Newsletter





About Rural Funds Management

Rural Funds Management Limited (RFM) is one of the oldest and most experienced agricultural fund managers in Australia. RFM has a 25-year history and operates from a head office in Canberra, and offices in Sydney and Queensland. The company employs more than 180 staff in fund and asset management activities.

Established in 1997, RFM manages approximately \$2.0b of agricultural assets. This includes two investment funds for which RFM is the responsible entity. Assets are located across New South Wales, Queensland, South Australia, Western Australia and Victoria.

The Rural Funds Group (RFF) is RFM's largest fund under management. RFF is an ASX-listed real estate investment trust and owns a \$1.5b portfolio of diversified agricultural assets including almond and macadamia orchards, premium vineyards, water entitlements, cattle and cropping assets.

Scan the QR code to learn more.



Cover image: Almond tree during bloom at Tocabil, Hillston NSW, August 2022. Image on top: Nanny and kid goats at Tocabil, Hillston NSW, June 2022.



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Ongoing advances in Australian cotton production

Cotton is one of the world's oldest known fibres and has been cultivated for at least 7,000 years. In Australia native cotton predated settlement, with foreign species arriving with the First Fleet in 1788. To this day cotton remains the most widely used natural fibre in the world, and it recently became Australia's third most valuable agricultural export.

Rural Funds Management Limited (RFM) has a long history developing and operating cropping properties, beginning 25 years ago in the Riverina region of western New South Wales. Today, RFM continues developments on three Rural Funds Group (ASX: RFF) cropping properties in central Queensland that cover over 12,000 ha.

The basics of cotton growing

Cotton is an annual summer crop, traditionally planted from September to October with harvest occurring from March to April. In Australia, it is primarily grown in New South Wales (66%) and Queensland (33%) on predominantly clay soils on flood plains, adjacent to rivers or other water sources. The crop benefits



from areas which receive a significant portion of non-cloudy days during their growing season, increasing solar radiation.

Cotton can either be dryland or irrigated. Dryland cotton relies on rainfall, requiring a full moisture profile in the soil at the start of the season and rainfall during the summer months. Irrigated cotton requires a reliable water supply from rivers, underground or other sources and typically needs between 6 to 12 ML/ha, depending on the growing region.

In either case, the higher the average temperature and amount of solar radiation – an essential energy source for photosynthesis – the faster the crop will grow and develop. The longer these conditions extend the growing season, the greater the potential for a higher yield.

Cotton, being an annual summer crop, is often rotated with other crops such as wheat and chickpeas during winter.

This helps to minimise pests and diseases, reduce pesticide use, retain soil moisture levels, build and maintain healthy soils and better manage soil nutrients. Some growers will also graze livestock between harvest and planting.

Processing the fibre

The cotton plant is a shrub that grows to approximately 1.2 m high. The plant produces branches, called 'nodes', on which cotton grows within 'bolls'.

When ripe, the bolls open, exposing the cotton fibre. The cotton is then harvested or 'picked' using large mechanical pickers that drive along the rows, pulling the fibre from the plant. The remainder of the plant is then mulched back into the soil.

The raw/seed cotton is packed into round bales ('modules') to be collected and sent to a cotton 'gin' for processing. The term 'gin' is short for the word 'engine'. The ginning

process separates the seed from the lint. Waste such as leaves and sticks are removed and the ginned cotton is pressed into bales, each weighing approximately 227 kg.

While the cotton lint is the more valuable part of the plant, the seed is also a valuable by-product. Cottonseed, which is used as a livestock feed is high in protein (23%), high in energy in the form of fat (20%), and high in fibre (24%). Oil can also be extracted from the cottonseed and used for cooking and in various other products. One tonne of cottonseed yields approximately 200 kg of oil.

Another by-product is cotton 'trash', which is a combination of plant material and lint. This waste product is used as compost fertiliser.

On the global front

Australian cotton is of a high quality compared to other growing regions globally, and as a result Australian



growers typically receive a premium price for their crops. This is largely a result of ongoing research and development of plant varieties by the CSIRO.

