

# ClearTech

**Award-winning effluent  
treatment system**



**The solution  
is clear**







# ClearTech<sup>®</sup> - the solution is clear

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ClearTech®

by raversdown 

# What is ClearTech?

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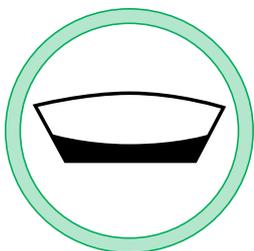
## A fully automated system for treating farm dairy effluent.

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**The patented technology can be retrofitted between a dairy shed and an effluent pond.**

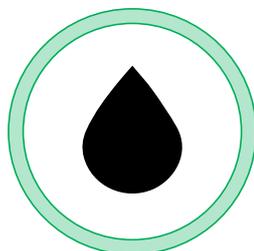
Intelligent technology automatically calculates and mixes the right amount of specifically formulated liquid coagulant to bind the fine effluent particles together.

The system can be configured for each farm and will be installed by a licensed installer in conjunction with Ravensdown's support.



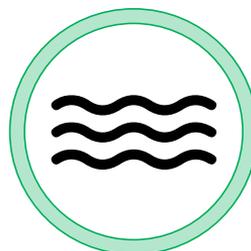
### **Financial**

Increase pond storage capability



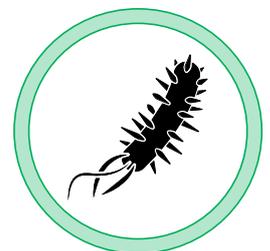
### **Environmental**

Decrease risk of phosphorus leaching



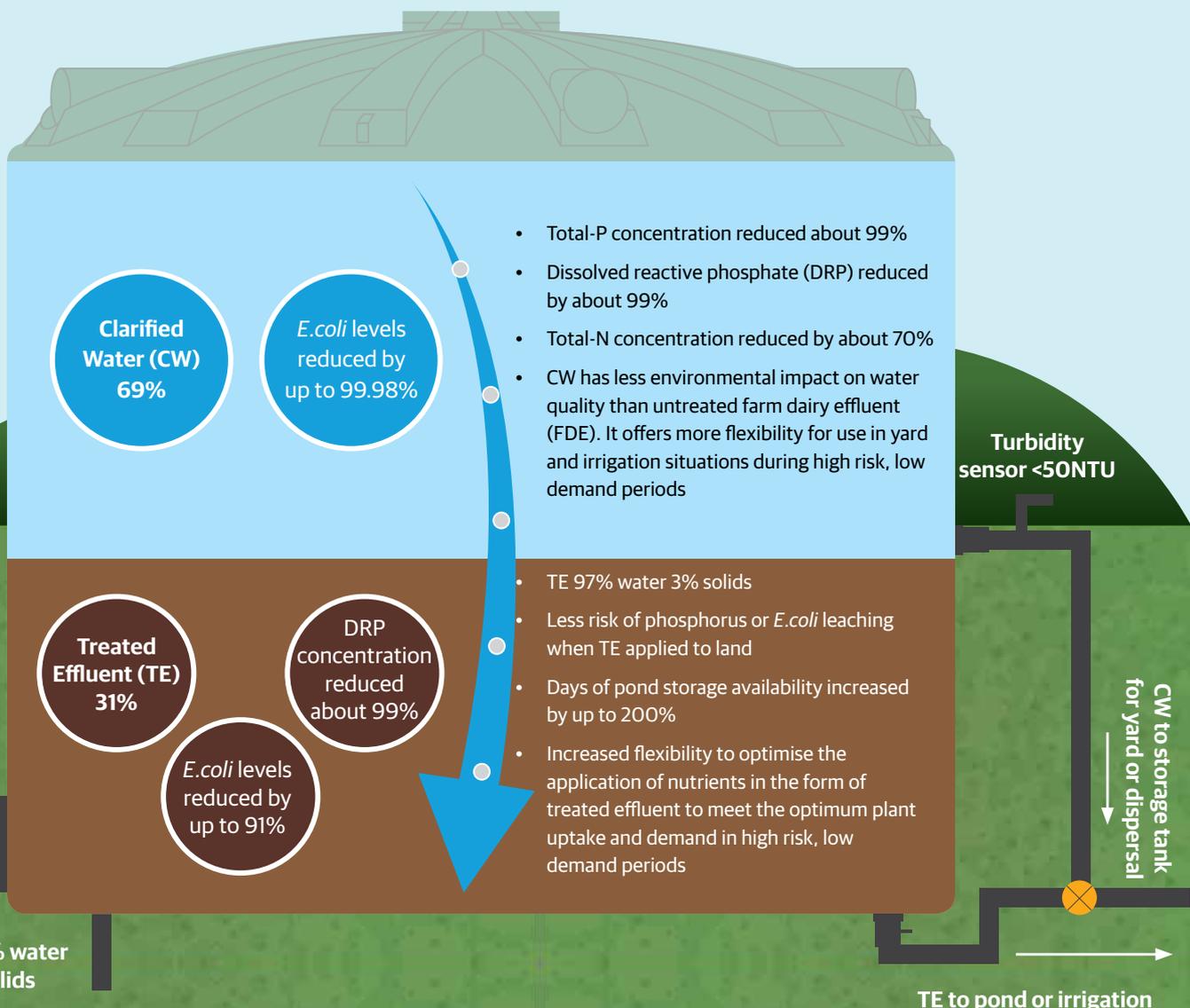
### **Water**

Reduce yard fresh water use by up to 2/3



### **Safety**

Decrease risk of *E.coli* by up to 99.9%



**Clarified Water (CW)**  
69%

*E.coli* levels reduced by up to 99.98%

- Total-P concentration reduced about 99%
- Dissolved reactive phosphate (DRP) reduced by about 99%
- Total-N concentration reduced by about 70%
- CW has less environmental impact on water quality than untreated farm dairy effluent (FDE). It offers more flexibility for use in yard and irrigation situations during high risk, low demand periods

**Treated Effluent (TE)**  
31%

*E.coli* levels reduced by up to 91%

DRP concentration reduced about 99%

- TE 97% water 3% solids
- Less risk of phosphorus or *E.coli* leaching when TE applied to land
- Days of pond storage availability increased by up to 200%
- Increased flexibility to optimise the application of nutrients in the form of treated effluent to meet the optimum plant uptake and demand in high risk, low demand periods

Turbidity sensor <50NTU

CW to storage tank for yard or dispersal

FDE 99% water  
1% solids

