Newsletter

from Rural Funds Management Ltd

Rural Funds Management

EDITION 9, JULY 2018

A CHANGE OF AIR

David Bryant, RFM Managing Director

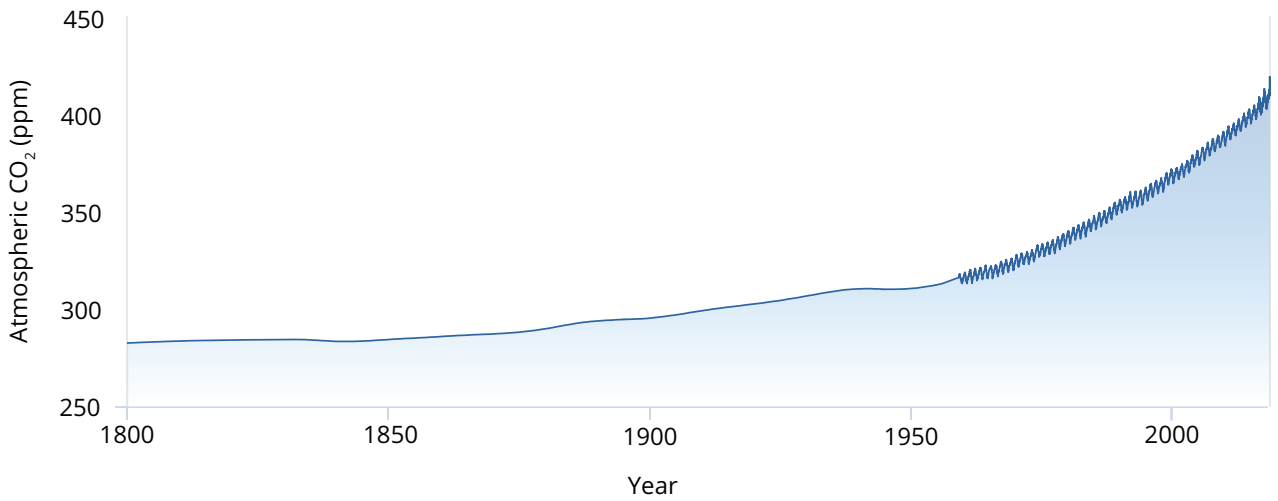
Emerging Lablab crop, Rewan, Rolleston, central Queensland, January 2017.

Matt Mitchell, RFM's National Manager – Cropping and Livestock, has grown 25 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 will probably yield 12 bales per ha, representing a 71% increase in productivity. Could this sort of productivity gain be replicated on a cattle farm?

The increase in cotton yields is commonly attributed to the introduction of genetically modified cotton. Today, cotton plants have three genetic modifications for insect resistance, plus a fourth modification to make the plant resistant to glyphosate, also known as Roundup. The plant modifications have certainly assisted, since where Matt would have once had a crop sprayed with insecticides up to ten times during a season, it is now unlikely to occur at all. Meanwhile the 'Roundup Ready' modification has made weed control less expensive and more manageable. While helpful, these genetic modifications have only provided indirect benefits, in the form of lower costs plus reduced insect pressure and weed competition.

Another explanation or contributing factor to Matt's higher cotton yields, is the increasing concentration of carbon dioxide (CO_2) in the atmosphere. Atmospheric CO_2 concentration is important because this is a measure of how much CO_2 is available for the plant to perform the process of photosynthesis. In the early 1800's, at the beginning of the industrial revolution, atmospheric CO_2 concentration was 283 parts per million (ppm). Today it is 407 ppm, representing a 44% increase (see **Figure 1**). By 2050 CO_2 concentration is forecast to be around double that of pre-industrial levels.

Figure 1: Atmospheric CO_2 levels (1800–2018)[1, 2]



1 2 Degrees Institute, 2018, *Gobal CO_2 Levels*, viewed 4 June 2018, < http://www.co2levels.org/>.

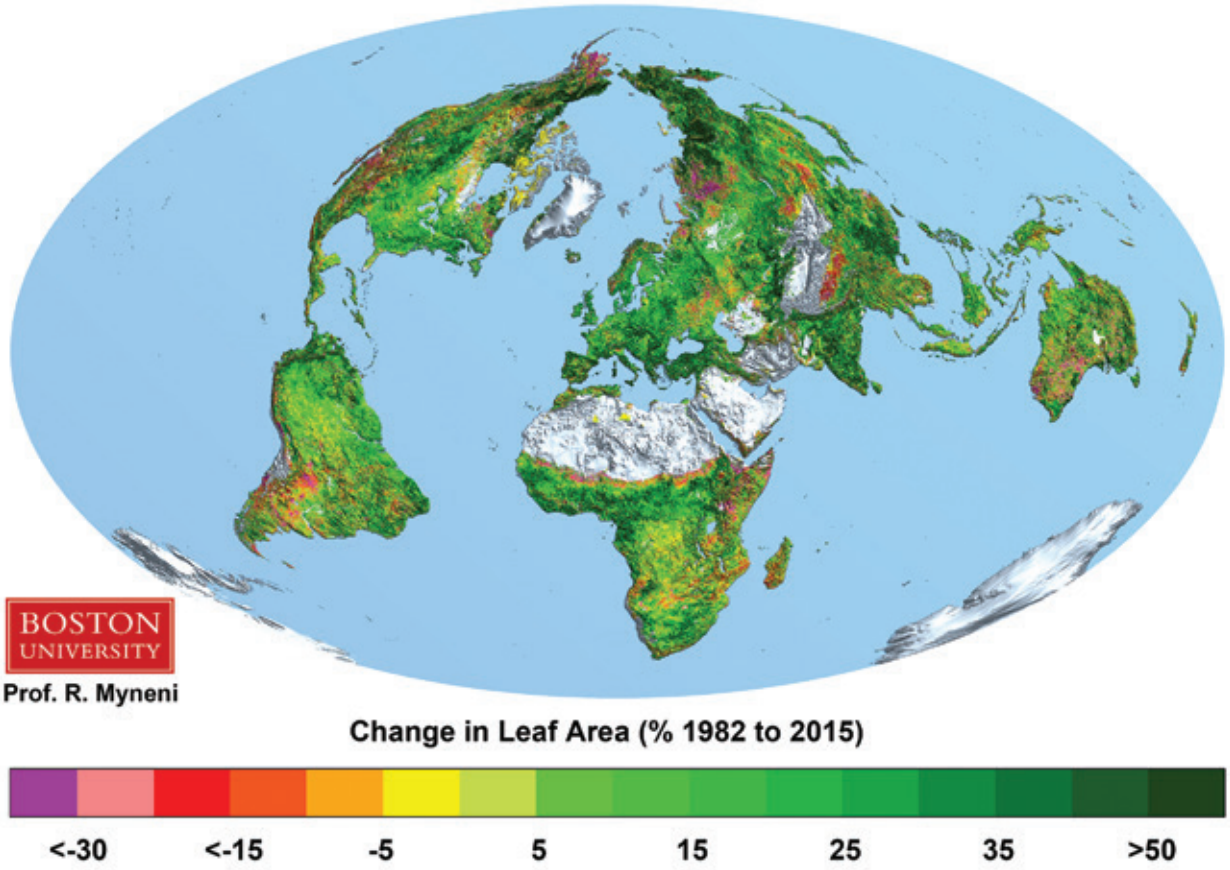
2 Higher recording frequency after 1958 explains increased data point movement on graph.

