a feel for the sort of calver numbers that are required to cover the costs using a number of investment scenarios.
- These extra cows have a big impact on the practical operations of running the farm.

If the return on additional capital and the payback period are within accepted limits, go to the next step. If they are not, it is back to the drawing board!

- In some cases, this may mean re-visiting the decision to invest capital to upgrade or build.
- It may mean accepting that herd numbers will have to increase substantially.
- It may also mean that it might be better to employ additional labour rather than invest in a new dairy.



Calculating the return on additional capital using the current gross margin is a great reality check before getting into any detailed planning. It sharpens the focus when deciding what is 'essential' versus 'nice to have' in the upgraded or new dairy!

Rose and Joe got a quote for the 'dream' dairy of \$320,000. The question now became, 'How many cows would they have to milk to make it pay?' They started by looking at increasing the herd size by 100 to 300 calvers in total.

Rose worked out that their gross margin per calver would stay about the same – the current gross margin was \$1000 per calver – but they'd need to allow \$8000 extra for repairs. They estimated that with a new system they would spend a similar time managing 300 calvers as they did for their 200-cow herd.

What quickly became apparent was that milking only 100 extra was not enough – the return on capital was only 17% with a payback period of 7 years. Shocked, Rose and Joe recalculated and increased the proposed herd size to 400 in total. This was the maximum herd size they thought they could manage.

They reviewed their initial assumptions, in particular, the gross margin per calver. Their consultant indicated that on many farms this often did not remain unchanged when herd size increased.

After much discussion, Rose and Joe decided that the gross margin per calver would remain the same, but that an additional \$43,000 was required to cover repairs, employ labour and lease a neighbouring block.

At 400 calvers, the return on capital was more acceptable at 28% and the payback period was 3 years.

Joe was particularly glad that they had both the accountant and consultant working on the figures, as it gave them an opportunity to ask questions. They had never really looked into things in this much detail before and it was a bit confusing. Both felt they had a better grasp of the basics by the end of this stage, although how 'opportunity cost' was factored in still confused them a bit!

The analysis of the return on additional capital and payback period for the 100 and 200 extra calver options is shown below.

Rose was worried – 400 was double the herd they had now. How would they cope with the extra management – pastures, breeding herd health? How long would it take to milk? Would they need extra labour? Their consultant and accountant suggested they move onto the next step to work out the nitty gritty.

Return on additional capital worksheet				
		Cost	Life (yrs)	Depreciation p.a.
Capital invested in dairy:				
	Shed	\$200,000	20	\$10,000
	Plant	\$120,000	10	\$12,000
	Total	\$320,000		\$22,000
		<i>Number of additional calvers</i>		
Current calver numbers		200 calvers	100	200
Gross margin/calver @ 28 ¢/L		\$1000/calver		
		<i>Number of additional calvers</i>		
			100	200
<i>Added/lost income</i>				
Gross margin of additional calvers			\$100,000	\$200,000
Change in gross margin across original herd			\$0	\$0
<i>Added costs/savings (e.g. repairs, lease, labour)</i>				
Additional R&M			\$8000	\$13,000
Labour			\$0	\$25,000
Lease			\$0	\$5000
Depreciation			\$22,000	\$22,000
NET GAIN/LOSS			\$70,000	\$135,000

Additional capital requirements:			
Dairy		\$320,000	\$320,000
Cattle	@ \$850/calver	\$85,000	\$170,000
TOTAL		\$405,000	\$490,000
Percentage return on additional capital		17%	28%
		=\$70,000/ \$405,000	=\$135,000/ \$490,000

% Return on additional capital = (Change in GM – additional costs/savings)/(added capital in shed + plant + stock). Return is based on total additional capital invested (new shed + new plant + added stock). Residual value of stock is not included, hence return on additional capital is conservative.

Payback period			
Opportunity cost of capital	10%	Payback (yrs) on	\$320,000
		<i>Number of additional calvers</i>	
		100	200
		7	3

Payback period is an estimate of the time that it will take for the capital invested in the dairy to be repaid, given an opportunity cost on the capital. It is a useful indicator as to whether the payback period reflects the life expectancy of the investment. Payback period = Capital invested in dairy/(Change in gross margin – other added costs/savings – (capital invested in shed/plant x opportunity cost)).