Key attributes of Australian-grown cotton include its superior staple length, which makes it easier to process and increases the yarn or end product's quality, as well as high strength characteristics and consistent micronaire, which is a measure of the maturity and fineness of the cotton. These attributes make the cotton less susceptible to breakages during mechanical action or to knots ('neps').

While a relatively small producer of cotton globally, Australia is one of the top four cotton exporters, exporting over 710,000 metric tons in 2021.

The depth of the global export market is highlighted in Australia's trading history. In recent years, China has been Australia's largest raw export market; however, in 2021 the majority of Australian cotton was exported to Vietnam and Indonesia. Substantial amounts also went to Turkey, Thailand, China, India and Bangladesh to be used in the textile industry. Australia's cotton export value is expected to increase by 220% to \$7.0 billion in 2022–23.



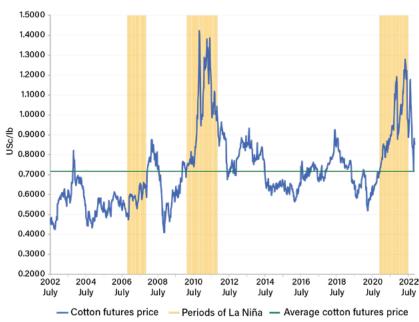
Cotton farmers are able to manage their price risk through a futures market that enables growers to be able to forward sell their crop for up to five years. In practice, growers will typically only forward sell a portion of their crop to allow for yield variance and other factors. In 2021–22 a large portion of the Australian cotton crop was forward sold on December contracts due to high global prices.

Interestingly, over the past 20 years cotton prices have tended to be

higher during periods of La Niña. Figure 1 shows that periods of La Niña in Australia since 2002 (shaded in yellow) have corresponded with spikes in the cotton futures price (blue line). The green line shows the average cotton futures price. This trend has the benefit of high cotton prices when water storages are also likely to have been replenished for local growers to capitalise on increased output.

On the demand side, the outlook for cotton continues to be positive. Figure 2 shows world cotton consumption and world population growth since 1994, highlighting similar long-term correlation between global population and the demand for cotton. Conversely, analysis shows that cotton consumption is not as related to GDP growth as some other "food based" agricultural commodities tend to be, such as protein.

Figure 1: Cotton futures price and La Niña¹



Developments to improve productivity

Matt Mitchell, RFM's National Manager – Cropping, has grown 30 cotton crops, one each year since 1993. In that first year he budgeted to grow seven bales of cotton per hectare (ha). This year's crop averaged over 12 bales/ha which represents over a 70% increase in productivity.

The increase in cotton yields is commonly attributed to the introduction of genetically modified cotton, along with improved varieties through plant breeding. Cotton plants have genetic modifications primarily for insect resistance. The plant modifications have made a difference – once, a crop was sprayed with insecticides up to ten times during a season, but now it's unlikely to occur at all. Additional modifications have made weed control less expensive and more manageable.

In 2016, a new cotton variety was developed which has a number of benefits, including further increased insect resistance. As a result, the cotton planting window has been extended, which can benefit growers in northern climates, such as those in central Queensland. The additional season length enables growers to plant closer to wet seasons and harvest in historically drier months. As a result, average yields in central Queensland have increased with the introduction of this new variety.

Two other cotton production systems have been adopted by central Queensland growers to improve yield reliability and combat climate variability.

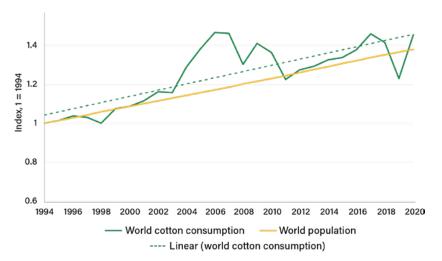
The 'grow on' cotton system allows crops that have been sown in the early part of the planting window to produce a second crop within the one season, on the same plant.