Front cover: Aerial image of cattle yards, Rewan, central Queensland, February 2018
Inside cover: Cabinet Sauvignon grapes, Geier Vineyard, Barossa Valley, South Australia, April 2018
Back cover: Swan Ridge macadamia orchard, Bundaberg, Queensland, December 2016

Although it is possible to doubt the rate of climate change that higher CO_2 concentration is causing, it is not rational to doubt that higher CO_2 levels have occurred and will continue to rise. A second area where there can also be no doubt, is the impact that this is having on plant growth. In a 2016 report published by a team of scientists[3], the results of studies of long term satellite surveillance and ten global ecosystem models were reported. The study found there is a 'persistent and widespread increase' of growing season leaf area index (greening) over 25–50% of global vegetated area (see **Figure 2**). Leaf area index is a ratio of leaf area relative to the ground area below. It is used by scientists, weather forecasters and agriculturalists to study phenomena including atmospheric changes, vegetation growth, energy conversion and gas exchange. The study's modelling indicated that 70% of this vegetation increase could be explained by the CO_2 fertilisation effect.

Numerous studies and experiments have been conducted to measure the increased rate of plant growth from the change in CO_2. Perhaps the most accurate and interesting is the technique of Free Air Carbon Dioxide Enrichment (FACE) trials, where plants in the field (rather than a greenhouse) are supplied additional CO_2 and their growth rates are then measured compared to the control plants. This is achieved by surrounding the plants with pipes and pumping CO_2-enriched air into the atmosphere immediately surrounding the plant (see **Figure 3**). Studies of numerous FACE experiments run at CO_2 concentrations of 475–600 ppm have found faster growth rates, greater biomass and increased seed or fruit yields.[5, 6] US studies found cotton lint yields increased by 60%, Australian studies found wheat yields increased by 26%, and Italian studies found potato yields increased by 36–50%. These and many other results, often called the CO_2 fertilisation effect, are the result of more efficient photosynthesis.

Figure 2: Change in global leaf area (1982–2015)[4]



3 Zhu, Z. et al, 2016, 'Greening of the Earth and its drivers', *Nature Climate Change*, vol. 6, pp. 791–795.
4 Carbon Brief, 2015, *Rising CO_2 has 'greened' world's plants and trees*, viewed 4 June 2018, < https://www.nature.com/articles/nclimate3004/>.
5 Ainsworth, E.A. & Long, S.P. 2005, as quoted from: Taub, D. 2010, 'Effects of Rising Atmospheric Concentrations of Carbon Dioxide on Plants', *Nature Education Knowledge*, vol. 3, no.10, viewed online 4 June < https://www.nature.com/scitable/knowledge/library/effects-of-rising-atmospheric-concentrations-of-carbon-13254108>.
6 de Graaff, M. A., Van Groenigen, K. J. et al. as quoted from: Taub, D. 2010, 'Effects of Rising Atmospheric Concentrations of Carbon Dioxide on Plants', *Nature Education Knowledge*, vol. 3, no.10, viewed online 4 June < https://www.nature.com/scitable/knowledge/library/effects-of-rising-atmospheric-concentrations-of-carbon-13254108>.

Figure 3: Aspen Free-Air Carbon Dioxide and Ozone Enrichment (Aspen FACE) experiment site at Wisconsin, United States

Photosynthesis is the process whereby a plant uses the energy from the sun to fuel a chemical reaction between H_2O (water) obtained from its root system, and CO_2 absorbed from the atmosphere. The reaction between these molecules creates carbohydrates used to build plant matter, and a release of oxygen, thereby ensuring atmospheric oxygen concentration remains at 20% – a level at which people find breathing easy. Looked at in this way, photosynthesis sustains both plant life on earth by producing carbohydrates, and human and animal life, by producing the oxygen we need to breathe.

Increased atmospheric CO_2 concentration assists plant growth in two ways. Firstly, if CO_2 is 44% more abundant, the rate of photosynthesis simply speeds up, thereby producing more plant material during the annual growing period.

The second effect on plant growth is increased water use efficiency. Only around 2% of plant water use is consumed in the process of photosynthesis and therefore plant growth. The other 98% is utilised in the process of transpiration. Plants typically have leaves with tiny pores, called stomata, that can open and close through the day, depending on growing conditions and the plants need to obtain CO_2 from the air. When the stomata are open, CO_2 enters the plant, while much larger quantities of water evaporate out through the stomata, thereby cooling the plant. Due to the now higher availability of CO_2 in the air, plants obtain the required CO_2 more easily and therefore open their stomata less. This is evidenced in a variety of FACE trials that showed, on average, a 22% reduction in the stomatal conductance of water.[7]

There is, however, a downside to the higher rates of plant growth that we are now experiencing; plants are becoming less nutritious. There are probably two reasons for this. Firstly, because photosynthesis has become more efficient, leaves are able to produce more carbon rich plant matter, thereby diluting other nutrients that are accumulated through the root system.

The second reason for less nutritious plants is explained by the way they obtain those nutrients. The transpiration process provides a column of water within the plant, rising from the root system, up through the stem or trunk, then out into the atmosphere via the leaf stomata. This flowing column of water transports nutrients extracted from the soil by the plants roots, which are then deposited throughout the plant structure and particularly within the leaves. However, the increased water use efficiency that is now occurring from higher CO_2 levels, means that the plant is processing less water and therefore importing fewer nutrients.