Sensitivity analysis				
Extra calvers	If net gain/loss estimates out by	Net benefit	Return %	Payback years
100	-10%	\$63,000	16%	8
	0%	\$70,000	17%	7
	10%	\$77,000	19%	6
200	-10%	\$121,500	25%	4
	0%	\$135,000	28%	3
	10%	\$148,500	30%	3

Sensitivity analysis shows effect of errors in estimates on net benefit, return on capital and payback period.

Preparing budgets

After analysing the return on additional capital and payback period to establish the viability of the proposed changes, detailed budgets are prepared for the investment period.

If the proposed changes to the system are deemed as viable to this point, the next steps involve preparing budgets.

Step 3: Prepare year-in-year-out (YIYO) budget.

Step 4: Prepare cash flow budgets.

Step 3: YIYO budget

A YIYO budget broadens the view to take in all the categories of income and spending of the farm business, which now includes the new dairy and increased herd size. YIYO budgets can be used to save time by filtering out options that are not profitable and viable. A YIYO budget provides a guide as to whether to proceed with detailed cash flow budgets (Step 4).

‘Return on additional capital’ and ‘payback period’ only relate to the additional capital expenditure. If the investment achieves an appropriate return on capital to the risk involved and a payback period that reflects its life expectancy, the next step involves:

- assessing the medium to long term profitability of the ‘new-look’ farm business – an operation that now includes the new capital investment and probably, additional debt.

Greater attention is given to technical issues in the preparation of the YIYO budget, with the use of feed budgets and other technical tools to assist in this process.

- Those options with low returns have generally been excluded by this stage, so the number of scenarios being considered has been reduced.



Remember, some options may be profitable, but not feasible, for a number of reasons. These may include lack of labour, lack of management skills, environmental problems, etc.

Determining profitability and viability includes looking at:

- The future farm system and operations – what the farm will look like once the new dairy or upgrade has been completed. This will incorporate issues such as any changes to calving pattern, how many heifers will have to be reared to support the expanded herd, fertiliser and grain requirements, etc.
- Income and expenditure based on the ‘sustainable’ management practices of the future farm system – this may not necessarily be occurring today.



Viability relates to the ability to meet all cash costs. Businesses can be profitable but not viable because of insufficient cash to meet all the cash costs of the business, e.g. debt reduction, replacement of plant and machinery, and a sustainable level of drawings.

For example: investing in a new dairy and milking more cows may improve total milk volume. More milk means more money, right? Well, maybe! Don't forget to take into consideration what has to be spent to achieve this higher volume.

In order to determine viability, all of the following costs are considered:

- farm operating costs – variable and fixed costs;
- plant replacement;
- interest on working capital – overdraft;
- debt repayment – interest and principal reduction; and
- drawings and tax.

Some 'rules of thumb' for a YIYO budget are listed below. Use these as a guide when discussing analysis with financial advisers.

- Operating profit should be around 20-25% if a business has to service debt. Operating profit includes depreciation and an allowance for the operator.
- Return on total farm assets should exceed 5%.
- Aim for a farm cash surplus of between 5-10% of total farm income (TFI).
- Debt-servicing costs should be less than 25% of TFI.



The importance of YIYO budgets cannot be overestimated. A YIYO budget with and without the upgraded or new dairy shows whether the investment will increase the profitability and viability of the business, and whether the financial outcome is worth the effort!

The YIYO budget can also highlight potential risks for the business.

- If debt is highlighted as being a major risk, strategies involving fixed and variable interest rate loans may have to be put in place to manage the risk.
- When the required number of calvers has been determined, check this figure against the projected numbers from natural increase. Stock may have to be purchased.

A lot of work went into this stage of the analysis for Rose and Joe. While accepting that the return on additional capital from the 300 calver system was low, they examined both the 300 and 400-calver options using the YIYO budgets.

The task also involved thinking about how farming would be different with these herd increases. With the help of their consultant and accountant, Rose and Joe worked hard to understand the impact that extra calvers would have on their farming system.

Pasture budgets prepared in conjunction with the YIYO budget showed that grain and fodder use per calver would have to increase with the 400-calver option.

