



Chatham Rock Phosphate

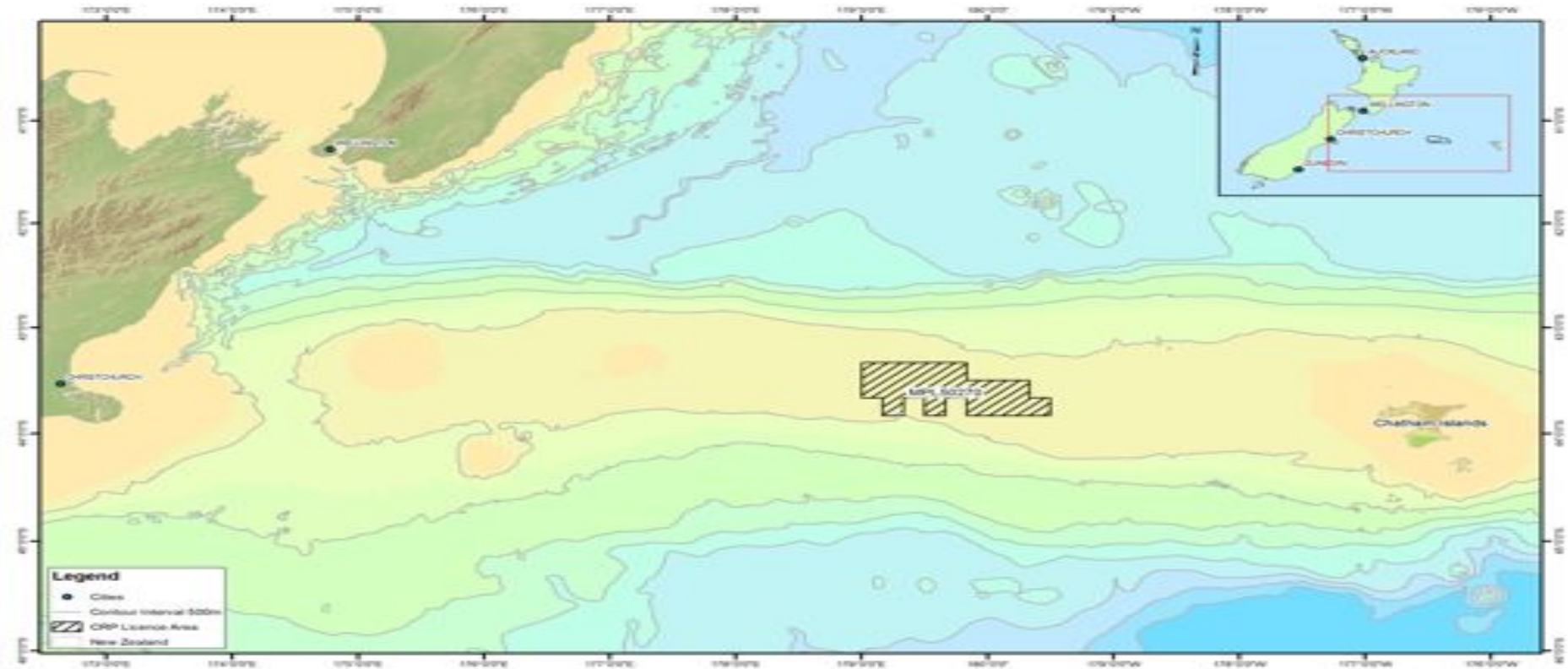
Advanced rock phosphate project in NZ

The opportunity

- **Chatham Rock Phosphate (CRP) has NZ's only major rock phosphate deposit**
- **1 m/t imported annually to NZ - mostly from Morocco**



Well defined shallow deposit offshore NZ



Tenure and grade

- **100%
ownership**

- **High grades
21 % P₂O₅**

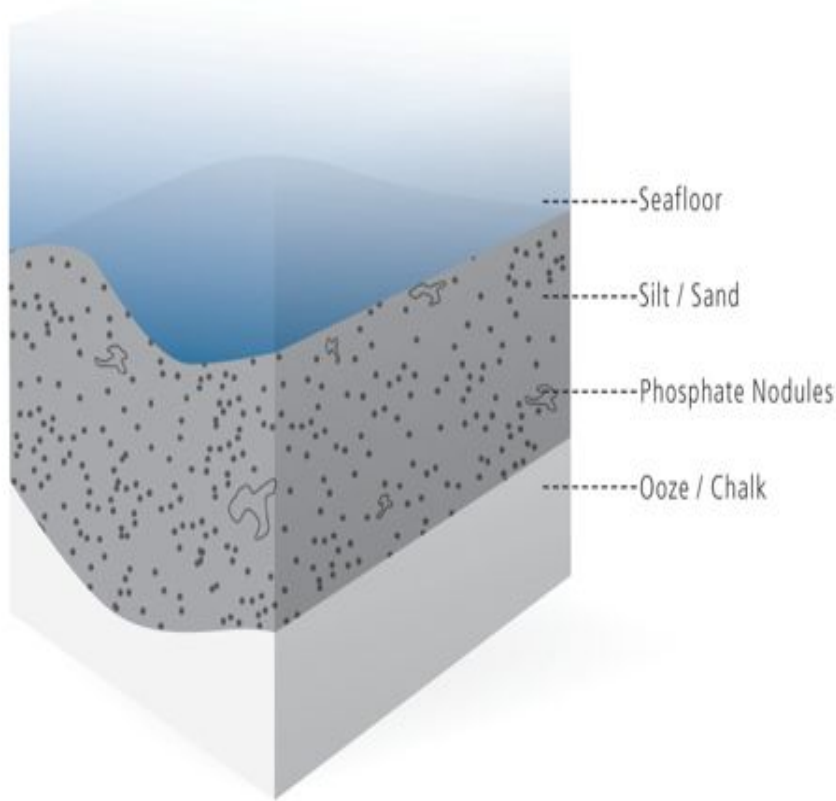


Scale of deposit.....

