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**PLENTEX**  
LIMITED

**Company Update**  
**December 2012**

## A global race is underway to harness the potential of algae

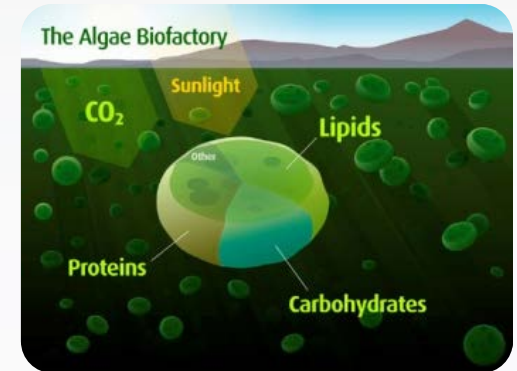
Macro algae (seaweed) and micro algae (microscopic organisms) are bio-factories that efficiently convert sunlight and CO<sub>2</sub> into a range of lipids (oils and fats), proteins and carbohydrates.

They also contain essential fatty acids, vitamins, micronutrients, antioxidants and pigments.

Algae are therefore a sustainable resource that can be processed to produce a portfolio of high-value products, including nutraceuticals, cosmeceuticals, pharmaceuticals, livestock and aquaculture feeds and supplements, chemicals, fertilisers and biofuels.

To do so, a commercial algae bio-refinery requires an end-to-end system that includes:

- (1) Strain selection
- (2) Growing
- (3) Harvesting & Processing
- (4) End-product extraction
- (5) End product marketing



# Plentex: algae product focus



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Proven end-to-end biorefinery platform

Large end markets with unmet needs

World leading expertise

Unique opportunities  
Exciting niche products

SARDI, Flinders U, Texas U and Open Algae

Experienced management and board

Diversified program portfolio

Partnering opportunities

Intellectual property

Near-term value catalysts and de-risking events

Plentex aspires to be a leading producer of sustainable, algae-derived products and raw materials for multiple industries.

The company has leveraged years of R&D by multi-disciplinary research teams in Australia and the USA to assemble a unique end-to-end algae biorefinery platform.

Its fully integrated process can produce raw materials from macro and micro algae that may be used for nutritional ingredients, functional 'bioactive' compounds, chemicals and biofuels.

Plentex's lead programs target the rapidly expanding aquaculture feed and nutraceutical industries.

The company has a business model capable of generating and sustaining positive shareholder returns.

# Algae biorefinery platform delivers strong product pipeline



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Industry	Market size	Plentex Strategy
<b>Livestock feed</b> - Aquafeed	US\$111 billion	Work with the South Australian Research and Development Institute (SARDI) to develop fish meal substitution products and animal feed supplements from algae grown in seawater, brackish water and fresh water. <span style="float: right;"><b>underway</b></span>  Establish a commercial demonstration project with an identified offtake partner and then scale-up to full commercial production.
<b>Nutraceuticals</b> - Carotenoids	US\$11.7 billion	SARDI has identified an exclusive algal strain that produces high levels of carotenoids. <span style="float: right;"><b>completed</b></span>  Apply appropriate extraction technology to cost-effectively obtain high purity end-products without solvent contamination.  Continue to draw on the expertise of SARDI & Flinders U to select and grow algal strains for optimal yields of components that command premium prices in the market.
<b>Biofuels</b>	US\$800 billion	Jointly, with SARDI and Flinders U, undertake core research and development with the assistance of government grants and collaborative funding. <span style="float: right;"><b>underway</b></span>  Apply the experience gained at lower production volumes in the above programs to achieve cost competitive, sustainable production.

Plentex intends to use its core specialty in algae production and processing to build a portfolio of niche products and unique opportunities, each with a distinct market and commercial path.

Programs will be prioritised according to their potential to yield financial return in the near term.



