BERRYBANK FARM
Windermere

Charles I.F.E. Pty. Ltd.
"Berrybank Farm"
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Pigmeat Inquiry
Productivity Commission
Locked Bag 2
Collins Street East
Melbourne Vic 8003

Dear Commissioner,

Please find enclosed our Company Profile. Charles I.F.E. (Integrated Farming Enterprises) Pty. Ltd. have continuously looked for better ways to protect our farming activities. Integrating the farming enterprises has been successful and even with the many variances in agriculture over the years, our company has remained profitable.

I do hasten to mention that as stand alone enterprises there have been losses.

One of the strengths of our company is location. Berrybank Farm is in the Ballarat district of Victoria. The Ballarat district was once considered too cold and wet for growing grain, but through the use of raised beds, winter wheat varieties and canola, our farm is nearly drought proof. During the last drought we produced half of the piggeries grain requirements. Our farm is fortunate to be located in an area with reliable and good quality ground water

Being close to Ballarat City the work force is available and reliable. The freeway to Melbourne provides a close market for both Pigs and Garden Products. Freight costs are minimal into a very large market.

By applying Quality Assurance Systems and Risk Management Strategies we have been able to contain costs that are associated with animal production, health and welfare, the environment, garden product manufacture and general farm and cropping activities.

Out of our hands is the health of the Australian Pig Herd. Bio-Security is vital. One only has to look at the cost worn by our nation and the farmer from the introduction of animals, birds and reptiles at the whim of politicians and science.

We cannot be sustainable when Importers and Processors use unfair measures to manipulate the markets by using imported, dumped or subsidised products.

Sir or Madam in closing I believe we should let the market decide the future of the Australian Pig Industry. But it is up to the Government to guarantee the present health status is maintained even to guaranteeing to subsidise the Pig farmer if there is an introduced disease through imported pig meat

It is also the duty of a Government to introduce measures that make the international trading of pig meat fair.

……
Melville Charles
Managing Director.

Charles I F E Pty Ltd . . . Company File

The Charles family have been residents of the Windermere district, Victoria, Australia, since their forebears migrated from Northern Ireland. They were among the first pioneers in the area. "Berrybank Farms" original 130 hectares was purchased in 1921 by a grandson of the original pioneer.

Over the next 50 years the farm increased to 323 hectares, running dry sheep and growing oat and barley crops. In 1967, the farming company Charles I.F.E. (Integrated Farming Enterprises) Pty. Ltd. was formed. Three more properties have since been added to make the total area presently farmed 860 hectares.

The main enterprise at "'Berrybank Farm" is a piggery established over 40 years ago which has been remodelled and upgraded at different times into a modern, efficient and productive pig unit. The farm has 1,800 productive sows. The breed is unique to "Berrybank", having been developed over thirty years through selection and performance testing. Since 1982, new breeding lines have been introduced through Artificial Insemination. Stringent measures and the strict monitoring of visitors to the farm have helped to keep "Berrybank Farm" a minimal disease piggery with a high health status.

The farm has a computerised feed mill producing approximately 200 tonnes of prepared rations required by the piggery each week. There is storage for 8,000 tonnes of raw materials and 70 tonnes of prepared feeds. The raw materials purchased and anything produced on the farm must be of the highest quality and is weighed over the company's weigh bridge. This area is seen as important in maintaining quality assurance programs and farm efficiency.

Annually about 1000 hectares are sown to winter wheat and canola on company and leased property.
The grain produced is used as pig feed and grown on land that is part of the total waste management system. The raised beds and controlled traffic cropping concept is used to overcome water logging and improve soil structure.

The company appreciates the enthusiasm and loyalty of the 34 staff. All staff members take part in training programmes which include quality assurance, animal welfare and health and safety.

Charles I.F.E. Pty. Ltd were actively involved in the development of the Ausvac Vaccines. The Principal was Chairman and Director of Ausvac Pty. Ltd. until the Company was purchased by the international vaccine company, Intervet.