- **25m/t resource in closely explored 380 sq km (less than 10% of licence area)**
- **Resource calculated in 1981 (prior to inception of 43 101 standard). Is non-compliant, but accepted by TSX**
- **Mid-2011 exploration identified additional resources**



CHATHAM RISE SEAFLOOR COMPOSITION



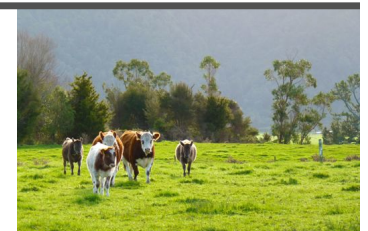
GEOLOGICAL SETTING

- Formed 7-12m years ago by current action on limestone seabed
- Nodules 1-150mm in 1m layer of sandy silt
- Forms 13% of seabed layer volume

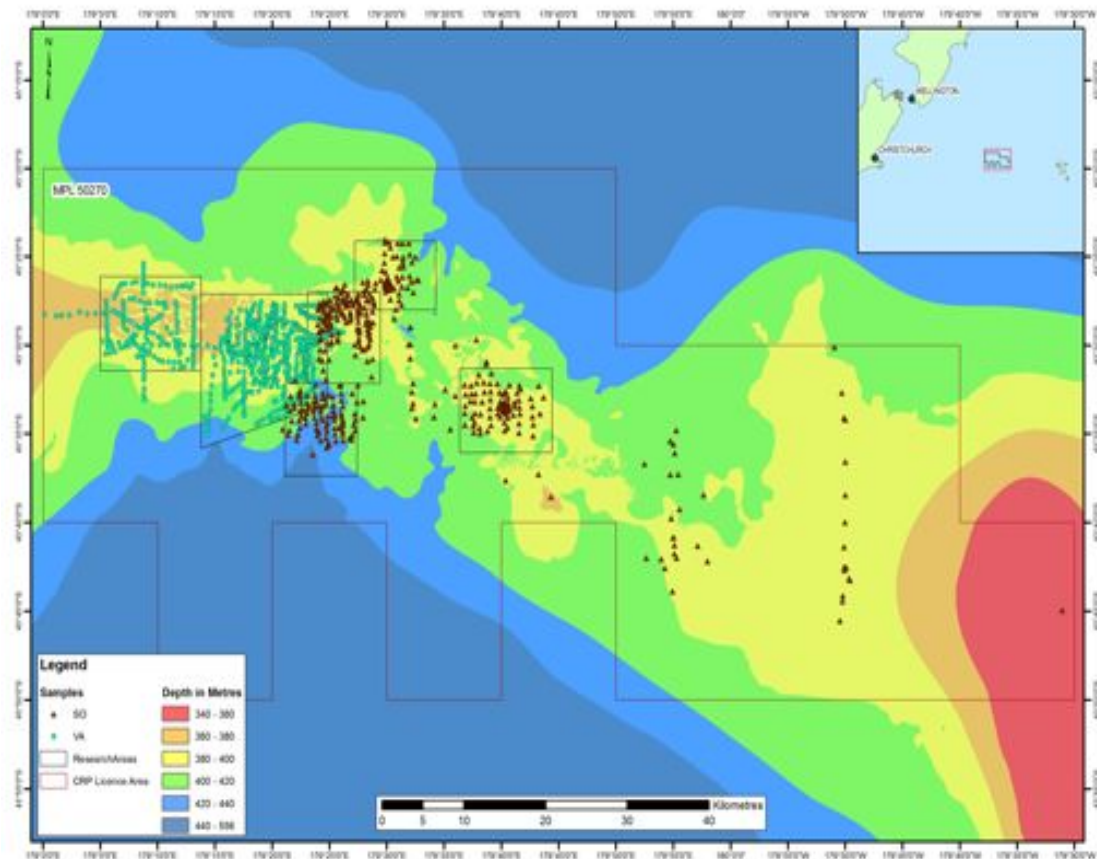


Chatham deposit

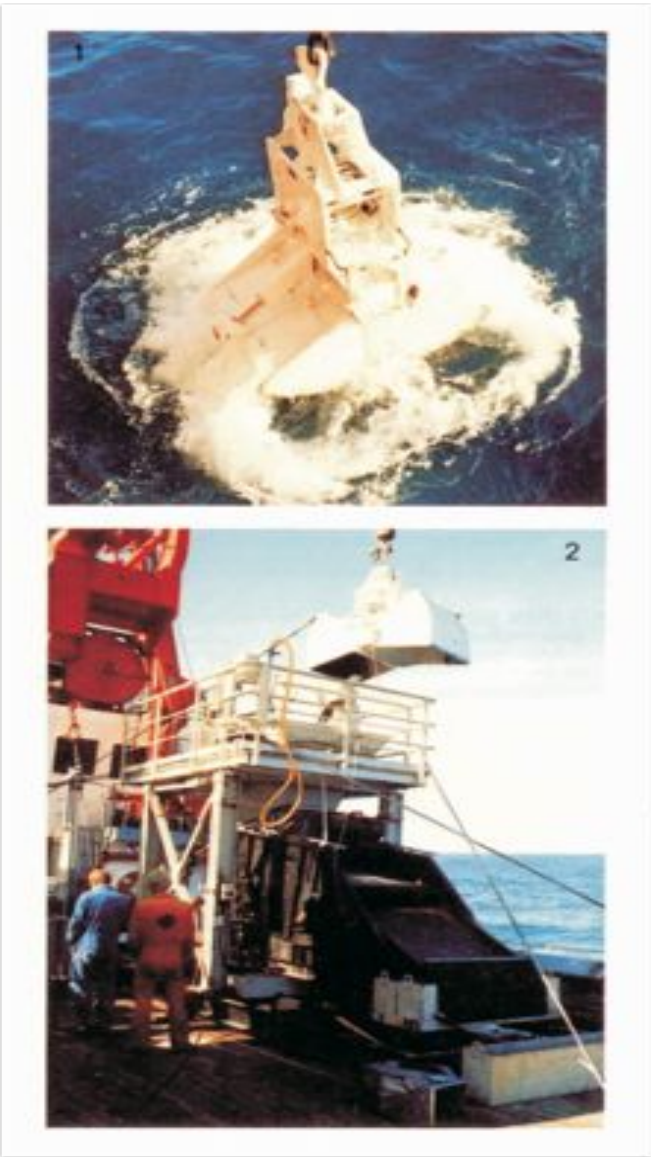
- ❑ **Extensive exploration 1952 - 1981**
- ❑ **Associated spending \$50m**
- ❑ **Suspended due to supply and demand in Australasia and immature mining technology**