## Algae for stock feeds

Global Feed Market > 600 M tons pa

- Growing world population and affluence is driving demand for high protein food
- Algae is a new protein-rich source of feed to supplement and replace fish-meal and some of the corn and soybean meal mix traditionally given to food-producing animals

Aquaculture - the fastest -growing primary industry in Australia

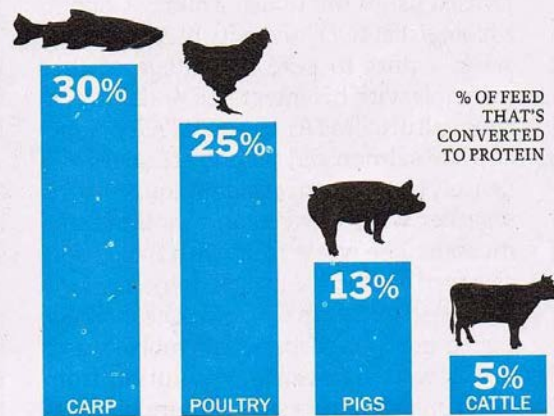
- \$870 million in 2010 ABARE
- 87% is salmon, oysters, tuna and prawns



TIME 2011

### FARMING SEAFOOD VS. FARMING LAND ANIMALS

Cold-blooded fish convert feed to protein much more efficiently than warm-blooded mammals—so in terms of how much feed it takes to produce nutritional body tissue, fish farming compares well with meat production



Global aquaculture

- US\$97 billion, 9% CAGR
- Supplies half the world's fishery products
- Major source of protein for over 3 billion people

# Program 1

## Algae as an Aquaculture Feed Replacement

### Market Need

- Aquaculture has emerged in the last 50 years and has grown faster than any other form of food production
- Today, about half the seafood consumed comes from farms (Source: TIME July 2011)
- This growth is maintaining enormous pressure on overfishing the oceans to provide fishmeal to grow farmed species
- Ratios of between 1.5 and 14 kg of wild fish in the form of fishmeal are required per kg farmed fish to maintain growth
- Fish meal prices are continuing to rise with supply on the decrease and have been doubling every 7 years

### Why Algae?

- The nutrient mix in algae make them ideal ingredients in aqua, livestock and poultry feeds
- Typically microalgal biomass contains 12-35% proteins, 7-23% lipids and 5-23% carbohydrates on a dry weight basis
- Algae can be used in aquafeeds in two ways – microalgae as live feed in hatcheries, and oil and dried biomass relacing or supplementing feed ingredients such as fish waste, soy meal etc
- Sustainable, reliable year round supply of raw material

***Developing alternatives for fish meal has become a global challenge and algae can play a large part in the solution.***

# Program 1

## Algae as an Aquaculture Feed Replacement

### The Unique Opportunity

Plentex has identified a potential aquaculture industry offtake partner in the Philippines needing 70 tonnes fish food per day at capacity

Strong economic incentives to develop a commercial algae growing and fish food manufacturing facility in the Philippines

- Philippine Economic Zone Authority potential benefits
- Low cost labour and extensive infrastructure including existing ponds and testing facilities
- Attractive domestic markets as well as strategic proximity to growing markets in Asia