Over its many years of involvement in pig production, Charles I.F.E. Pty. Ltd. has always been environmentally conscious. Notable amongst the company's achievements has been research into waste management systems. The piggery was the first in Australia to install a run-down screen, and the first to have a complete first flush run-off collection system for winter disposal areas.

An additional environment achievement has been the development of the Total Waste Management System which has been acknowledged as world class and has received recognition and praise from leading authorities including the E.P.A. and the Renewable Energy Authority. The plant converts all the effluent from the piggery into electricity which is sold into the power grid. The odourless organic fertiliser is used to promote crop growth, and sold commercially through the company's Garden Products Division.

The Garden Products division has become a key supplier of premium quality potting mixes and soil conditioners to garden centres and nurseries throughout Victoria, NSW and Tasmania. The products are also distributed to a number of leading golf courses, bowling greens and sporting stadiums.

Charles I F E Pty Ltd . . . Recognitions

Environmental Protection Authority - "Clean Technology Incentive Scheme"

Australian Trust for Conservation Volunteers - award for "Care and Management to the Environment"

Commonwealth Environment Protection Authority - award for "Assistance with National Cleaner Production"

Hugh McKay Innovators Award - award for "Outstanding Application of New Technology, Marketing and Value Adding Strategies"

SQF 2000 Quality Certification - For "Production of Antibiotic Free Pork Products"

AS 3743, Standards Mark Licence - For “Production of Potting Mixes”

SQF 2000 Quality Certification - For production of antibiotic free pork products to the biological, chemical, physical and meat quality needs of the pork industry quality standards

The Australian Pork Industry Quality Program, Level 3, - Certificate No. 001

Case Study for Museum Victoria. “Future Harvest”- a journey towards a sustainable future

Featured in the National Farmers Federation publication “Hand in Hand” - farming sustainably

Rabobank Agribusiness Award for Excellence 1998 - Eastern Energy Environmental and Energy Management Award

SQF2000 Quality Certification Scope of Registration - the production of Primary Pork Products that meets the standards of the Australian Pork Industry Quality Program

The Australian Pork Industry Quality Program, Level 3, Revised Standard - including Animal Welfare of
the Australian Pork Industry Quality Program

Australian Quality Pork Standard - Accredited Member

Australian Certified Organic P/L - Certificate of Compliance – Perma Fert & Potting Mixes

Approval to use the Green Power Generator logo as described by the National Green Power Accreditation Program

Green Power Generator – Sustainable Energy Development Authority (SEDA)

Charles I F E Pty Ltd . . .
Pig Enterprise

BUILDINGS

Buildings have been designed for animal and staff comfort, to cut pig movements to a minimum, yet allow zoning of different age groups to protect the Health Status of the herd.

Breeding and gestating sows are all housed in open, naturally ventilated pens with catch boars housed in the centre of the mating shed . AI is used extensively at Berrybank where an AI Boar Stud is maintained.

Farrowing is in stalls in eight separate insulated, environmentally controlled houses, electrically heated, with slurry flushed out daily. Piglets are weaned daily at 18 days of age.

Weaned piglets are housed in six environmentally controlled units. Each unit is flushed daily and carries an entire week's pig production. Growth rate 330 G.P.D.

There are two Grower sheds catering for pigs from eight to thirteen weeks of age. These sheds have automatic blind control, are well insulated and slurry is flushed daily. Growth over 700 G.P.D.

There are two growing areas (Finishers), where the sexes are segregated into each shed. The sheds are insulated and have thermostatically controlled natural ventilation through the use of blinds. Growth rate in the shed averages about 850 G.P.D. for the boars and the gilts are around 800 G.P.D.

ROUTINES

All breeding stock are visually selected at about 90 kg's - special attention is taken on body, leg & trotter confirmation, gait, teat placement, soundness and temperament. All animals passing the "eyeball" test are weighed, fat probed and selected on index.