Tenure and sample intensity



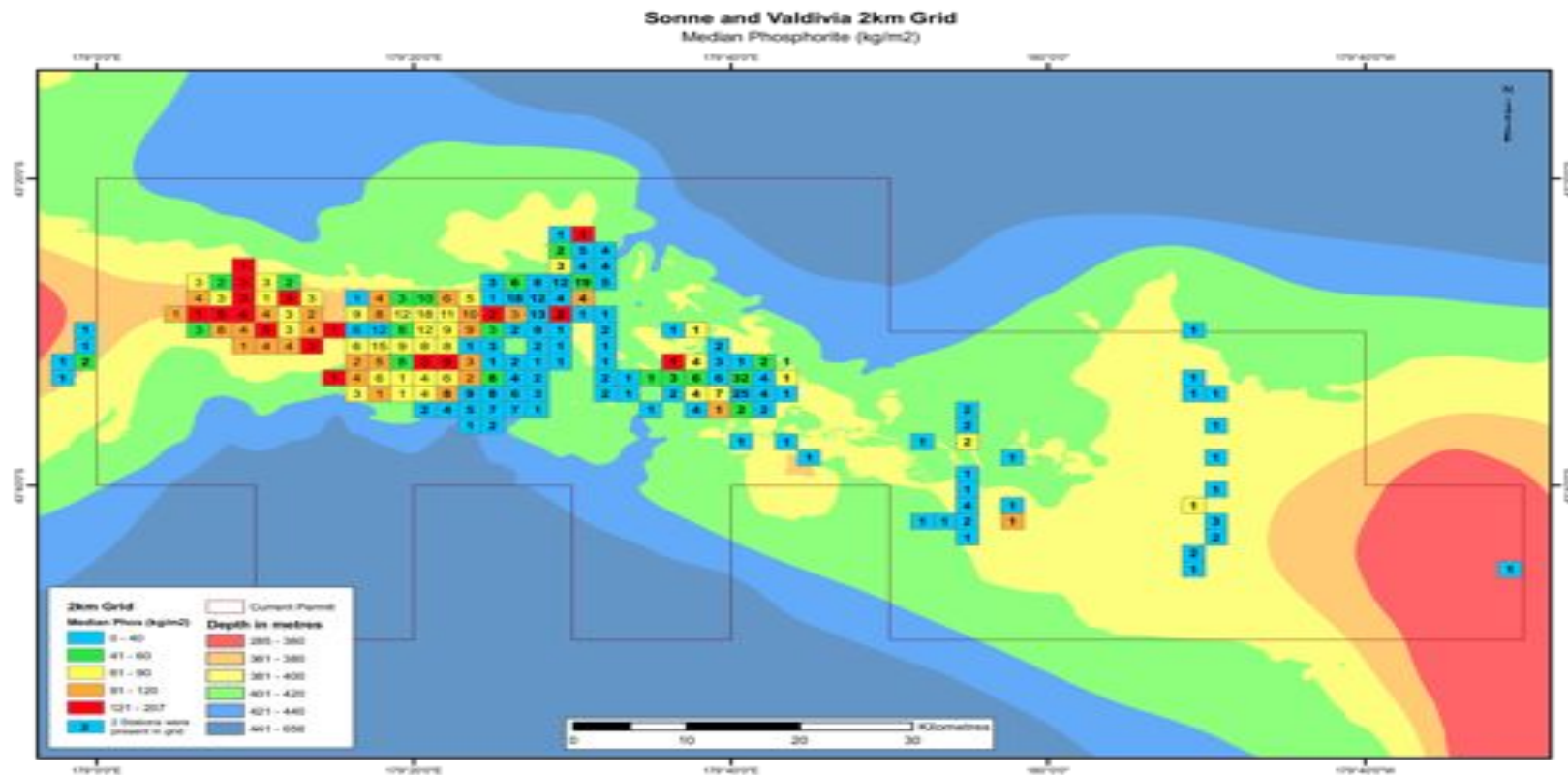
Bulk sampling equipment used to develop resource