This technique was originally used to grow compensatory fruit after earlier fruit loss from weather events. Crops where yields had deteriorated to seven to eight bales/ha were improved to 12 to 14 bales/ha along with improved quality as well.

In recent years some growers have used the grow on system in crops with yield expectations of 12 bales/ha and added a second crop of 10 bales/ ha to achieve record yields of over 20 bales/ha.

The other production system is

Figure 2: Global population and cotton consumption since 1994²



known as 'walk away' cotton and allows growers to maximise their planted cotton area and rely on inseason rainfall and water harvesting opportunities to complete the crop needs.

RFF cotton in central Queensland

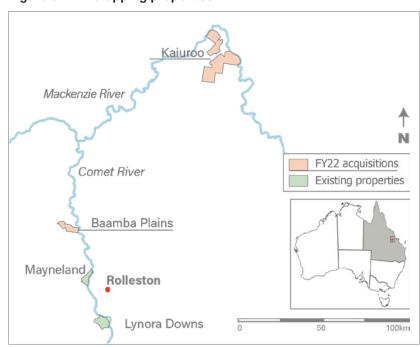
Central Queensland cotton-growing properties within the RFF portfolio include Lynora Downs (4,963 ha, acquired in 2016), Mayneland (2,942 ha, acquired in 2018) and Baamba Plains (4,130 ha, acquired in 2021). A fourth property aggregation, Kaiuroo

(27,879 ha), is scheduled to settle in 2023 and includes both cattle and cropping areas (see Figure 3).

RFM has completed several improvements to increase productivity at Lynora Downs since acquiring the property. The developments include increasing water storage from 10,000 ML to 14,142 ML and increasing irrigation areas from 779 ha to 1,560 ha (see Figure 4).

Heavy-duty machinery, such as scrapers, compactors, graders and water trucks, were used to complete

Figure 3: RFF cropping properties³



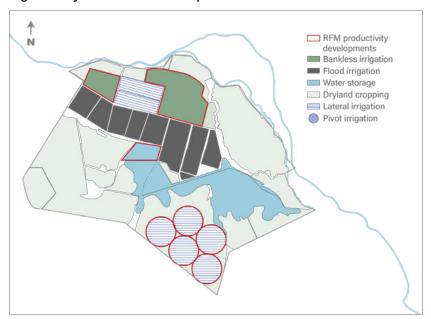
the water storage development at Lynora Downs. The 640,000 m³ of soil removed was used to construct the storage walls up to 10 m high, which increased the water storage capacity by 4,142 ML (approximately 1,650 Olympic-size swimming pools).

A newly constructed water delivery system, using one 1.8 m diameter, 80 m long pipe, transfers water in and out of the new water storage. Another supply pipe, 1.5 m in diameter and 60 m long, was installed to maximise water harvest capabilities.

Overall, the Lynora Downs development program successfully increased the annual average planted area by 608 ha to 1,272 ha, which is a key driver of cotton property valuations. The water storage and use of irrigation provides more reliable production of annual crops for operators. Similar developments are now underway at Mayneland and Baamba Plains.

Looking ahead, RFM's experience in operating and developing cotton operations will allow the business to identify further opportunities in the sector and effectively manage capital development programs, such as those at Mayneland, Baamba Plains and Kaiuroo.

Figure 4: Lynora Downs development



Conclusion

Cotton production in Australia is well placed. Over the past 30 years, global demand for cotton – one of the world's longest-used fibres – has steadily grown in line with world population growth, which suggests that demand will continue to increase.

The Australian cotton industry enjoys a comparative advantage with expansive suitable growing areas and soil types, favourable climatic conditions and advanced production techniques, along with specifically developed plant varieties.

These factors, combined with RFM's extensive experience in operating and improving the productivity of cotton and cropping farms, enables RFM to maximise opportunities for RFF investors.





Sustainability in the cotton sector

The Australian cotton industry is improving water efficiency, with water-use productivity improving by 48% since 1992. Leading cotton producers now grow nearly two 227 kg bales of cotton per megalitre of water – almost double the industry average of a decade ago.