Favourable climatic conditions to support strong algal growth year round

### Underpinned by Solid Expertise

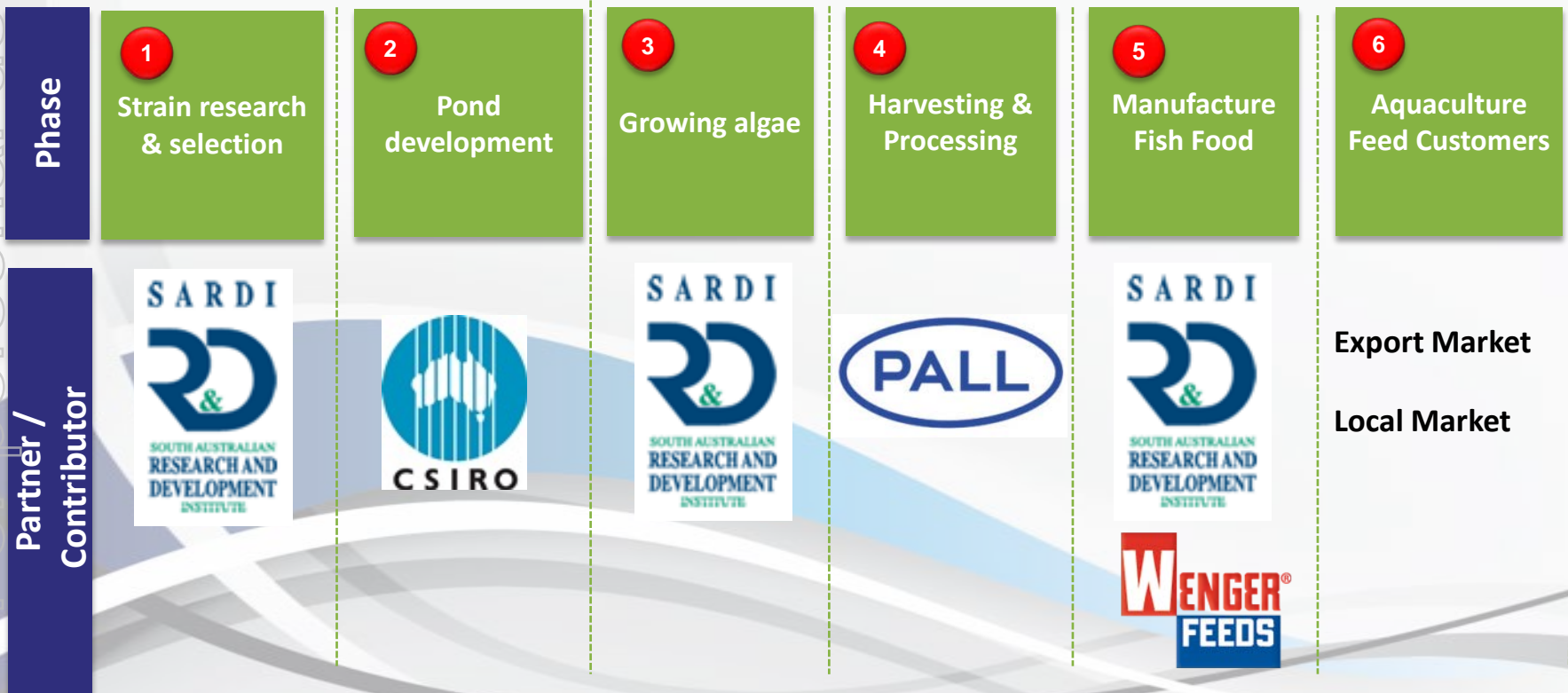
- SARDI is a leading SA based research and development organisation and has one of the world's most technologically advanced research facilities for primary industry applications
- SARDI's Aquatic Sciences branch located at West Beach, Adelaide, is a leader in the development of aquaculture practices and has considerable established infrastructure such as algae raceway ponds, laboratories etc
- Plentex has an established commercial relationship with SARDI and access to key intellectual property and specialist expertise
- The program will include a range of finfish, crustaceans and molluscs that are farmed

# Program 1

## Algae as an Aquaculture Feed Replacement

*The aquafeed program is the first phase of a broader algae based animal feed supplement production strategy*

Participants at each stage of value chain identified



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# Program 1

## Algae as an Aquaculture Feed Replacement



### Structured project roll-out

Plentex has developed a staged approach to executing its aquafeed project.