von Rad, pg21



Chatham deposit phosphate intensity

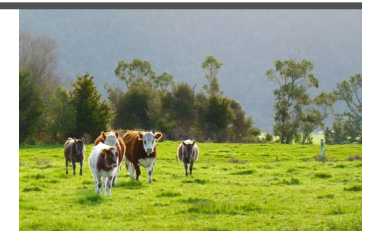


Element analysis

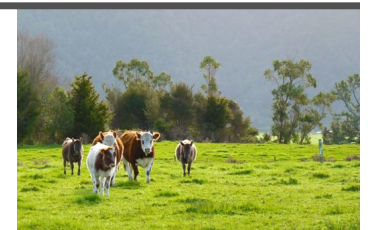
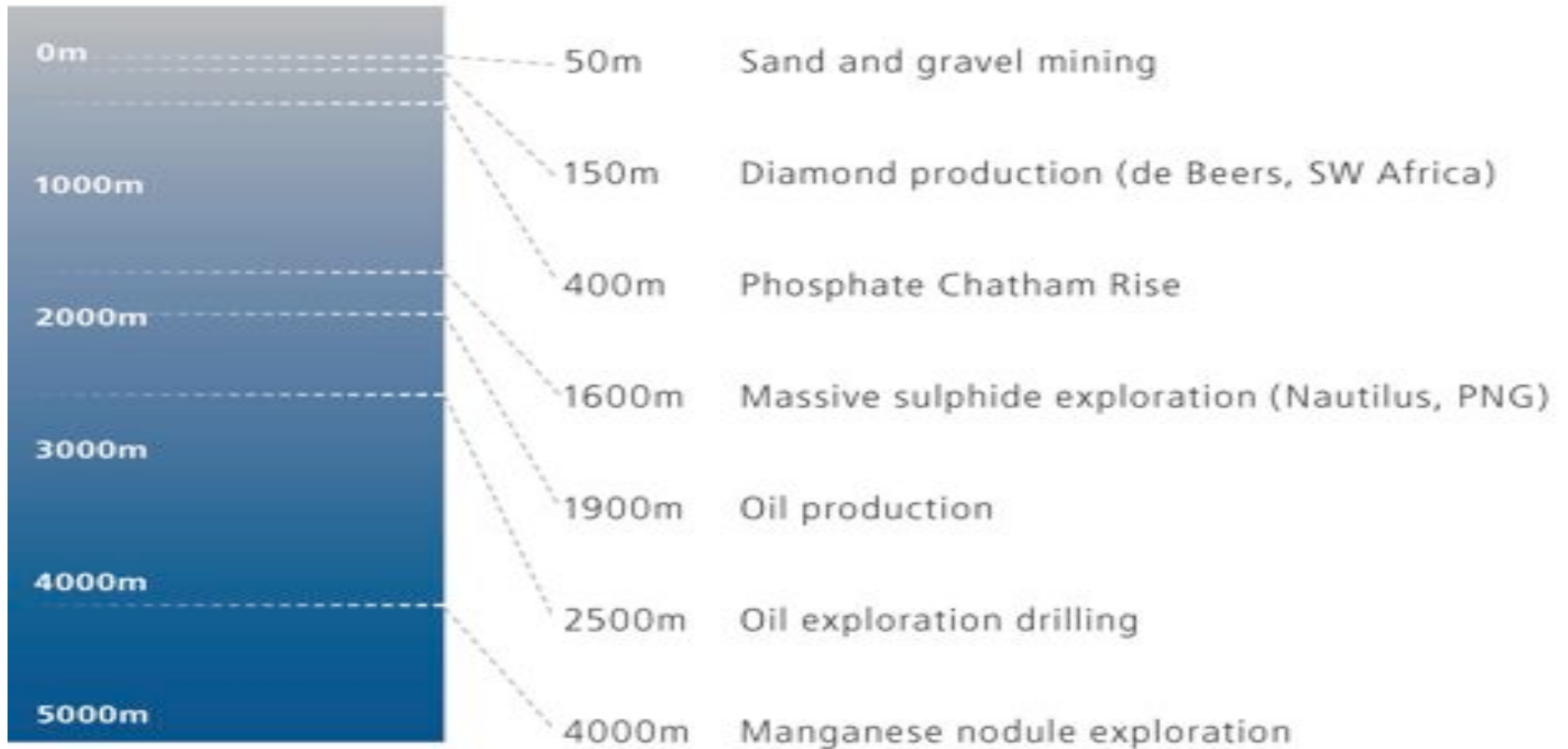
Element	Symbol	Average %
Calcium	Ca	30.3
Phosphorus	P	9.17
Silicon	Si	4.53
Iron	Fe	3.89
Fluorine	F	2.90
Potassium	K	0.93
Magnesium	Mg	0.72
Sodium	Na	0.68
Aluminium	Al	0.56
Sulphur	S	0.56
Stronium	Sr	0.12
Chlorine	Cl	0.04
Titanium	Ti	0.02
Vanadium	V	0.01

Note: chemistry varies with size of nodules. Can adjust by mining different sizes

Cadmium (Cd)
4 mg per kg of phosphorus compares with limit of 280 mg per kg (Morocco product near limit)



UNDERSEA MINERAL EXTRACTION DEPTHS



Royal Boskalis Westminster

- Provides services globally for the dredging, maritime infrastructure and services sectors
- Main product segment is dredging & earthmoving
- Fleet of over 1100 vessels and equipment
- 14,000 employees
- Operates in 65 countries across six continents