Industry-wide water productivity is now being monitored and benchmarked annually. Regular measurement of this and other climate and crop management data allows deeper analysis of the effects of soil type, rainfall, temperatures, evapotranspiration, irrigation systems, establishment method, fertiliser rates, crop rotations and other factors in driving water productivity.

Nitrous oxide (N_2O) emissions are the secondlargest form of greenhouse gas emissions (GHG) from the agricultural sector. The main cause of these emissions from cropping is the application of fertilisers, which contribute about 60% of the GHG that result from growing, ginning and moving to port a bale of cotton.

Nitrogen use is a focus area of cotton sustainability, as it is the biggest contributor to cotton's carbon footprint. NUE is the measure of nitrogen use efficiency: the higher the NUE, the more efficiently nitrogen is being used.

The industry average for the five years to 2019 was 8 kg lint/kg nitrogen. Cotton Australia has reported that emissions per bale are estimated to have reduced by 6% in 2020/21 compared to 2019/20.

Despite Australia being a world leader in water efficiency and nitrogen use being the focus of cotton sustainability, the Cotton Research and Development Corporation is still looking to improve sustainability of cotton farming by:

- continuing research to improve water and nitrogen management and other significant components of cotton's environmental footprint including native vegetation and soil carbon
- understanding and informing the methodologies and metrics used to assess the footprint of raw materials and their value chains

RFF cropping properties are also being developed with consideration to water efficiency as well as the use of technology (which reduces herbicide application) and systems which produce green manure crops (reducing N₂O emissions).

Notes

- Source: Independent Commodity Management (ICM).
- 2. Source: World Bank and USDA
- Kaiuroo has a settlement period of up to November 2023.



Potential impacts of inflation to farmland and Rural Funds Group

The year 2022 will be remembered as one of significant volatility in financial markets. The US equity market has produced a negative 19% return year to date after a decade of averaging 17% positive per annum. Australian equities are down 4% year to date after bouncing from a low of negative 14% in June, while the sector index in which Rural Funds Group (ASX: RFF) is a constituent is down 21%.

One of the main catalysts for these market movements was cash rates being raised from historic lows by central banks. The US Federal Reserve Board has maintained ultra-low interest rates for most of the period since the 2008 Global Financial Crisis (GFC), However, since March 2020, rates in the US have increased dramatically, from 0.25 to 4.00%. Similarly, in Australia, cash rates increased from a historic low of 0.10% in May 2022 to 3.10% in December 2022. This is despite earlier indications from the Reserve Bank (RBA) that rates would not be likely to rise until 2024.

The main reason for the drastic actions of central banks is inflation. In Australia, inflation (as measured by the Consumer Price Index (CPI)) was recently reported as high as 7.3%, compared to the RBA's target range of 2 to 3%. In the US, the largest economy in the world and bellwether for many other central banks, inflation was reported as 7.1% at December 2022.

The first section of this article will consider the historical performance of farmland during inflationary periods. The second section outlines measures being undertaken within RFF to protect from higher interest rates and mechanisms which benefit from higher inflation.

Farmland and inflation

The June 2022 edition of the RFM Newsletter featured an article by David Bryant which presented a detailed historical analysis of the relationship between inflation, commodity prices and agricultural land values.

While inflation is often observed to negatively impact the value of traditional property sectors, David Bryant demonstrated a positive correlation between inflation, commodity prices and farmland values, as depicted in Figure 1.²

Figure 1 plots CPI, agricultural commodity prices and the change in farmland values in the US over rolling ten-year periods. As shown in the chart, the capital value of farms rises at a faster rate when agricultural commodities are rising, and these periods tend to correspond with periods of higher CPI (inflation).

Logically, this makes sense. The price of food is a component of CPI, meaning that higher CPI usually coincides with higher food prices. Properties that produce food are generally more profitable when the prices being paid for their products are higher.

The 132-year data set also shows that farmland experienced negative growth over rolling ten-year periods only a few times. The collapse in US farmland values in the 1930s coincided with the Great Depression.