TE to pond or irrigation

## Clarification Tank (Flocculation Process)

# Why ClearTech® is right for you

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**Need to get control of your effluent capacity and compliance headaches?**

**Don't bet that next winter won't be a wet one.**

**Talk to the Ravensdown team about how ClearTech can help you today.**

**Do the right thing and save money doing it.**

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**Save on effluent pond storage** - Double or triple your days of effluent pond storage capability

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**Save on phosphate** - Re-use the phosphate in effluent without adding to run-off risk

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**Save on compliance costs** - Renewing compliance with councils can be cheaper with a ClearTech system

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**Save on pumping** - Less fresh water use means less water to pump

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## Like to know more about ClearTech?

Call us today on 0800 100 123,  
go to [www.ravensdown.co.nz/cleartech](http://www.ravensdown.co.nz/cleartech)  
or [cleartech@ravensdown.co.nz](mailto:cleartech@ravensdown.co.nz)

## Award-winning technology

Ravensdown's ClearTech® dairy effluent treatment system has taken first prize in the South Island Agricultural Field Days' Agri Innovation Awards 2019.

The judges commented on the calibre of entrants across the Agri Innovation Awards and were impressed with the collaborative approach to the development of ClearTech. "The application of known technology, used elsewhere, to solve a widely recognised farm-scale problem was truly innovative. It was a bonus that ClearTech would also enhance our clean, green image."

Carl Ahlfeld, Ravensdown Product Manager, believes the development is important because "the dairy sector's nutrient and bacterial impacts on waterways are under scrutiny, farmers want to demonstrate they are doing the right thing and the government and regional councils are committed to good farming practice."



Ravensdown Product Manager Carl Ahlfeld with the ClearTech demonstration unit.