Perhaps the most acute nutrient deficiency now occurring in plants is nitrogen, even though it makes up a surprising 78% of the air that we breathe. Our June 2017 newsletter discussed the importance of nitrogen in the formation of amino acids, which are the building blocks of the protein that all animals, including humans, require for tissue growth. Despite its abundance in the atmosphere, plants do not absorb nitrogen through their leaves and instead must rely on nitrogen uptake through their roots.

Insects, herbivores and farmers are adapting to the lower nitrogen content in a number of ways. Insects are having to eat more plant leaves to obtain their dietary requirements, and herbivores must do the same. Farmers, such as Matt Mitchell, are adding nearly twice as much nitrogen fertiliser, allowing cotton plants to produce 71% more cotton lint and oil rich cotton seed than they did twenty five years ago. Farmers then are not just adapting, but capitalising on the increased plant growth created by higher atmospheric CO_2 concentration.

7 Ainsworth, E.A. & Long, S.P. 2005, as quoted from: Taub, D. 2010, 'Effects of Rising Atmospheric Concentrations of Carbon Dioxide on Plants', *Nature Education Knowledge*, vol. 3, no.10, viewed online 4 June < https://www.nature.com/scitable/knowledge/library/effects-of-rising-atmospheric-concentrations-of-carbon-13254108>.

Viticulturists with decades of experience, such as David Murdock, the manager of the Rural Funds Group's vineyards, have observed that harvests are happening significantly earlier than when they first began their careers. FACE experiments have shown that grape vines are able to accumulate sugars more efficiently, thereby presenting wine makers with a dilemma. They either harvest earlier at the desired sugar level, before the grapes have accumulated other compounds that provide flavour complexity, or they harvest later at higher sugar concentrations. Fortunately, they are choosing the second option, but this is contributing to higher alcohol levels in our wine.

One type of plant that is not experiencing declining nitrogen concentrations are legumes, a plant that enjoys a symbiotic relationship with bacteria called rhizobia that accumulate as nodules on the legumes root system. Rhizobia bacteria are able to consume the abundant atmospheric nitrogen and convert it into forms that can be absorbed through the plants root system. Consequently, legumes have much higher nitrogen levels present in their leaves, which herbivores such as cattle, purposely graze to obtain the nitrogen they need. Given the now lower concentrations of nitrogen in grasses as a consequence of the CO_2 fertilisation effect, one wonders if cattle are tending to favour legumes even more, thereby reducing the legume content of some pastures.

Nitrogen deficiency is evident in the grass-based pastures on the Rural Funds Group's Rewan property, and the recently acquired Comanche. Prior to European settlement these farms were covered with large stands of Brigalow (*Acacia harpophylla*) trees, which, like wattle trees, are a legume that sequestered significant nitrogen into the soils of these farms. In the 1960s the Brigalow Development Scheme resulted in the clearing of nearly 4.5 million ha of Brigalow forest, which was then allotted to settlers, who established grass pastures and highly successful cattle businesses, due to the fertility of the soil.

While the developers of these farms included legumes in their pastures, the nitrogen levels in these pastures have declined in the past sixty years. The cause of this decline is three fold. Firstly, the cattle sales that drive the profits of these businesses constitute an export of nutrients such as nitrogen from the biological system. Secondly, the legumes included in the pasture mix are often preferentially grazed by cattle, due either to their greater palatability or the cattle instinctively seeking to increase the nitrogen they consume. Finally, the grasses that dominate the pasture mix have higher growth rates, but lower nitrogen content, due to the CO_2 fertilisation effect described above.

The challenge of declining nitrogen levels in pastures is in fact an opportunity. Planting larger and more persistent legumes such as Leucaena (see RFM Newsletter edition seven, June 2017) can lift soil nitrogen levels and the growth rates of the accompanying grasses. Also, simply applying nitrogen fertiliser on a regular basis can drive higher pasture growth rates and leaf nitrogen levels to supply cattle with the best possible nutrition.

As Matt Mitchell and cotton farmers all over the world have discovered, the increased atmospheric CO_2 created by mankind's industrialisation presents an opportunity for farmers to increase their productivity, providing they supply the additional plant nutrients that this accelerated biological system now demands. This is the same opportunity that currently presents itself to cattle farmers in northern Australia, and one that lessees of the Rural Funds Group cattle farms will pursue.

Pasture on Rewan, central Queensland, March 2018. The dark green strip is a section treated with fertiliser. The contrast with the balance of the pasture is of particular interest. Its 'yellow' appearance is a classic indication of nitrogen deficiency.

RURAL FUNDS GROUP UPDATE

Cattle grazing with improved pasture in background, Rewan, central Queensland, February 2018

Rural Funds Group (ASX: RFF) is an agricultural real estate investment trust (REIT) that leases properties to agricultural operators. Its strategy is to generate a stable income and capital growth by owning, and where appropriate, improving productivity of farms.

In this section:

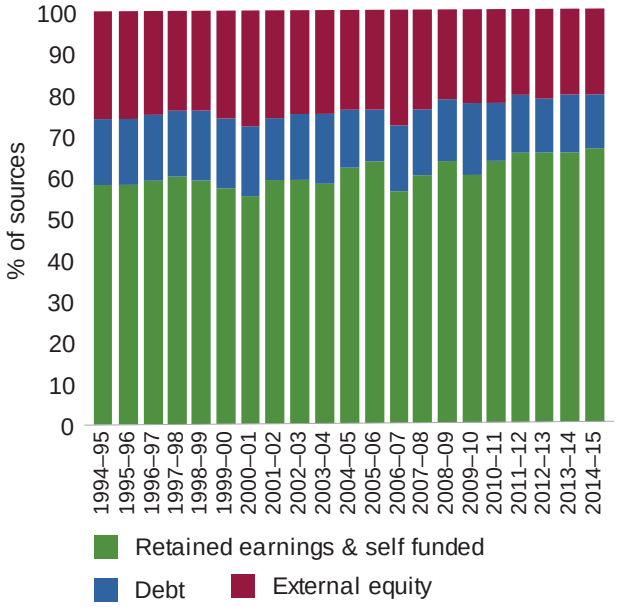
- **Positive results from northern developments**
- **HY18 financial results**

Positive results from northern developments

Over the past two years, RFM has outlined a strategy of identifying assets that have the potential to benefit from capital development designed to improve productivity. This strategy aims to increase the productivity of assets, and in turn the value of the assets, through deploying capital. The resultant valuation uplifts can then be monetised in the form of increased rent via periodic rental reviews.