A second, relatively brief period of

negative growth occurred in the 1980s.

Figure 2 starts in the period leading up to the negative growth of the 1980s that was termed a "Farm Crisis". This chart also plots the price change of farmland but on a year-on-year basis rather than ten-year rolling averages.

There are numerous factors which resulted in the negative growth of farmland roughly between 1983-1987. What is evident from the chart is that farmland had a decade of unsustainably high growth, an

Figure 1: 10-year moving average US commodities, farmland and CPI (1890-2022)³

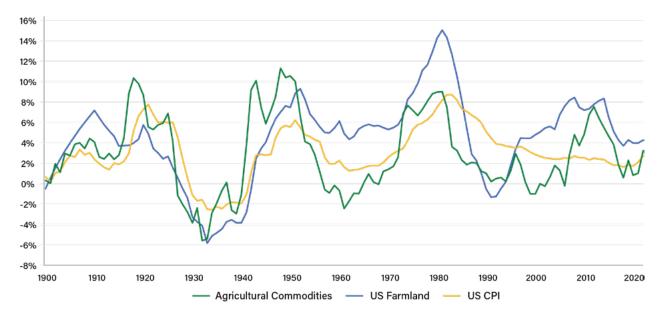
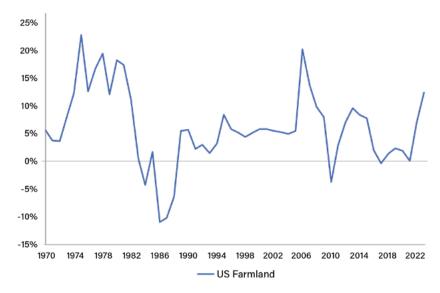


Figure 2: Year-on-year price change US farmland (1970-2022)⁴



average of 15% each year for a decade (1972-1981) prior.

Other contributing factors, which are not evident in the chart, include that: farmers had doubled their debt levels, interest rates soared to above 20% and a collapse in commodity prices.

In other words, multiple extraordinary factors conspiring over numerous years led to the negative growth of farmland of the 1980s. Comparing this to the last decade on the chart, average farmland growth has been a more sensible 4% per annum. Also, anecdotally, farmland debt levels are more conservative and interest rates are not currently forecast to peak

anywhere nearly as high.

Figure 3 presents analysis over a similar period (to the data in Figure 2) of the returns, volatility and correlation of US agricultural production compared to equities, bonds, and inflation (CPI).

The analysis supports the thesis that agriculture performs well in inflationary periods as represented by the positive correlation (0.65) between the two.

The prior analysis has considered US agricultural data sets. While Australian data sets are also available, they are shorter in duration (measurement of farmland values in Australia commenced in 1978) and therefore include fewer inflationary periods to assess. Separate analysis, however, suggests the relationship of these three variables are relevant to Australia.

Another possible explanation that the impact of inflation is statistically less detrimental to agriculture (than equities) may be that the sector is influenced more by other factors, for example, commodity prices and seasonal conditions.

While, in the Australian agricultural sector, median farm prices have grown at double digits in 2021 and 2022, this has been supported by good seasons and above average commodity prices. Furthermore, ABARES estimates the value of agricultural exports to reach a record of over \$72 billion in 2022–23. The

Figure 3: Sector return characteristics - US data (1970-2019)⁵

Sector	Return	Volatility	Correlation
Agriculture	10.2%	6.5%	1.00
Equities	7.1%	16.5%	-0.25
Bonds	6.3%	3.0%	0.15
Inflation (CPI)	3.8%	2.8%	0.65

combination of high production and prices has seen Australian agricultural exports exceed \$5 billion in every month since November 2021.

While farmland as a broad asset class appears to have characteristics which provide an effective inflation hedge, the balance of this article will consider the impacts of higher inflation and interest rates specifically for RFF.