After selection the animals receive their first vaccination for Erysipelas, Leptospirosis, E.Coli, and Parvo-virus. These animals are then moved into the conditioning yards. Boars are further appraised on libido and trained for semen collection.

All breeding females are artificially inseminated twice. Sows are run in pens of about twenty and are fed 2.2 kg's "Dry Sow" ration per day for the duration of pregnancy. Three weeks before farrowing all breeding sows receive a booster vaccine of Intervet's Ecovac LE PLUS. These procedures and sow numbers are on automatic call up on the H.M. Boot Computer Program Action List. The programs Action List also prints a life history and farrowing date of all sows due the following week.

Sows in the farrowing shed receive a 16% protein, high fibre, high energy diet. Piglets at birth receive the usual post-farrowing husbandry and one week before weaning, an oral Autovac vaccine. Weaning is at 18 days when piglets weigh approximately 6 kg.

Weaning takes place everyday and a weeks production of pigs are weaned into one of the six weaner units. Temperatures are set according to age and pigs receive the Weaner ration.

The first week after weaning, pigs are fed to appetite three times per day. After that they are ad-lib fed until transfer on their eighth week. All pigs are weighed between transfer of areas - i.e. four times during their stay on the farm. A close watch is kept on daily gain, a monitor for ration quality, herd health and environmental changes.

FEEDING PROGRAM

Raw material used are wheat, pulses, meat and bone meal, canola meal, candy mix, blood and fishmeal. Vitamins and minerals are added to the milled raw materials.

WEANER:	Good quality ration fed to piglets while on the sow and after weaning until the pigs are eight weeks of age.
GROWER:	20% protein 14.25 MJ/KG ration fed ad-lib eight weeks until thirteen weeks of age.
FINISHER:	18% protein 13.5 MJ/KG ration fed to appetite from fourteen weeks of age to market.
SOWS:	Receive two rations. The lactating sows receive a higher quality ration than the sows in the dry sow house. After farrowing lactating sows are fed to appetite. Dry sows receive 2.2 kg's per day.

"BERRYBANK FARM" FIGURES - 2004

Number of litters per productive sow per annum	2.3
Total number of Sows and Gilts	1920
Total number of Productive Sows	1800
% Unserved or maiden Gilts	11.5
Number of Sows and Gilts per Boar	75
Weaning age in days	22
% Farrowing Rate	85%
Number Born Alive per litter	10.5
% Pre-Weaning Mortality	10.5
Weight per Pig at Weaning	6
% Sow replacement per annum	52.5%
% Adult Mortality per annum	5
Sow Feed used per Sow per annum (tonne)	1.05
Number Sold per Productive Sow	20.1
Average Liveweight of Feeding Pigs at Sale	81
Number of Pigs Sold per annum	36000
% Feeding Herd Mortality (W,G,F)	3.4
Herd Feed Conversion Ration (total)	3.1
Feeding Herd Conversion	2.4

''Berrybank Farm'' . . .
Waste Management System

In June 1989 Charles I.F.E. Pty. Ltd. embarked on a major project to develop a Total Waste Management System for the Pig Unit. The system incorporates grit extraction, dissolved air flotation, anaerobic digestion, cogeneration and the use of organic by-products as fertiliser for sale or to be used on the property. It is new technology specifically developed for Australian conditions and can be adapted to treat effluent from all agricultural and food processing industries. Most pig producers would be satisfied with a 3 to 1 feed conversion. Feed is the greatest operating cost and these producers are, in effect, satisfied with the non-utilisation of about half their feed input. This wastage becomes a problem for the producer, his enterprise, his neighbours and the environment in general. In fact, so much of a problem that the viable life of a piggery may be determined by the success of its waste management.

The total waste management system developed at "Berrybank Farm" is not so much problematic but productive. Waste is considered a resource in the wrong place.