Such assets tend to be natural resource predominant and in the livestock and cropping sectors. Whilst quality assets, in many instances the operating performance of the farms has been suboptimal due to limited capital development being historically undertaken. This is often due to capital constraints on the part of the owners, with most private farm operators funding their business predominantly through debt and retained earnings (see **Figure 4**). Not having access to additional external capital limits their ability to invest in their businesses. Conversely, a listed-entity such as RFF has ongoing access to external capital, allowing for development to be undertaken.

Figure 4: Capital sources for farm operators (1994–2015)[8]



8 ABARES, AGSURF Data 2017.

Page 8: Aerial view of cattle and stockman, Rewan, central Queensland, February 2018

In addition to farms operating sub optimally due to a lack of capital and development, there are acquisition opportunities present in these sectors due to restructuring requirements of these primarily family-owned businesses. In many instances the sale of farms is required to fund intergenerational asset transfer and as farming operations consolidate in order to maintain operating scale.

RFF has funded approximately $5.7m of capital development on its northern Australian assets. The development on the cattle properties has focused on improving carrying capacity, a key metric of valuation. The development of RFF's cotton property has concentrated on increasing water capture capability, storage capacity and irrigable area.

For investors it is important to recognise that RFM seeks to structure leases on these assets with periodic rent reviews. As at 31 December 2017, 38% of RFF's income was derived from leases that have rent reviews.

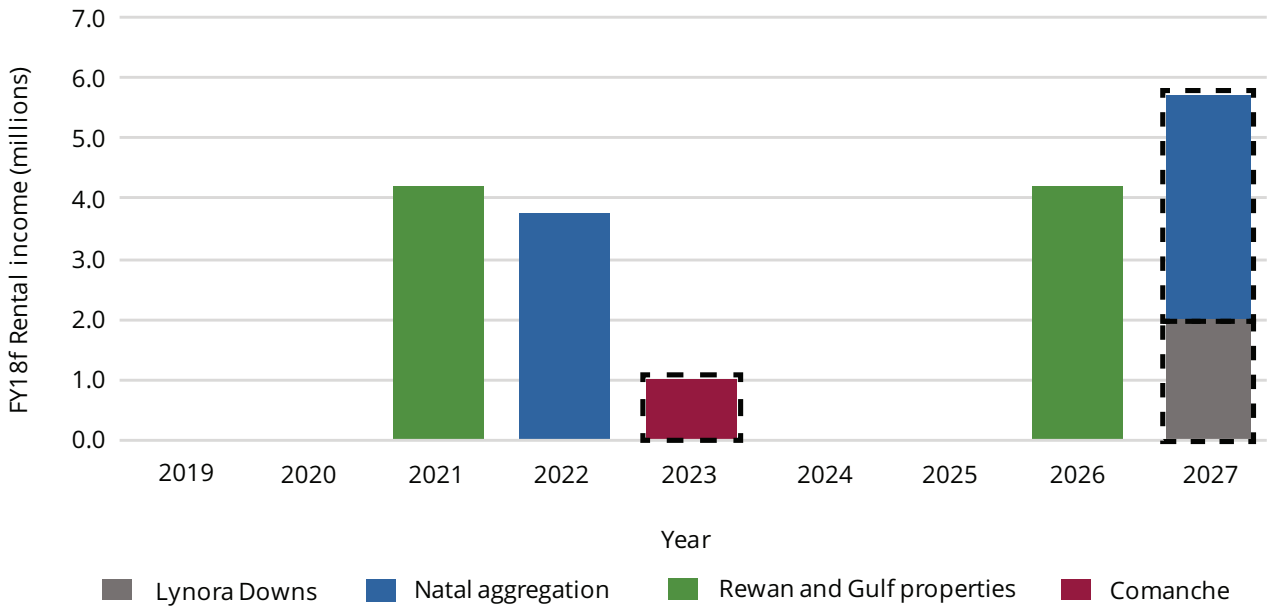
By monetising increases in asset values, these reviews serve as the mechanism to support the distribution per unit growth target of 4% p.a.

As RFF acquires more natural resource predominant assets, the number and frequency of these market reviews will increase. RFM's overall aim is to have a higher rental review frequency within the portfolio, allowing for consistent monetisation of capital development work.

Figure 5 shows the expiry profile of natural resource assets as of 31 December 2017.

"By monetising increases in asset values, these reviews serve as the mechanism to support the distribution per unit growth target of 4% p.a."

Figure 5: Lease expiry profile of natural resource assets[9]



9 FY18 revenue shown in year of rent review for natural resource predominant assets. Dashed boxes indicate when lease is to be renegotiated or re-leased at market. Lynora Downs lease has a 5 year term with a 5 year option (graph assumes take up of option). Comanche lease details are yet to be finalised. Assumes 5 year lease, with rent review at end and lease rate consistent with cattle sector. Based on FY18f revenue, Natal aggregation revenue annualised as to recognise purchase date.

HY18 asset valuation increases

As part of the 2018 half year results presentation, RFM presented the results of independent valuations undertaken on two properties: the central Queensland cattle property Rewan, and Lynora Downs, also in central Queensland.

In the case of Rewan (see **Figure 6**), it received an independent valuation 17% higher than the acquisition price plus deployed capital expenditure. Undertaken by CBRE valuations, the primary factor driving the valuation uplift was the increased carrying capacity of the property.

At the time of purchase, RFM stated that it intended to substantially increase Rewan's carrying capacity. To support this aim, RFF has funded $0.6m of capital development on the property, focusing on increasing cultivation area and water infrastructure. In addition, RFM is investigating further productivity enhancement opportunities, such as those outlined in David Bryant's article at the start of this newsletter.

Rewan, a cattle backgrounding property, is part of an integrated cattle operation with two breeding properties in northern Queensland; Mutton Hole and Oakland Park. Valuation uplifts resulting from capital development tend to be recognised in backgrounding properties sooner than breeding properties. This is because in the case of backgrounding properties, valuation metrics such as carrying capacity are based on more short term and measurable factors such as increased weight gains. However for breeding properties, carrying capacity is assessed using longer-term weaner turn-off rates, often over several seasons.

A rental review scheduled for 2021 is included in the Rewan lease.

Lynora Downs also received a modest independent valuation increase. Since acquiring the property in late 2016, RFF has funded $3.8m of capital development to expand the water storage and irrigation area (**Figure 7**). The development on Lynora Downs is ongoing, particularly the expansion of the irrigated cropping area, and RFM expects the majority of valuation increases to be recognised as part of future valuations. Lynora will have the opportunity for a market-based rent review when the lease is renegotiated in 2022.