# The ClearTech Unit

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Coagulant pump and meter



Coagulant tank

Turbidity sensor

ClearTech

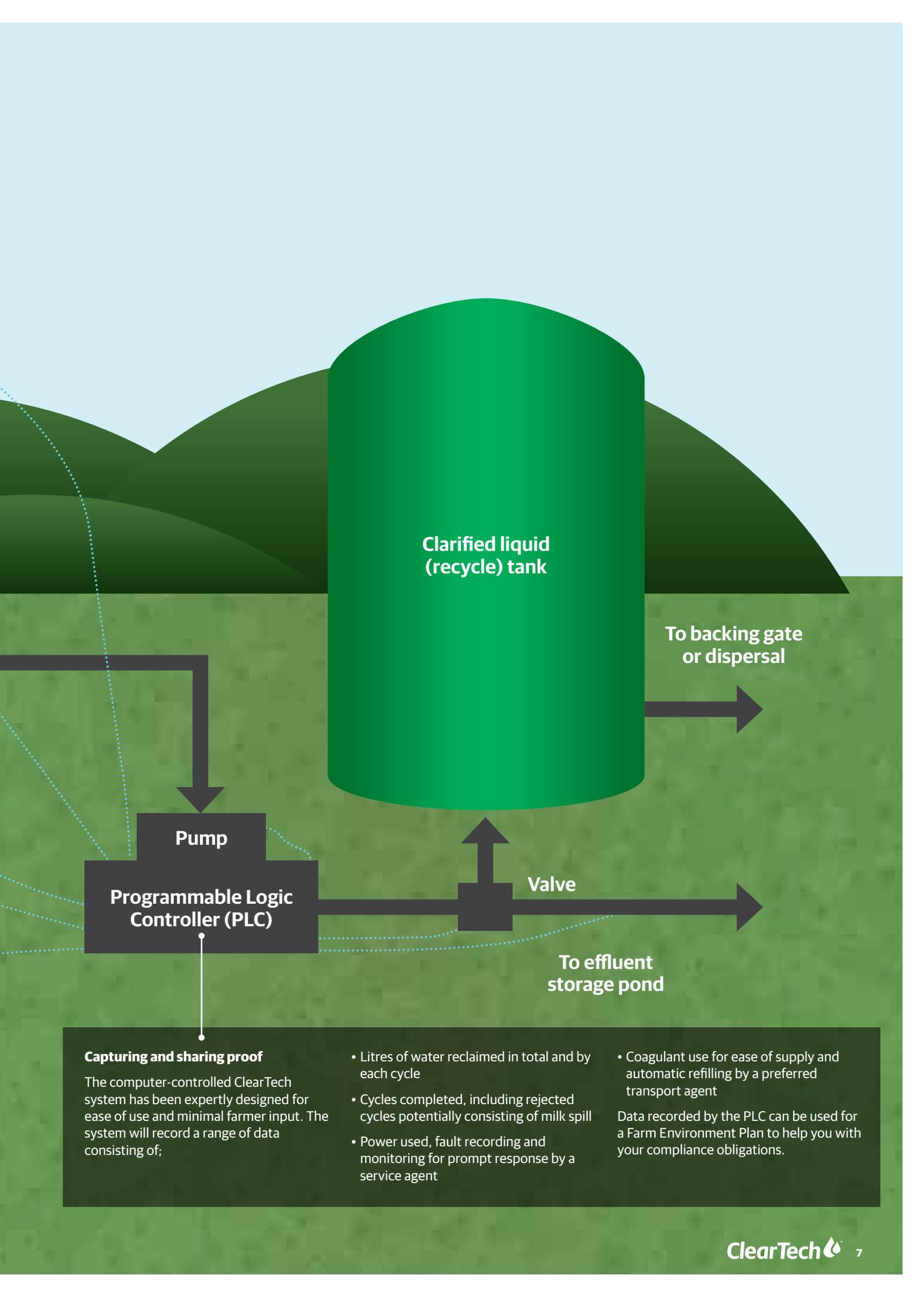
Clarification tank

Mixer

Turbidity sensor

Data/control cables

Effluent pumped from dairy farm sump submersible pump and lifter



Clarified liquid  
(recycle) tank

To backing gate  
or dispersal

Pump

Programmable Logic  
Controller (PLC)