PROJECT OBJECTIVES:

Design and construct a system that would recover the waste from a 1,800 sow piggery, convert this waste into energy and fertiliser, and in doing so, not only relieve any pollution problem, but also offer considerable savings and steady returns to the farming enterprise. (Refer: Flowchart)

THE PLANTS CAPACITY

The piggery presently has approximately 18,000 pigs, with an estimated liveweight of 1,219 tonnes, which is the equivalent to an 14730 pig unit system - a pig unit being a pig of 80 kg. liveweight.

The piggery produces a daily average of 320,000 litres of slurry, having an organic solids content of around 1.4%. This may be compared to the sewage output of a town with a population of 70,000 people.

The plant recovers daily:

- approx. 7.2 tonnes of humic solids at 35% Dry Matter, to be used for packaged garden products or fertiliser for field crop production
- 140,000 litres of recyclable water
- 140,000 litres of mineralised water, which is also used as fertiliser for field crop production
- 2,200 N Cub. m of Biogas, which can run a cogeneration system with a daily output of 3200 kw of electric power, 8000 kw of thermic energy and supply enough gas to incinerate the pig units mortalities

The plant saves or recovers annually:

- an estimated $100,000 in electricity
- 6,000 tonne of packaged organic garden products with a value of $1,200,000
- organic fertiliser utilised on the property replaces a commercial product that would cost approximately $50,000

BRIEF DESCRIPTION OF THE MAIN PROCESS ITEMS

1. Grit removal plant consisting of a sedimentation chamber with bottom screw conveyor.
2. Run Down Screen (0.5mm)
3. HDAF - High efficiency Dissolved Air Flotation Plant capable of thickening the wastewater to a consistency of 4-5% of solids.
4. Anaerobic digestion system in two stages (the first hot at 33-37^{o} C and the second cold) with the recirculation of the biomass
5. Gas cleaning & moisture removal
6. Dewatering plant.
7. Cogeneration/boilers/incineration.

THE PLANT CONSISTS OF

A collection pit with submersible mixer.

A screening plant for the separation of filterable solids from the wastewater.

A physiochemical treatment plant (HDAF) for the thickening of the wastewater to a consistency of around 4% of solids. The separated waters may be recycled into the farm or passed through a biofilter for further treatment.

A steel primary digestion tank thermally insulated and equipped with a dual mixing system and heat exchange plates. This is for the treatment of filterable solids and the thickened sludge from the physicochemical treatment plant (HDAF).

A steel secondary digester tank on top of which there is a gas holder bell.

A system of electronically controlled pumps.

An electronically programmed management and control system with visual display. A digested sludge dewatering system.

From the work done on the "Berrybank Farm" project it is considered that approximately 80% of the

energy produced is available for use outside the treatment plant.
The average expected analysis of the digested sludge is approximately:

Moisture	70.0%
pH	7.6
Total Nitrogen	3.1%
Total Phosphorus	3.5%
Potassium	1.0%

The average expected analysis of the separated waters containing nutrient

Moisture	98.7%
pH	8.3
Total Nitrogen	0.24%
Total Phosphorus	0.12%
Potassium	0.12%

THE BENEFITS OF THE SYSTEM

A reduction in polluting power or BOD of the thickened sludge by at least 80%.

Elimination of odour, pathogens and seed from the waste.

An improvement of the manurial value of the waste.

Improvements in the storage, handling and utilisation of the wastes.

The on-farm production of energy.

Improvements in working and living conditions, the elimination of some pests and a reduction in flies and mosquito breeding areas.

Increased opportunities for long term farm development options.

The characteristics of this waste management system allow all by-products to be recycled and practically a zero waste target to be achieved.

Due to the unique recirculation process the anaerobic digester system is able to:

- Stabilise a large range of organic matter including fibrous material, vegetable and animal fats and oils.
- Achieve almost complete pathogen destruction.
- Be shock loaded without consequences to the process.

After plant commissioning the system does not require specialised attention or monitoring.
A daily check to ensure equipment is maintained and operating properly is all that is required.