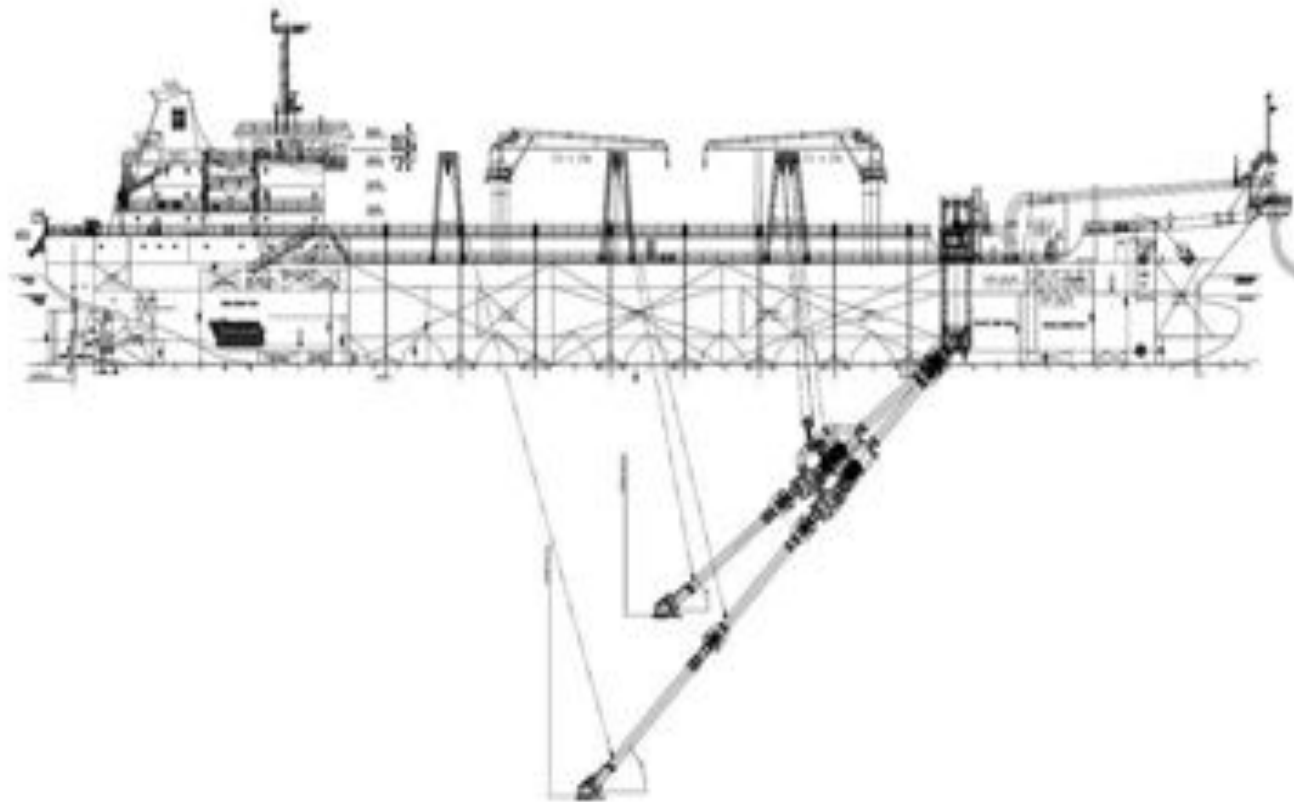


Phosphate excavation design

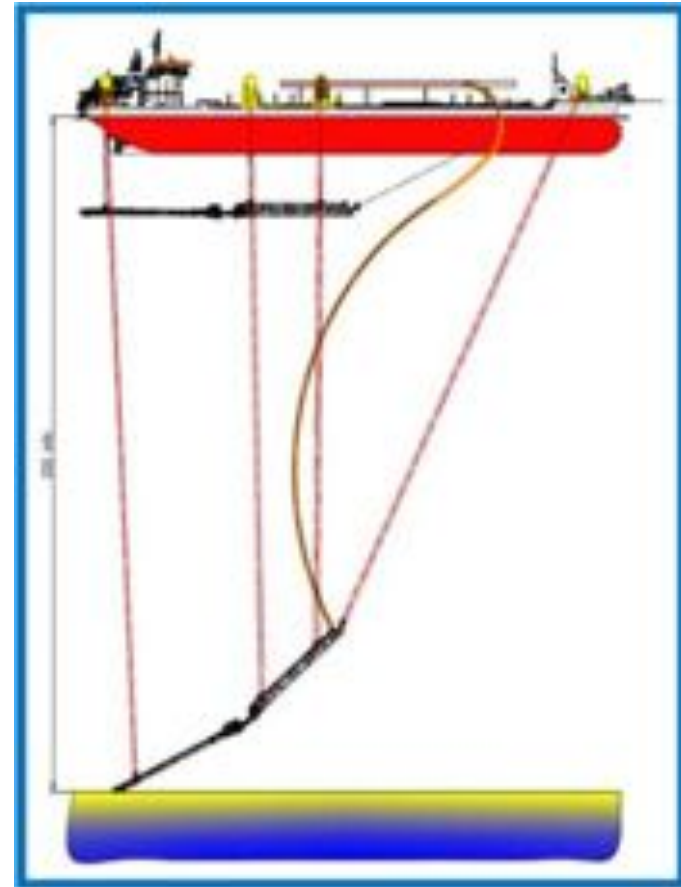
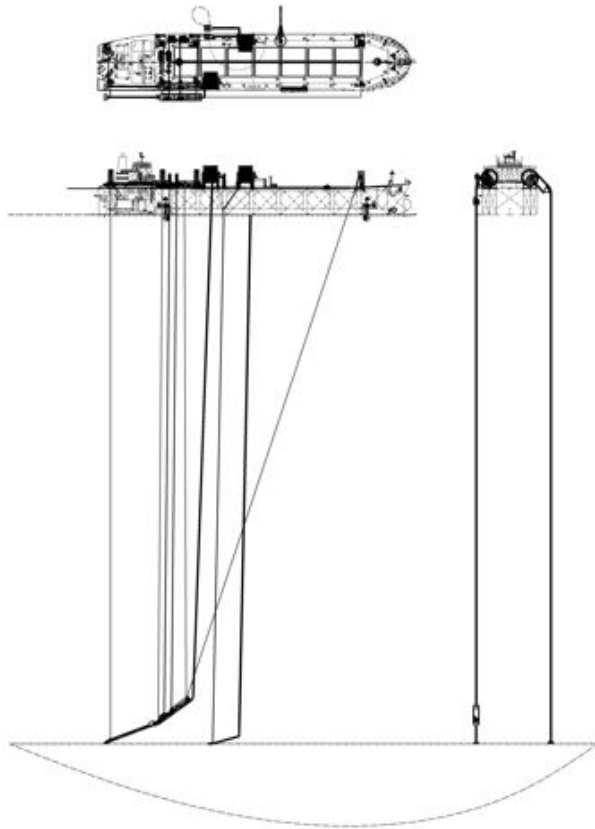
- **Suction head, assisted by water jet cutting**
- **Phosphate separation and storage on dredge**
- **Delivery of 30-50,000/t shipments to NZ, eastern Australian ports**
- **Annual dredge production 750,000/tpa of rock phosphate**