- **Objective:** Demonstrate economic feasibility using identified macro algae strain
  - Growth tests utilising existing ponds and varying water quality, nutrient levels, carbon dioxide levels, water depth, pond design and light exposure
  - Techno-economic viability of macroalgal inclusion to supplement fish meal in formulated feeds :
    - Enriched *Ulva* production
    - Feed formulation with algal inclusion and feeding trials
  - **Location:** SARDI, Adelaide
  - **Timing:** Month 1 to Month 6
- **Objective 1:** Validate “end-to-end” economics by producing initial quantities of algae biomass for fish food
  - Up to 1 hectare of existing ponds optimised for algae growth rates and oil content
  - **Location:** Philippines
  - **Timing:** Month 6 to Month 12
  - **Objective 2:** Validate aquafeed production process
  - Produce and test algal rich feed pellets in partnership with established feed manufacturer
  - **Location:** Partner premises, Australia
  - **Timing:** Circa Month 12
- **Objective:** Commercial scale production of algae biomass and the production of aquafeed
  - Commencing with a minimum of a 10 hectare pond/s
  - Pond configuration and sizing optimised based on growth data from Phase 2
  - Modular design enables efficient rollout of additional commercial units, facilitating a rapid increase in overall production volumes and revenue
  - Construct, commission fish food production facility using proven equipment
  - **Location:** Philippines
  - **Timing:** Month 13 onwards

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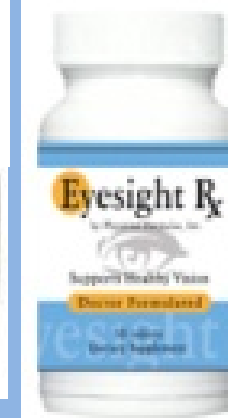
# Program 2

## Nutraceuticals

### Products Containing Carotenoids



Food additives/  
ingredients



Vitamin Supplements

And many more...

Infant Formula



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# Program 2

## Nutraceuticals: Carotenoids

### Market Need

- Carotenoids are natural colouring and stabilizing agents that help foods retain their appearance for long periods and withstand the action of direct sunlight
- Lucrative nutraceutical applications have emerged in recent years:
  - 1) a role in vision, growth and development, reproduction, and immune system function
  - 2) associated with lowered incidence of cardiovascular disease, eye diseases, and cancer
  - 3) Antioxidant; protects body from oxidative stress & aging
- Market growth is being driven by dietary supplements, skincare and potential disease prevention applications
  - Aging 'baby boomer' population
- Increasing demand for 'functional foods' and vitamin additives in packaged foods

### Why Algae?

- Synthetic manufactured products account for about 85% of the carotenoids on the market
- Even current extraction methods from plants use chemical solvents resulting in a push for a more natural synthesis



- Algae are natural bio-factories for essential fatty acids, vitamins, micronutrients, antioxidants and pigments
- Algae strains can be selected for their high specific content of desired carotenoids or other compounds
- Microalgae is processed whole & requires no pre-processing

# Program 2

## Nutraceuticals: Carotenoids

### The Unique Opportunity

Plentex has exclusive commercial access to a strain of *Nannochloropsis* discovered by SARDI that consistently yields high levels of specific carotenoids

200 - 660x

more product by weight of dry biomass than the equivalent weight of source plant material

Plentex has a strong alliance with Texas-based technology provider:

- 1) Patented technology can access the carotenoid without drying & solvent extraction
- 2) Reduces expensive processing costs