Figure 6: Rewan capital development overview

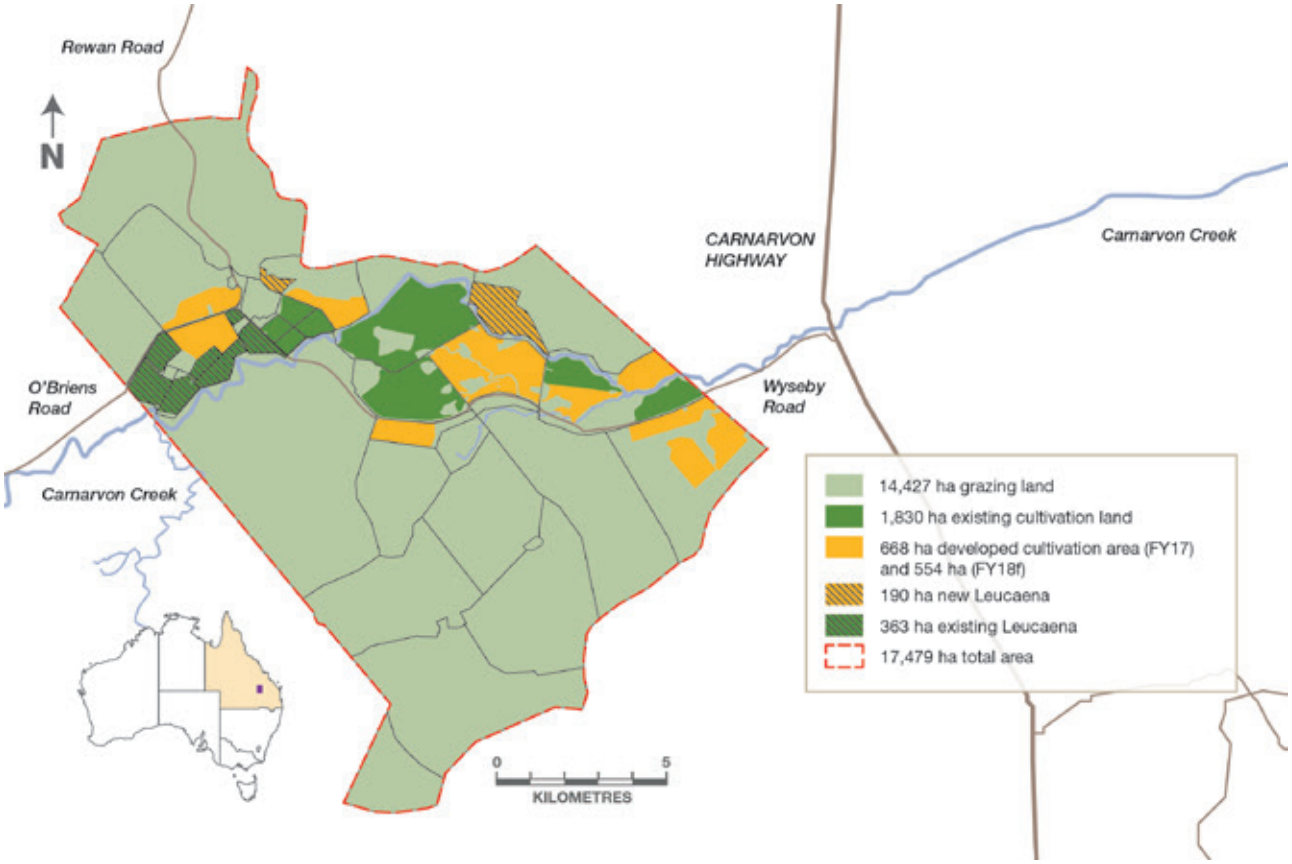
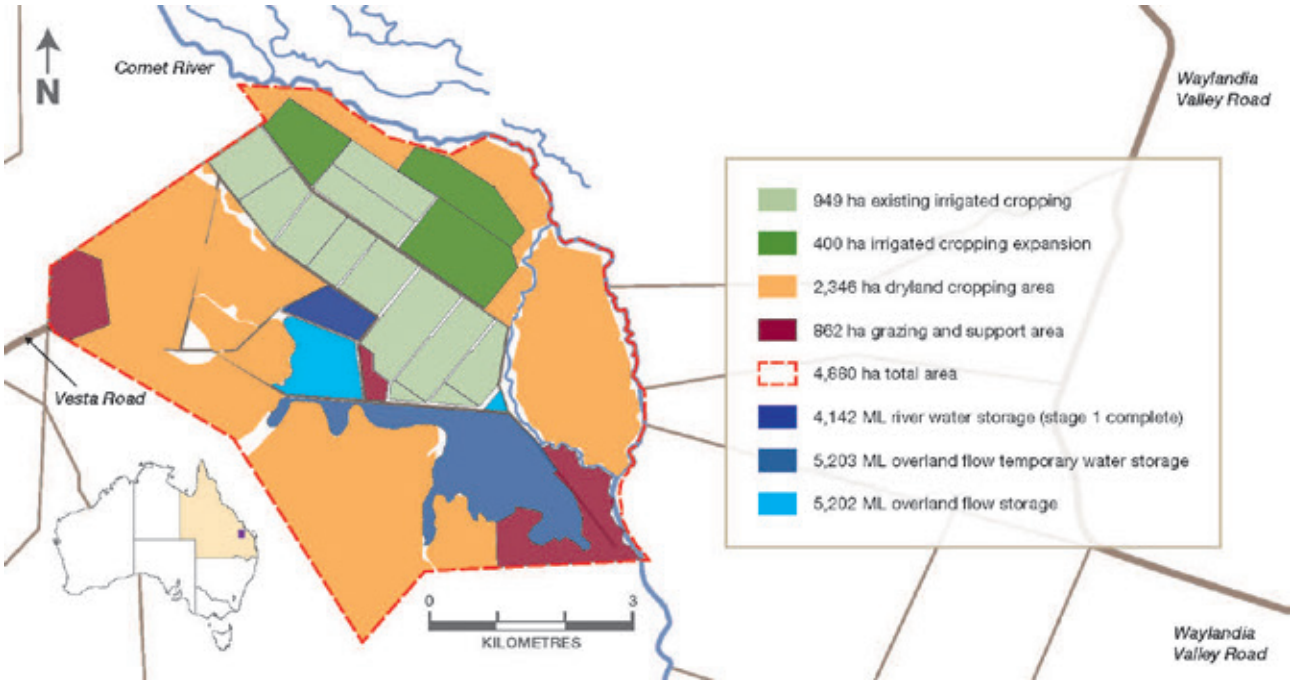


Figure 7: Lynora Downs capital development overview



Natal update

RFF is in the early stages of funding a similar development strategy on the Natal aggregation of cattle properties, which settled in December 2017. When announcing the purchase of the northern Queensland breeding and backgrounding properties, RFM outlined that $3.1m would be spent on capital development focused on 47 new water points, fencing and pasture improvement. Stage one of the development aims to increase carrying capacity by 36%, with the potential for further increases from additional development in the future.