Conventional trailing suction hopper dredge



Boskalis design concept



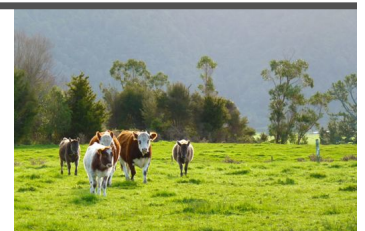
Many benefits

- **Environment** Very low in cadmium
Much lower carbon footprint
- **Market** Security of supply
Cheaper source than Morocco
- **Economic** Reduced foreign exchange risk
Import substitution and exports



Environmental benefits

- ◆ **Very low in cadmium**
- ◆ **Lower carbon footprint through reduced transport costs**
- ◆ **Can be applied directly – more effective than super phosphate with less run-off to environment**



Wider NZ economic benefits

- ◆ **Cheaper source with no foreign exchange risk**
- ◆ **NZ balance of payments – reduced imports and export potential (attracting NZ Govt financial support)**

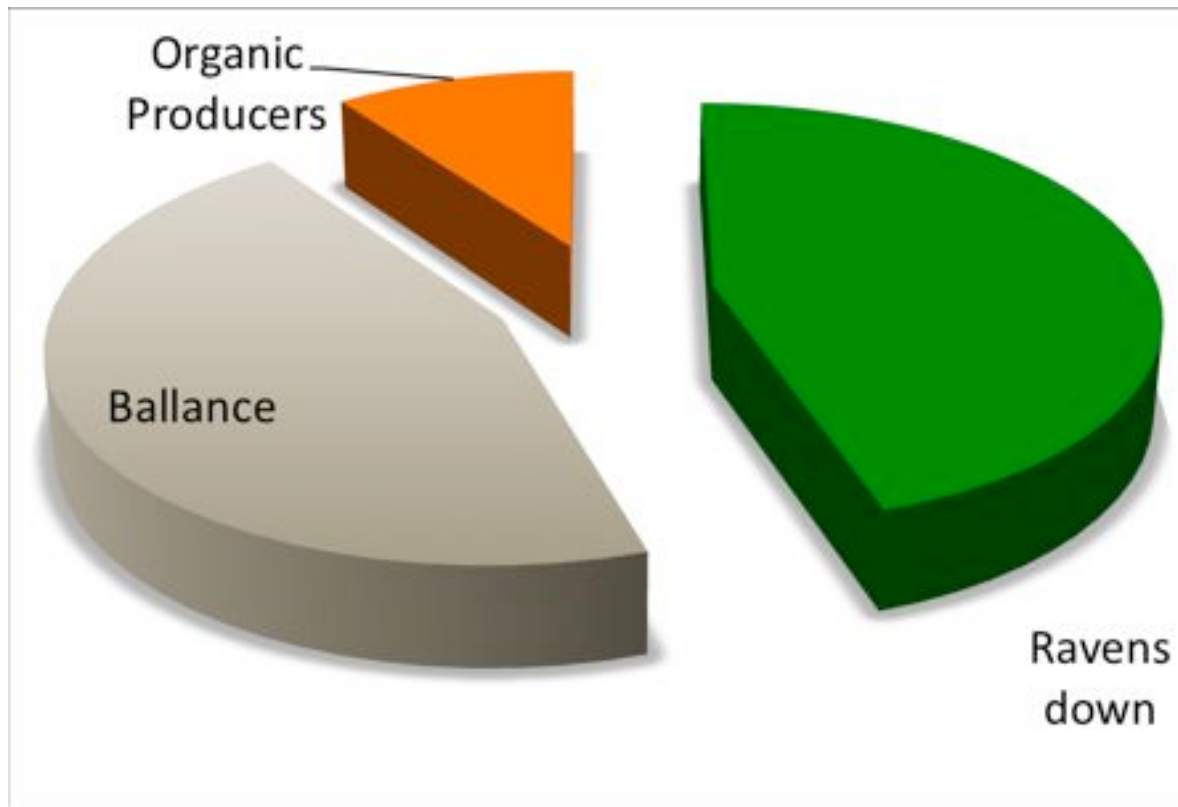


Chatham Phosphate

- ◆ **Commercial production targeted within 2 years**
- ◆ **High quality product**
- ◆ **Chatham has significant freight and security of supply advantages**



NZ Phosphate market sales



- All NZ fertiliser companies showing strong interest in product
- Australia and India also a market