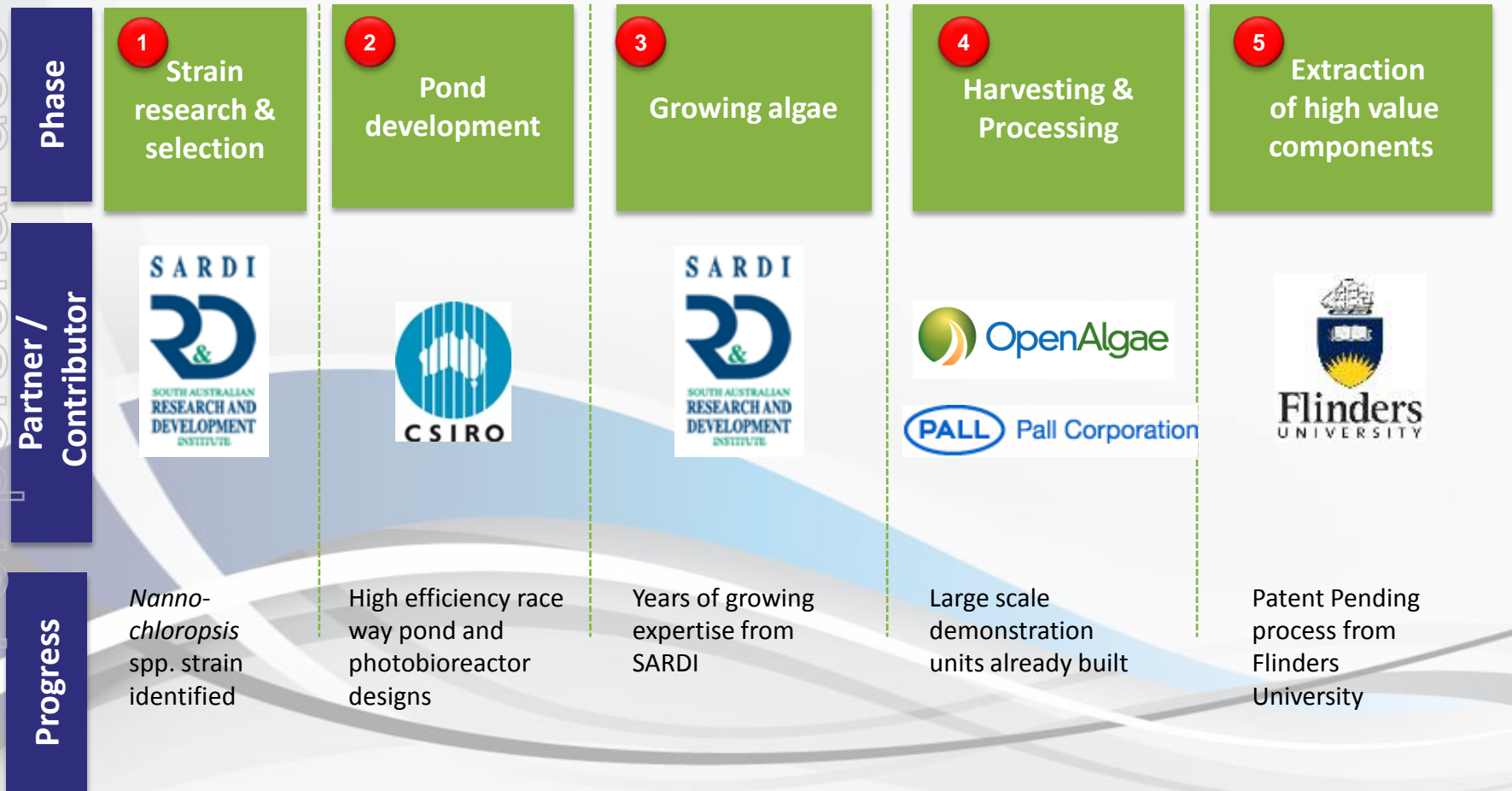
### Underpinned by Solid Expertise

- As for Plentex's other programs, expertise in growing algae & maximizing yields will be provided by SARDI and Flinders University
- CSIRO can provide the efficient raceway pond and photobioreactor designs needed to maximize yield
- Other high value components such as Omega 3 can be isolated based on work completed by Flinders University in Adelaide

# Program 2

## Algae to Nutraceutical - Production Pathway

Participants at each stage of value chain identified



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# Program 2

## Algae to Nutraceutical - Production Pathway

### Structured project roll-out

Plentex has developed a staged approach to executing its algae to carotenoid project.