Interest rate hedging update

For the full year ended 30 June 2022 (FY22), RFF generated earnings of \$210 million after expenses. This amount can be split broadly into:

- cash earnings primarily generated from leasing assets, and
- 2. non-cash earnings generated by asset revaluations.

Inflation can impact both types of earnings, we will consider the potential impacts of inflation to cash earnings first.

Cash earnings, or adjusted funds from operations (AFFO), support the payment of distributions. AFFO totalled \$44 million for FY22 and provided distributions of 11.7 cents per unit.

Higher interest rates increase the cost of floating rate debt, resulting in less AFFO to distribute to investors (noting that RFM have already assumed higher interest costs in the current financial year when calculating FY23 forecast AFFO and FY23 distributions). Notwithstanding, RFM has sought to mitigate this by increasing the amount of debt that is fixed over the next several financial years.

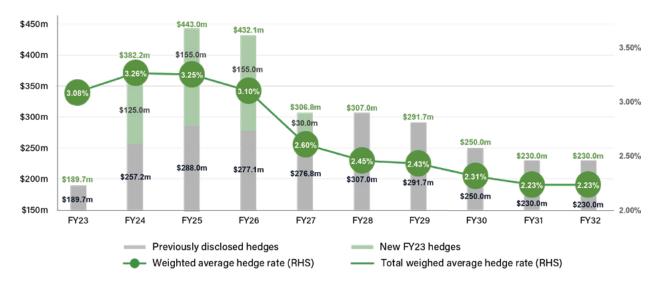
Like a fixed rate home mortgage, interest rate hedges provide a cap on the cost of an amount of debt. Figure 4 shows the interest rates held by the fund at FY22 (grey bar) and the additional hedges acquired since then (green bar).

As a result of the acquisition of additional interest rate hedges, in FY24 RFF will have \$382 million hedged with an average hedge rate of 3.3% growing to \$443 million of hedges in FY25 and remaining at a similar level in FY26. As at 30 June 2022 RFF had borrowings of \$458m and forecast capex of \$104m (FY23). Based on additional interest rate hedges acquired for FY24, the majority of RFF's debt is forecast to be hedged. This provides the fund with a material degree of protection if rates exceed those thresholds.

RFM has also maintained a strategy of acquiring interest rates hedges with a long duration, akin to fixing a portion of a home loan for an extended period. RFF's weighted average hedge duration is 7.5 years, and this provides a level of coverage well into the future.⁸



Figure 4: Interest rate hedges



However, considering only the higher debt costs overlooks the fact that higher inflation leads to higher lease income.

Inflation and lease indexation

Most RFF leases have an annual indexation arrangement. This means the rent increases annually based on a predetermined calculation method. Figure 5 shows indexation mechanisms weighted by their contribution to forecast FY23 AFFO.

The largest category of lease indexation mechanisms is based on CPI, that is, annual rent increases in line with inflation and higher inflation results in higher annual indexation.

Some of these leases are linked to CPI but have additional caveats such as caps and collars, which are maximum and minimum ranges of the annual indexation. Currently, CPI is higher than the caps in these arrangements, limiting annual indexation. However, most of these arrangements also have a market rent review mechanism or profit share arrangement that may add to the indexation rate over the lease term.

Market rent reviews are an important feature of RFF leases as they monetise the capital growth of assets, including those that could benefit from productivity improvement. They are also indirectly linked to inflation, as agricultural property values tend to be correlated with inflation as demonstrated previously.

Most fixed indexation arrangements that are fixed at a pre-agreed rate (usually 2.5%) also have market rent review mechanisms. Therefore, most

RFF leases are either directly or indirectly linked to inflation.

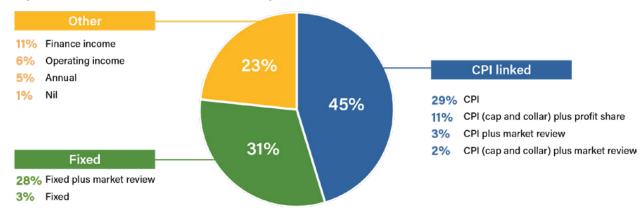
The 'other' category includes assets which are leased on finance income arrangements (which are generally higher than property lease rates), are operated directly by the fund (and therefore generates operational income), or are on an annual basis (eg water allocation sales).