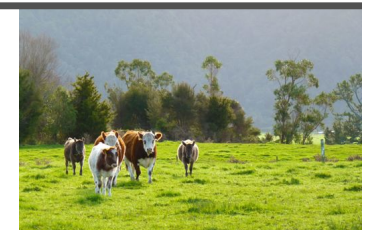
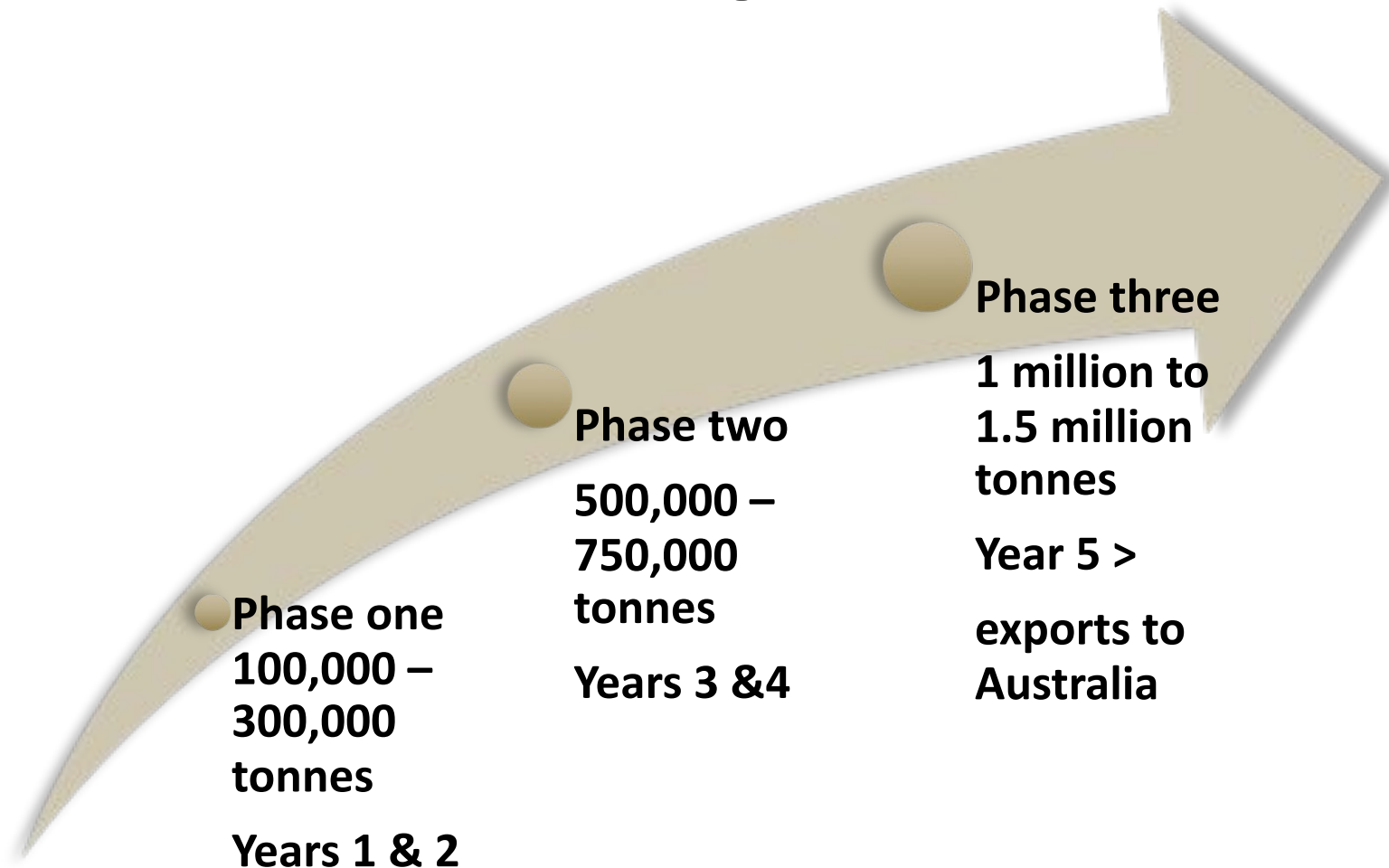


Australian market

- **Three dominant players - Incitec Pivot (Qld, Vic, NSW), CSBP (WA), Impact (Tas.)**
- **New entrant Ravensdown (NZ) competing with Incitec Pivot and CSBP**
- **Super-phosphate market size 4m/tpa (2.5x NZ market)**



Growth profile



Expected operating margin

Imported material	\$235/t
Chatham Rock Phosphate	~\$160/t
Chatham RP operating cost	\$75-\$100/t
Chatham RP margin	\$85-\$60/t



Project Status

- ✓ **Pre feasibility study and valuation confirms commercial development is realistic**
- ✓ **Updated field data, environmental studies underway**
- ✓ **Commenced off-take discussions**
- ✓ **Boskalis mining designs underway**
- ✓ **Beneficiation options being evaluated**