#### Phase 1: Commercial Demonstration Facility

- **Objective:** Validate “end-to-end” economics by producing sufficient quantities of algae biomass for carotenoid extraction and market assessment
- Up to 1 hectare of ponds optimised for algae growth rates and carotenoid content maximisation
- Optimise carotenoid extraction
- Provide product to market participants for assessment
- **Location:** Identified site, SA
- **Timing:** Month 1 to Month 12

#### Phase 2: Commercial Facility

- **Objective:** Commercial scale production of algae for carotenoid extraction commencing with a minimum of a 8 hectare pond/s
- Pond configuration and sizing optimised based on growth data from Phase 1
- Modular design enables efficient rollout of additional commercial units, facilitating a rapid increase in overall production volumes and revenue
- **Location:** Identified site, SA
- **Timing:** Month 13 onwards

# The Plentex Solution ...



## Experienced team ... Board of Directors and Management

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### **Peter Streader** *(Executive Chairman)*

- Peter Streader has had a long career as a solicitor, barrister and “in house” corporate counsel and company executive.
- He spent approximately 10 years, ultimately holding the position of General Counsel and Company Secretary of the Australian subsidiary of one of the world’s leading engineering and construction contractors, USA based Fluor Corporation and played a significant role in the negotiation and execution of a number of major resource development projects in Australia including the initial Dampier to Perth Natural Gasline.
- He was a founding Director of Drillsearch NL (now Drillsearch Energy Limited) and Executive Director of Diamin Resources NL (now Senetas Corporation Limited).
- He joined the Board of Plenty River Corporation Limited (now Plentex Limited) in January 1998 and has since served in an executive capacity.
- Peter has had extensive experience in major project development and played a leading role in Plenty River Corporation Limited’s attempts in conjunction with a number of major international companies to establish a world scale ammonia/urea plant on the Burrup Peninsula of Western Australia.
- Peter is a Fellow of the Australian Institute of Company Directors.

### **Chris Roberts** *(Non-Executive Director)*

- Chris is a geologist with over 35 years experience in mineral exploration throughout Australia initially with BHP but subsequently in senior positions with a number of other companies.
- He was a Non-Executive Director of Perseverance Corporation Limited until he resigned in February 2008 following the acquisition of Perseverance by Canadian based Northgate Minerals Corporation in February 2008.
- He is a Corporate Member of the Australasian Institute of Mining and Metallurgy and a member of the Australian Institute of Geoscientists. In late 2005 he was appointed to JORC (the Joint Ore Reserves Committee) and remains an active member of that Committee.
- He was appointed to the Board of Plentex in August 2006.

### **Darwin “Ric” Campi** *(Non-Executive Director)*

- Ric is a Fellow of the Australasian Institute of Mining and Metallurgy with over 50 years experience in mineral exploration, development and production in Australia and overseas.
- He was Co-founder and Managing Director of Great Fingall Mining Company NL from 1986 to 1989 and then Managing Director of Triarc Corporation Ltd from 1989 until his retirement in 1994. He has been associated with the discovery and mining of a wide range of minerals in Australia and Asia.
- Ric has been a Director of Plentex Limited since November 2006.
- He is a Fellow of the Australasian Institute of Mining and Metallurgy.

# The Plentex Solution ...



## Experienced team ... Board of Directors and Management (cont'd)

### **Danny Goldman** *(Managing Director)*

- Danny Goldman is an experienced senior manager, having previously been General Manager of Electrical , Furniture and General Merchandise of Coles Myer Ltd.
- Previous to that Danny was the Chief Financial Officer and Company Secretary for Country Road Ltd, and has held various operational, financial and accounting roles in South Africa with Woolworths Holdings Limited and Ernst and Young.
- Danny is a qualified Chartered Accountant, with a Bachelor of Commerce degree (Honours) in Accounting Science from the University of South Africa and a Bachelor of Commerce from the University of Cape Town.