Earnings growth strategies

Non-cash earnings, or property revaluations, are reflected in a higher adjusted net asset value (NAV). Revaluations for 71% of the assets within RFF totalled \$134 million in FY22 and contributed to the increase in RFF's NAV to \$2.69 on a per unit basis.¹⁰

While the earlier analysis of historical

Figure 5: Lease indexation mechanisms (by FY23 forecast AFFO)9





farmland suggests that farmland is an effective hedge against inflation, it is also important to recall that RFF is using two strategies with the aim to improve the valuation of assets.

Figure 6 outlines the two main development strategies RFM has used to generate higher cash and non-cash earnings: productivity improvements and conversion of assets to higher and better use.

These strategies have contributed materially to the increase in NAV for RFF since listing.

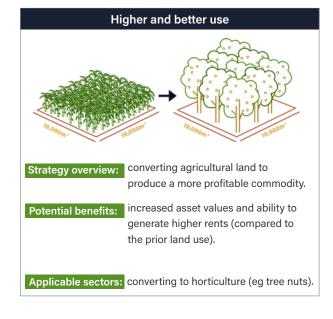
RFF has a diversified agricultural portfolio of \$1.4 billion of property assets, including in the cattle, almond, cropping, macadamia and vineyard sectors.¹¹

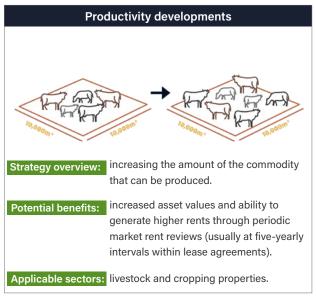
Of these assets, RFF has \$543 million of natural resource predominant

assets which may benefit from productivity developments. These assets are in the cattle and cropping sectors. An additional \$156 million of assets are being converted to higher and better use, namely into 5,000 ha of macadamia orchards.

Overall, approximately half of RFF's property portfolio have the potential for higher values in future years through development activities.

Figure 6: Earnings growth strategies







RFM is seeking to protect RFF from the impact of higher debt costs through interest hedges. Furthermore, higher inflation benefits many of the lease structures within RFF, either directly through CPI mechanisms or indirectly through market rent reviews.

Higher inflation also has a positive correlation with farmland values, that is, the capital value of farms has historically risen at a faster rate when agricultural commodities and CPI, are rising. Long-term data validates this relationship through cycles.

Additionally, RFM is seeking to improve the income and capital growth of a significant portion of the RFF portfolio through developing assets to higher and better use or improved productivity.

Notes

- Returns from 1 January 2022 to 9 December 2022. Prices indices only and does not include dividends. US market = S&P 500, Australian equities = S&P/ASX 200 and RFF = S&P/ASX 300 REIT index
- See RFM Newsletter edition 17, June 2022: Inflation, land values and the Rural Funds Group.
- Source: Federal Reserve Economic Data (FRED) St. Louis Fed (stlouisfed.org)
- Source: Rabobank RaboResearch Food and Agribusiness, Australian Land Prices, Vogel, September 2022.
- Source: Bruce Sherrick, Ph.D, Director of TIAA Center for Farmland Research, The relationship between inflation and farmland returns, (Oct 2020) https://farmland.illinois.edu.
- As measured by Total Comprehensive Income.
- For FY23, RFM has assumed that interest rates (as measured by one-month BBSW) will increase to 3.5% and remain at that level for the last six months of the financial year.
- Proforma to 30 June 2022.
- Numbers rounded. CPI (cap and collar) plus profit share includes The Rohatyn Group (TRG) lease. FIRB approval for the TRG lease received December 2022.
- Non-cash earnings include property revaluations excluding derivatives
- Total property assets adjusted for the independent valuation of water entitlements.