A rental review scheduled for 2022 is included in the Natal lease.

New water storage on Natal, northern Queensland, January 2018.

Comanche acquisition

In May 2018, RFF contracted to acquire Comanche, a 7,600 ha cattle property located in central Queensland. The property was purchased for $15.7m (excluding stamp duty). Comanche is suited to both breeding and backgrounding cattle.

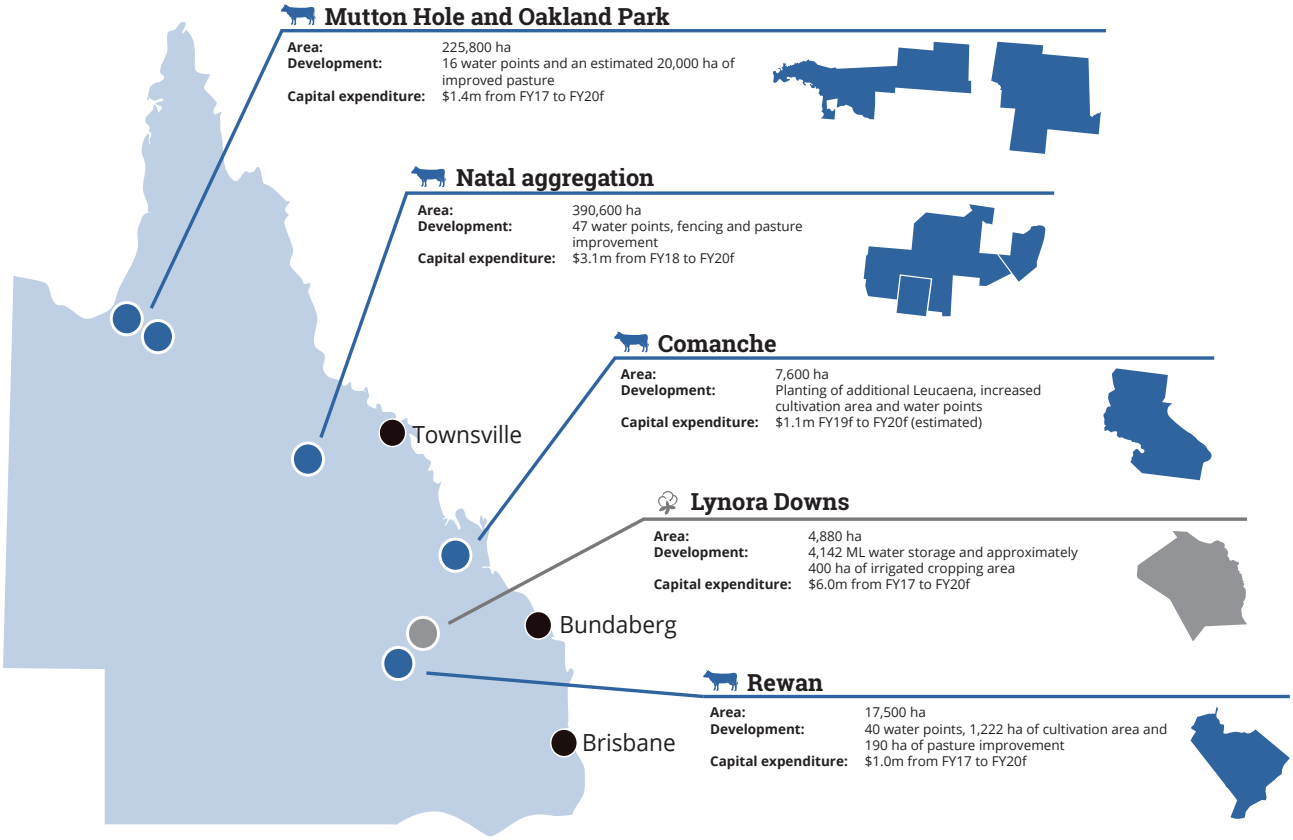
Importantly, the property offers productivity development opportunities almost identical to those proven on Rewan. These include planting additional Leucaena, increasing cultivation area and developing additional water points. The productivity development is supported by 864 ML of water entitlements included in the purchase, which is sourced from the Fitzroy River. RFM is targeting an additional 650 Adult Equivalent[10] in a stage one development, at an estimated cost of $1.1m, which will earn additional lease income.

RFM is well advanced in the process of arranging a lessee for Comanche and will provide an update when this has been completed.

Comanche offers opportunities to increase Leucaena planting such as those already on the property pictured above.

10 One AE is defined as a 450kg Bos Taurus steer at maintenance.

Figure 8: RFF natural resource predominant assets



RFM is expecting to deploy $12.6m for capital development across its natural resource predominant assets from their purchase dates to FY20 (see **Figure 8**). All capital development expenditure is expected to be funded through retained adjusted funds from operations (AFFO) and debt. This allows for organic growth in asset values and income within the portfolio and does not require ongoing capital contributions from investors.

"RFM is expecting to deploy $12.6m for capital development across its natural resource predominant assets from their purchase dates to FY20."

HY18 financial results

On 21 February, RFM delivered the RFF HY18 financial results. Highlights of the financial results as compared to the previous corresponding period included a 22% increase to adjusted funds from operations, a 4% increase to distributions, and a 17% increase in the adjusted total assets to $687.4m. The results reaffirmed FY18 forecast distributions per unit increase of 4% to 10.03 cents and advised of a forecast FY19 distribution of 10.43 cpu. **Figure 9** provides a summary of RFF's key financial metrics as of 31 December 2017.