### **David Vinson** *(Executive Director - Operations)*

- David Vinson is a seasoned executive in the Australian renewable energy industry, most recently with Blue Sundial Pty Ltd, and has been involved with numerous companies in the biofuel, chemical, marketing services and recycling industries.
- David managed the construction and operation of one of Australia's first biodiesel plants which operates as a division of The Victor Smorgon Group.
- David graduated from Purdue University, USA, with a degree in Chemical Engineering .
- He was appointed to the Board of Plentex in January 2011.

### **David Streader** *(Company Secretary)*

- David Streader graduated as a Bachelor of Science in 1991 and subsequently qualified for a Graduate Diploma in Applied Finance & Investment from the Securities Institute of Australia and later a Diploma of Financial Planning from Deakin University.
- From 1993 to November 2002 he held various roles including that of company secretary and director of a Melbourne based Licensed Securities Dealer which provided financial planning and investment banking services.
- David is a Certified Financial Planner and currently is a partner in a Mornington Peninsula based accounting and financial planning business.
- David Streader is a CFP Member of the Financial Planning Association.

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# The Plentex Solution ...

## High quality Advisory Board



### Prof Rob Lewis (Advisor)

- Rob Lewis is a distinguished scientist who has 38 years' experience in research, research management, public and private sector policy and governance, IP management and commercialisation.
- He led SARDI for 17 years to 2010 positioning SARDI as a major primary industries research and development provider in Australia and was former Director of Fisheries South Australia .
- A Fellow of the Australian Academy of Technological Sciences and Engineering and he was awarded a Centenary Medal for services to marine sciences.
- Rob chairs the PISC Fisheries and Aquaculture National Priorities Forum and holds Professorial appointments at both the University of Adelaide and Flinders University.

### Dr Wanda Mackinnon (Advisor)

- Wanda Mackinnon is a biochemist with a Ph.D. in medicine from the University of Sydney who has successfully blended scientific and corporate careers to become an advisor on commercialisation and investment readiness for technology-based ventures.
- She was co-national manager of the Australian Government's highly successful Commercialising Emerging Technologies (COMET) Program for its first five years of operation and is a long-term Judging Panel Member of the Australian Technology Showcase.
- Since 2005 she has used her expertise to help companies to communicate their business strategy, competitive position and value proposition for an investor audience and advises a number of companies in the biotechnology, health and environmental sectors.

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# Opportunity

## Plentex: algae product focus



Plentex offers the opportunity to participate in establishing a leading Australian commercial algae business with phased scale-up and multiple revenue streams targeting strong financial returns.

### Value proposition

- ✓ two well advanced programs at validation stage for aquafeed and high-value nutraceuticals
- ✓ excellent access to algae expertise and cutting edge technology
- ✓ phased commercial scale up to reduce risk

### Use of funds

Plentex is raising \$2.2 million by way of a placement in order to achieve commercial demonstration of its core programs. The company intends to re-quote on the ASX during 2013.

## Current capital structure

### Capital Structure as at 20/11/2012

#### Shares

Fully paid ordinary shares	32,963,183
Class A Performance Shares	10,500,000
Class B Performance Shares	5,250,000
Class C Performance Shares	<u>18,000,000</u>
<b>Total ordinary and performance shares</b>	<b><u>66,713,183</u></b>

#### Options

Options exercisable at 25 cents at any time prior to 30 June 2013	711,915
Options exercisable at 25 cents at any time prior to 30 November 2013	14,945,428
Options exercisable at 25 cents at any time prior to 30 September 2014	460,000
Directors and Management options exercisable at 30 cents at any time prior to 30 November 2014 subject to share price performance hurdle (35 cents plus – for over 30 days)	<u>6,750,000</u>
<b>Total Options</b>	<b><u>22,867,343</u></b>

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