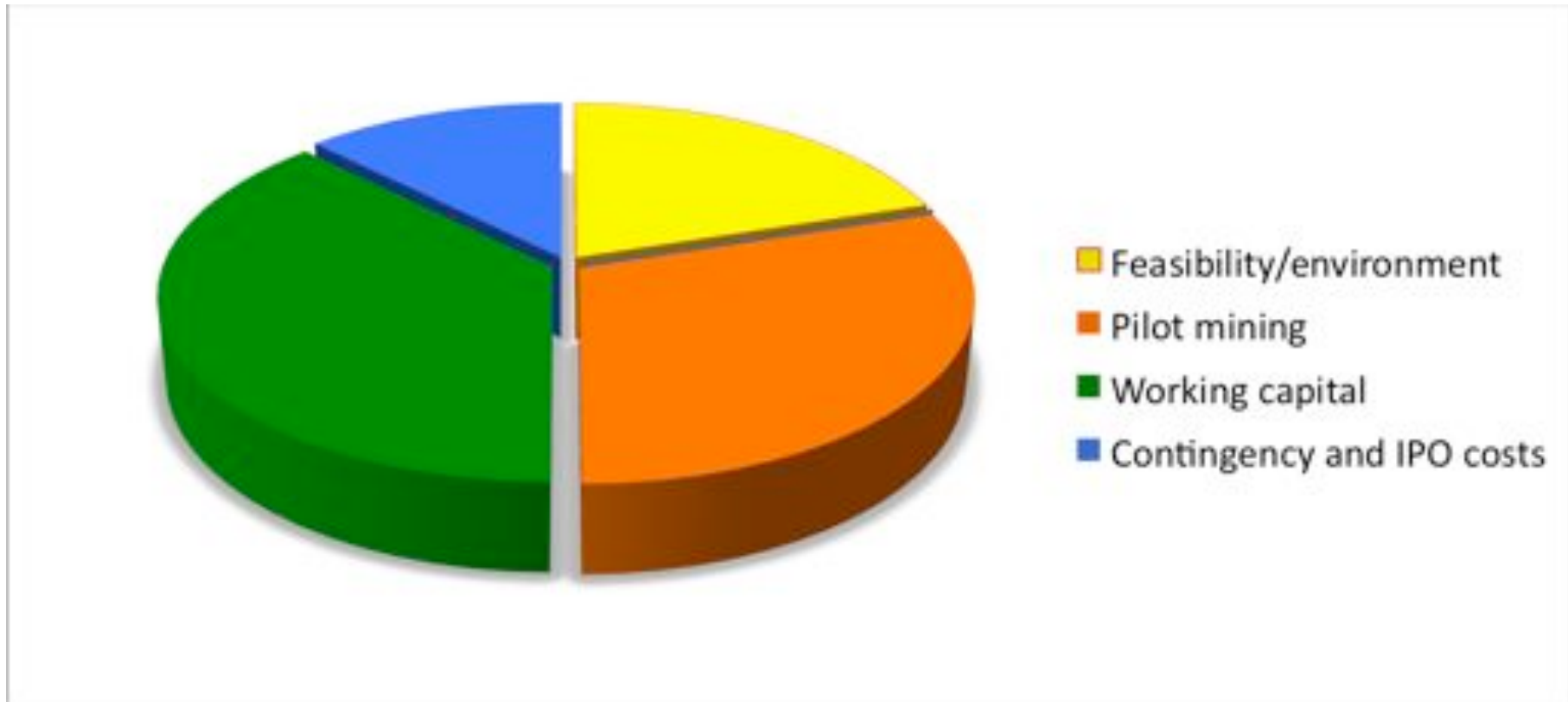


2011-12 objectives

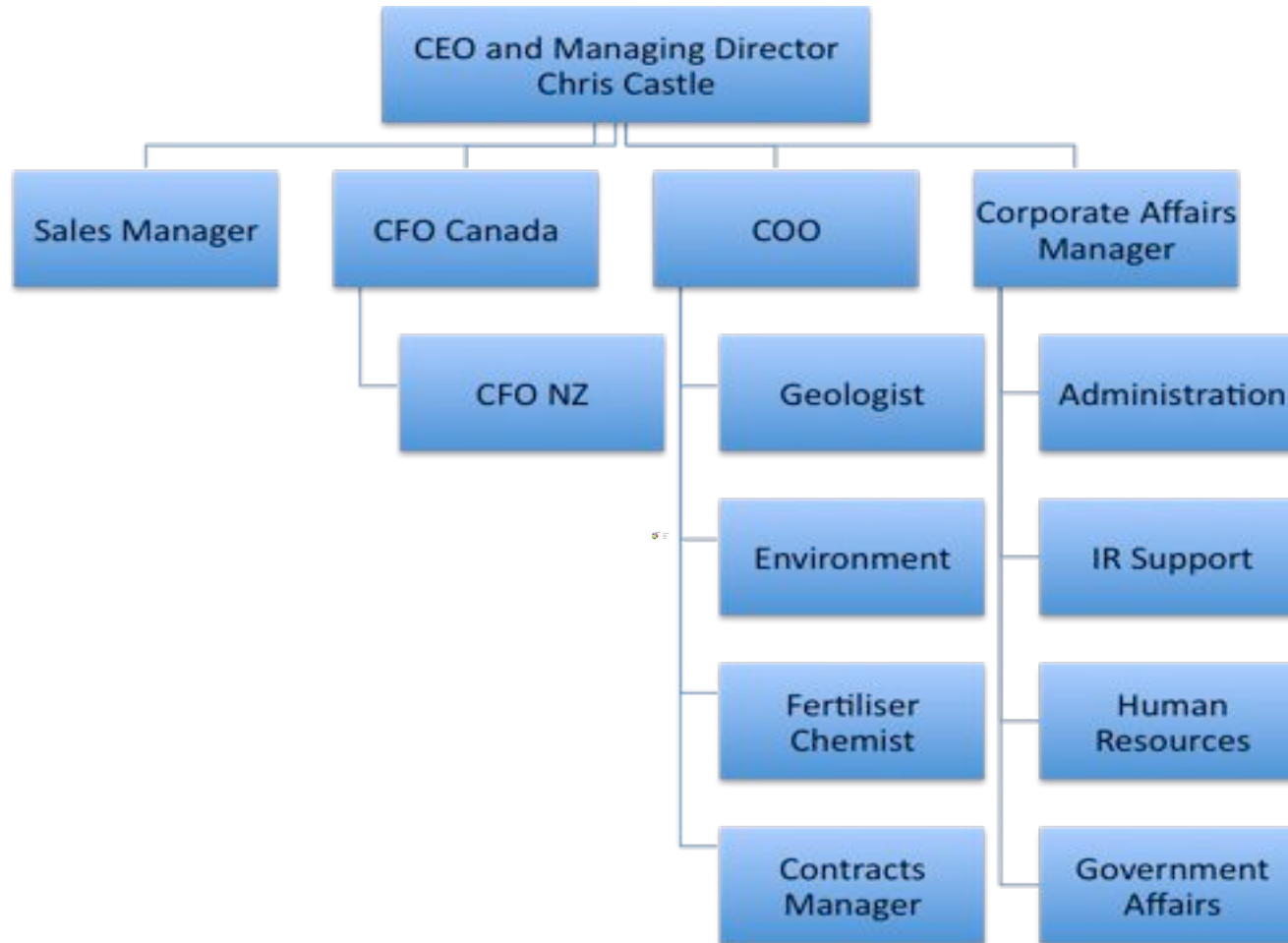
- Selected commercial technology for phosphate recovery, processing and delivery to market
- Environmental studies continue
- Canadian IPO (43-101 done) targeting H2, 2011
- Bulk sampling for marketing, dredge design
- Building off-take relationships



IPO Use of \$40m funds

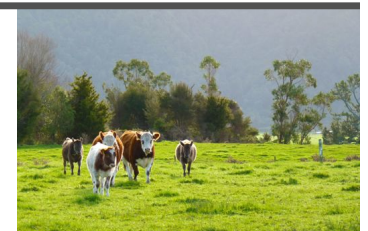


Proposed Management Structure



Timetable

- **Q4 2011 – complete IPO and progress concept designs**
- **H2 2011 – environmental, off-take progressed**
- **2012 - detailed design, deposit bulk sampling**
- **H2 2012 - commercial decision, construction**
- **H2 2013 – start commercial production**



Chatham Rock Phosphate

- **A long life deposit uniquely positioned to supply the existing NZ and Australian market**