Figure 9: Key financial metrics as of 31 December 2017 [11]

Financial metric	31 December 2017
Adjusted total assets[12]	$687.4m
Adjusted Net Asset Value (NAV)[11]	$409.1m
Adjusted NAV per unit[12]	$1.60
Market capitalisation ($2.31 per unit)	$587.6m
Number of properties	38
Sectors	6
Weighted Average Lease Expiry (WALE)[13]	12.5 years
Gearing[14]	37.4%
AFFO per unit (FY18 forecast)	12.7 cents
Distributions per unit (FY19 forecast)	10.43 cents
Forecast distribution yield (paid quarterly)[15]	5.0%

Upcoming key dates[16]

Quarterly distribution payment date	31 July 2018
Full year financial results announced	August
Quarterly distribution payment date	31 October 2018

11 Metrics do not include Comanche acquisition which occurred after the reporting period.
12 Adjusted assets incorporates most recent independent property valuations, inclusive of water entitlements.
13 Lease expiries weighted by forecast FY18 rental income, expressed in years from 31 December 2017.
14 Gearing calculated as external borrowings/adjusted total assets.
15 Calculated forecast FY19 distribution of 10.43 cpu divided by 1 June 2018 closing price of $2.10.
16 Dates subject to change.

RFM POULTRY UPDATE

Solar panels being installed on the roof of a poultry shed, Lethbridge, Victoria, January 2018.

RFM Poultry (RFP) is an experienced large scale chicken broiler farm operator, with the responsible entity, RFM, having managed the assets since 2003. The Fund, which listed on the National Stock Exchange in March 2014, undertakes chicken growing activities for Baiada Poultry and Turi Foods.

Operational update

At an operational level, management maintains a focus on improving bird growing performance, with particular attention on the older farms operated by RFP. This has included alterations to lighting, ventilation and the ongoing upgrade of the water sanitation systems. RFM will update investors on the progress of these works as part of the full year results presentation in August.

Completion of solar installation on Victorian farms

In the December 2017 Investor Newsletter, RFM advised that work on the solar panel installation at the Victorian farms it operates had commenced. The project was completed in January this year, with 100 kilowatt systems being installed on each of the four farms.

The solar infrastructure is expected to generate 508,000 kilowatt hours (kWh) of electricity per annum, with approximately 400,000 kWh hours consumed by the farms, and a further 108,000 kWh exported to the energy grid. The total cost of the installation is approximately $400,000 and this investment is forecast to generate a competitive return, with a portion of the benefits shared with Turi Foods.

HY18 financial results

On 28 February, RFM delivered RFM Poultry's HY18 financial results. The results included a profit of $0.26 million after tax, distributions totalling 7.18 cents per unit (inclusive of franking credits), and a forecast income yield of 12.6% based on 1 June 2018 closing price of $1.14 per unit.

Figure 10 – Key portfolio and financial statistics as at 31 December 2017

Total assets	$9,299,874
Net Asset Value (NAV)	$7,712,062
NAV per unit	$1.12

Page 15: Broiler chickens accessing water at 'drinkers', Griffith, New South Wales, December 2016

Digital Dashboard

As part of the solar installation program, RFM has access to a digital dashboard linked to the solar panels at the Lethbridge farms. The dashboard allows management in the Canberra corporate office to monitor the production and consumption of the solar energy in real time, thus maximising the performance of the system.

Screen capture of the digital dashboard.

RFM Poultry Business Manager, David Thomson, reviewing solar performance via the dashboard in RFM's Canberra office.

Upcoming key dates[17]

Quarterly distribution payment date	31 July 2018
Full Year financial results announced	September
Quarterly distribution payment date	31 October 2018

17 Dates subject to change.

RFM ALMOND FUNDS UPDATE

Runners and trailer laying out nuts to dry, Mooral orchard, Hillston, NSW, February 2018.

Rural Funds Management Ltd (RFM) manages three Almond Funds, with a total of 551 ha of almond trees, on behalf of over 450 Growers.

2018 harvest

The almond harvest commenced in early February, with dry, sunny weather providing the best harvest conditions experienced in the past few years. As a consequence of the favourable weather conditions and no major delays, the harvest was 50% complete by the end of March.

The harvest concluded in May following a second round shake of the orchard. RFM expects to provide final harvest numbers and FY18 distribution as part of the annual Grower update webinar to be held in August.

An almond sweeper collecting nuts from the orchard floor, Mooral orchard, Hillston, NSW, March 2018.

Almonds from the harvest were again sent to the new Almondco hulling and shelling facility at Hanwood, near Griffith, NSW. Road trains took daily deliveries of approximately 180 tonnes to the facility, reducing on-farm storage and transport costs.

2019 crop

Looking ahead to the 2019 crop, the combination of 2018 being a low yielding year due to the biennial bearing nature of the trees, and the reduction in crop load due to frosts, has promoted strong bud development. Management will be able to provide yield estimates for the 2019 cropping year to Growers after pollination in October 2018.

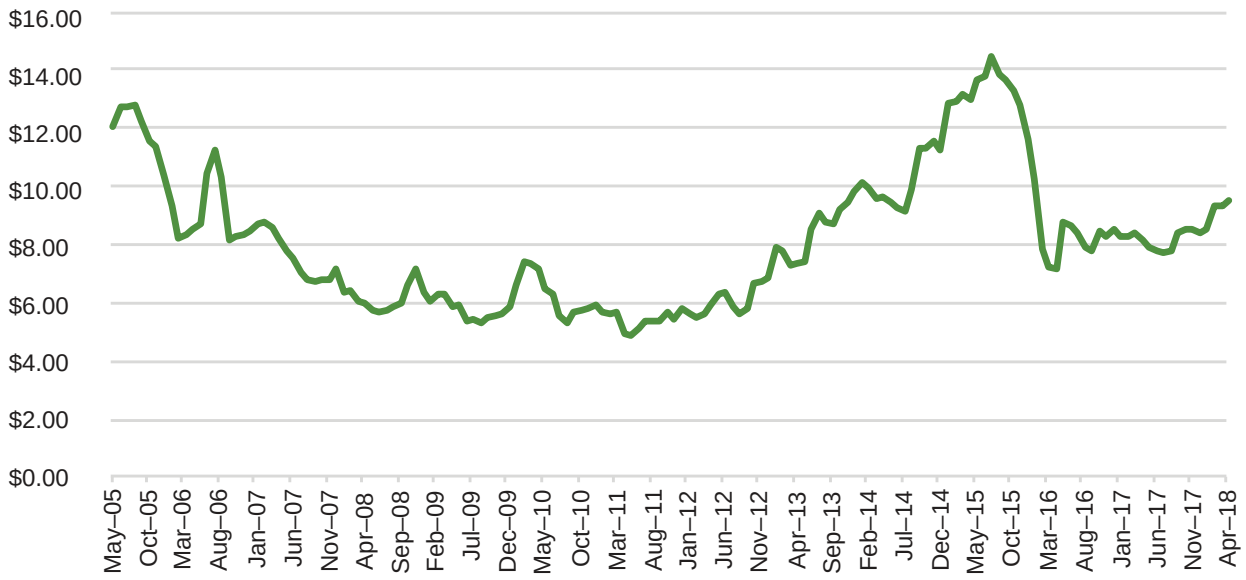
Market conditions

Almond prices continue to improve from early 2016 lows on a domestic marketing guide basis[18] (see **Figure 11**). Ongoing dry conditions and frosts experienced in California in early 2018 has assisted the ongoing strengthening of the price. Management is forecasting an almond price of $7.50 per kg for the 2018 harvest.