The herd build-up budget for the 400 calver option also revealed some important information. While a herd size of 300 calvers could be achieved through natural build-up within 2 years, it would take more than 4 years to reach a herd size of 400 calvers. It became apparent that they would need to include funds to purchase 60 mated heifers if they went for the 400-calver option.

Rose and Joe were confident that additional infrastructure costs could be met from cash rather than from borrowings and so these were not included in the YIYO budgets.

The operating profit of the 2 options is shown below and includes an operator's allowance and depreciation.

	100 extra calvers (herd of 300 calvers)	200 extra calvers (herd of 400 calvers)
Total farm income	\$586,676	\$780,568
Less variable costs	-\$288,979	-\$385,968
Less fixed costs	-\$180,670	-\$225,670
Operating profit	\$117,027	\$169,298
Less financing payments	-\$53,898	-\$57,986
Net profit	\$63,129	\$111,313

After looking at the figures, Rose felt more comfortable with the number 400. It was clear that milking an extra 200 calvers would boost their operating profit.

The operating profit for the 100 extra calver system was \$117,027 or 20% of total farm income, compared to \$169,298 (22%) for the 200 extra calver option.

The resulting cash surpluses, after including all costs including tax and amortisation of loans, was \$6374 (1% TFI) and \$53,521 (7% TFI) for the 100 and 200 extra calver systems, respectively (details not provided).

While operating profit for both options is within acceptable levels, only the resulting cash surplus for the 200 extra calver system would generate a sufficient surplus to cover risk and enable Rose and Joe to begin an off-farm investment. Rose was determined to use some of this surplus to plan for their next upgrade – a thought that horrified Joe!

Their accountant indicated that the 400-calver system would mean their equity would still be above 75%. The debt to income ratio would be less than 1 to 1 (manageable) and the total debt-servicing costs would be less than 15%. All these were within acceptable limits.

Step 4: Cash flow budget

If the YIYO budget shows that the business will be profitable and viable in the medium term, using an appropriate range of milk prices, the next step is to prepare a cash flow budget.

Detailed cash flow budgets, which forecast monthly income and expenditure, are essential for:

- The assessment of the transitional period (going from today to the YIYO scenario), as they determine what can be done and when.
- The assessment of the impact of major expenses, such as tax, plant and machinery purchases, and personal expenses.
- The assessment of how much debt can be serviced and how to structure repayments. For example, the budget may show the ability to meet only interest payments for the first 1-2 years and that a temporary increase to the current overdraft facility is required.

Even a business that is basically profitable is in trouble if there is insufficient cash to meet cash commitments as they occur.

The changed system must generate additional income as soon as possible after capital expenditure so that the full earning capacity can be achieved.



Generally, financial difficulties are associated with an inability to meet interest payments. This is often because there are insufficient cow numbers to generate the level of income required in the early years of the development.

Based on the YIYO budgets, only cash flow budgets for the 200 extra calver (400 calver) option were developed (data not shown) for Rose and Joe.

After completing the cash flow budgets, both Rose and Joe felt more in control.

Among other things, the cash flows showed how the new dairy and stock purchase would have to be funded from borrowings, while additional expenditure relating to laneways and fencing could be funded from cash flow.

Going through this process had other benefits too – they started to get a real picture of what was critical to achieve. Key events were identified, with contingency plans included in the budget to employ contractors if they couldn't manage to achieve them on time.

The overdraft would have to be renegotiated to cover peak debt and partial debt servicing on the new loan could commence within 18 months. With the purchase of 60 heifers in the first year, full earning capacity would be reached in less than 4 years.

This really appealed to Rose. In 4 years they would be able to start putting extra cash into their 'future' fund. All their hard work on the figures seemed to have paid off – they felt confident that they knew exactly what they were getting into.

 **Rounding up ...**

Due to the size of the investment and the cyclical nature of world dairy prices, the lag phase between incurring the capital expense versus generating a return is critical. While there may be compelling financial reasons to reduce the lag phase, a compromise between financial expediency and the ability to manage an increasing herd size may be required.

Planning should occur well in advance of a dairy being actually built, so that issues such as increasing heifer numbers, pasture renovation programs, etc., can be addressed in advance, if required, hence reducing this lag phase.

Assessing an investment of this type does not hang off any one set of numbers or indeed off financial figures alone. The assessment process should include effects on farm profit and cash flow, return on additional capital and their risks.