Valve

To effluent  
storage pond

#### Capturing and sharing proof

The computer-controlled ClearTech system has been expertly designed for ease of use and minimal farmer input. The system will record a range of data consisting of;

- Litres of water reclaimed in total and by each cycle
- Cycles completed, including rejected cycles potentially consisting of milk spill
- Power used, fault recording and monitoring for prompt response by a service agent

- Coagulant use for ease of supply and automatic refilling by a preferred transport agent
- Data recorded by the PLC can be used for a Farm Environment Plan to help you with your compliance obligations.

## Case Study:

# ClearTech helps get the “A” grade

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### **Using ClearTech to recycle water and reduce the volume of effluent to be managed has been revolutionary at the Lincoln University Dairy Farm (LUDF).**

In 2018 LUDF achieved a coveted “A” grading for their Farm Environment Plan audit, a grade that is achieved by less than 10% of New Zealand dairy farms. Since effluent storage is the key regulatory requirement, the work of the flagship ClearTech system helped to ensure this success.

By recycling wash water LUDF can effectively double the number of days of effluent storage in the existing pond. Each day the yard and milking shed wash from 555 cows generates about 58,000L of effluent. The ClearTech system is able to clarify two 27,000L tank loads per day, so with just two runs it can treat over 90% of all effluent produced at LUDF.

Professor Keith Cameron, Head of Centre for Soil and Environmental Research at Lincoln University and co-leader of the ClearTech science explains that “ClearTech means farmers have better opportunities to manage their effluent system. They can recycle water used for washing the yards which saves water use at the shed and reduces the amount of effluent produced or needing storage. This reduces the pressure on the farmer around both storage and the risk that untreated effluent poses to the environment.”

ClearTech has the potential to significantly reduce the risk of nutrient and *E.coli* losses to the environment. Having the increased pond storage ability means that the treated effluent can be strategically applied at the right time, avoiding periods when soils are saturated.

“The studies we have done, show that applying treated effluent onto land results in lower leaching losses of phosphorus and *E.coli* than applying untreated farm dairy effluent,” explains Professor Hong Di, Professor of Soil and Environmental Science at Lincoln University and co-leader of the ClearTech science. “It reduces the risk of negative impact on surface and groundwater resources, and treated effluent showed no negative impact on plant growth or N-cycling mechanisms and microbes in the soil.”

In the treated farm dairy effluent *E.coli* and dissolved reactive phosphorus (DRP) were reduced by up to 91% and up to 99% respectively. The coagulant used to treat the effluent binds the phosphate, temporarily turning it into a slow release form of phosphorus which mitigates the risk of phosphate run-off leaching.

The ClearTech system therefore allows LUDF to match their effluent applications to the plant nutrient demand / supply on farm, reducing risks of nutrient loss.

“ClearTech gives farmers another tool in the toolbox to help them meet their environmental challenges and helps them with their farm environmental planning,” says Professor Keith Cameron. “We hope that this new technology will help farmers to solve some of the challenges to the sustainability of their business and reduce the impacts on the environment.”

## **What is an FEP audit?**

The Environment Canterbury (ECan) Farm Environment Plan (FEP) audit is an on-farm independent assessment of the implementation of an FEP, checking that identified risks are being managed and good management practices, particularly around water quality, are being applied. The timeframe of these audits depends on the audit grade awarded at the time of the previous audit. So for the Lincoln University Dairy Farm (LUDF), passing their 2018 ECan FEP audit with an “A” grade means they have three years before their next renewal, rather than the two-year, one-year or six-monthly renewals that come with lower grades.

**“Another tool in  
the toolbox to help  
meet environmental  
challenges.”**

Professor Keith Cameron.  
Pictured (below left) with Professor Hong Di at Lincoln University.



**ravensdown** 



**LINCOLN  
UNIVERSITY**  
TE WHARE WĀNAKA O AORAKI

**0800 100 123**  
**ravensdown.co.nz**

V0519 Edition