18 Data is sourced from Almondco and provides a guide to price trends only. Average almond price is calculated using the $US average price data converted to $AUD for Nonpareil, Carmel and Price for the 23-25 almonds per ounce categories. Actual Almond Fund yields contain a mix of size and quality grades and pooled pricing received is also net of processing and marketing costs hence current management forecast of $7.50 per kg for the 2018 harvest as noted above.

Page 18: Almonds drying on the headland, Mooral orchard, Hillston, NSW, March 2018

Figure 11: Almond price trend May 2005 – April 2018 ($AUD per kg)[18]



Drone technology

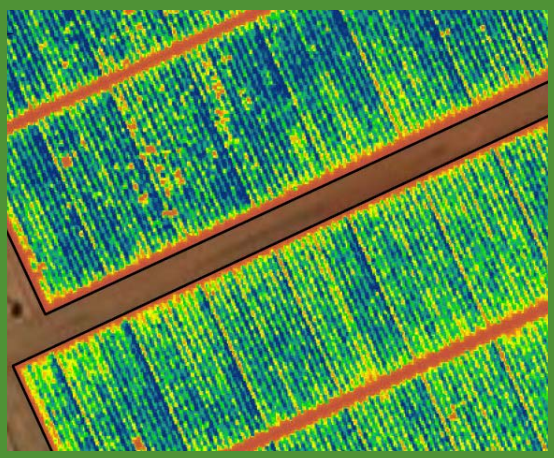
The use of drone technology in agriculture has progressed significantly in recent years. Not only have drones themselves become more accessible, but the supporting software required to make sense of the footage taken from drones has advanced significantly. The ability to readily obtain footage, and combine it with interpretive farm software, has seen drone technology increasingly used to support on-farm management decision making.

Over the last six months RFM has been investigating the potential use of this technology to assist with the analysis of almond orchards. For example, drones may offer the potential to use imagery to analyse biomass levels (a measure of crop vigour) and crop uniformity. Traditionally, a satellite or plane would be required to undertake this analysis, however using a drone may allow this to be done at a lower cost, with higher frequency and with greater precision.

Beyond assisting with orchard analysis, drones may also be used to support orchard and property mapping, with images being used in conjunction with other mapping software currently used such as Google Earth. Other applications may include inspecting farm infrastructure such as watering points and livestock viewing.

RFM has commenced field trials of the technology and will provide Growers with an update later in the year.

Matrice M200 Drone, the model purchased and being trialled by RFM .



Biomass imagery, such as that above taken from a plane, may be able to be obtained much more cost effectively using drones.

2007 MACGROVE PROJECT UPDATE

Swan Ridge Orchard, Bundaberg, Queensland, December 2016

Rural Funds Management (RFM) manages the 2007 Macgrove Project, with a 254 ha of macadamia trees, on behalf of 137 Growers.

2018 harvest

This year's harvest is well underway, with activities commencing in February and expected to continue through until late August. Conditions were close to perfect during the growing season, with a dry flowering and nut set period in August and September last year, followed by heavy rain in October which filled the soil's water profile. The growing season saw good flowering spread, density and nut set across the orchard.

The benefits of increasing the capacity of the de-husking shed on the Swan Ridge orchard have become clear during this year's harvest. As at 1 June 2018, approximately 714 tonnes (t) of Nut In Shell (wet weight) had been delivered to the processors, compared to only 368 tonnes at the same time last season.

Nut set from early flower, October 2017.

Annual Grower update

RFM will host an annual Grower update webinar later in the year which will contain harvest results and Grower positions with respect to their 2018 distributions.

Nuts being delivered to the dehusking shed, Swan Ridge orchard, Bundaberg, April 2018.

Page 21: Growing macadamia nuts, Swan Ridge orchard, Bundaberg, Queensland, September 2017

On-farm research

RFM continues to undertake research into tree carbohydrate levels on the orchards. Carbohydrate levels are an indicator of the amount of stored energy in trees and have an influence on crop yield. RFM is seeking to develop a better understanding of what the optimum carbohydrate levels are for different varieties of macadamia trees in order to drive yield growth.

The research has expanded this year to include the use of the sap flow metering technology that has been used on RFM's almond orchards over the past few seasons.

Macadamia fast facts

Horticulture Innovation Australia recently released its annual 2016/17 statistics handbook. Key statistics for the macadamia industry included:

- **46,450 tonnes of macadamias (in-shell weight at 3.5% moisture) was produced compared to 48,620 tonnes (in-shell weight at 3.5% moisture) on the previous year**
- **The value of production was worth $255.5m compared to $247.3m the previous year**
- **The percentage of Australian households that purchased macadamias remained the same at 19%**
- **Australia exported 14,695 tonnes of macadamias in-shell and 9,209 tonnes of macadamia kernels, compared to 18,509 tonnes of macadamias in-shell and 5,799 tonnes kernels, the previous year**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ABOUT RURAL FUNDS MANAGEMENT LTD

AFSL: 226701

RFM is an experienced fund and asset manager that specialises in Australian agriculture. RFM manages a diverse portfolio of large-scale farming and agricultural enterprises for investors who seek the opportunity to diversify their portfolios away from the traditional equity and property markets. Our primary assets under management include land, water, poultry infrastructure, almond and macadamia orchards, vineyards and livestock.

Established in 1997, RFM is the responsible entity for seven agricultural investment funds and, as of 31 December 2017, had approximately $743m of agricultural assets under management in New South Wales, South Australia, Queensland and Victoria.

RFM is one of the oldest and most experienced managers of agricultural assets in Australia. In addition to RFM's corporate office located in Canberra, RFM has offices in Sydney, Western NSW and south-east Queensland, and employs more than 95 staff in fund and asset management activities.

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To make an investment

Rural Funds Group (ASX: RFF) is a listed investment. To make an investment in RFF please contact your broker or financial adviser.

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Provide us your email address

We use email to communicate with our investors. Please take the time to contact our Investor Services team and provide your email address so that you don't miss out on any important information.

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