



# Economics and Industry Standing Committee

Inquiry into how technological and service innovation can be encouraged to expand and diversify the Western Australian economy.

November, 2015

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## **1.0 INTRODUCTION**

Co-operative Bulk Handling Limited (“CBH”) notes the Economics and Industry Standing Committee’s (“EISC”) inquiry into how technological and service innovation can be encouraged to expand and diversify the Western Australian economy.

While not necessarily a large “developer” of technology, the nature of CBH’s grain storage, handling and marketing business, and the attendant requirement for it to create and return value to Western Australian grain growers does mean that the imperative for ongoing service innovation is a central element of CBH’s operations.

In making this submission, the company’s limited association with universities precludes it from making comment regarding how collaborative research links might be improved. CBH is however pleased to outline to the EISC a range of practical examples that illustrate the co-operative’s approach to enhancing its service offering to Western Australian grain growers and their customers along with the overarching strategy from which this innovation is driven.

## **2.0 BACKGROUND - COOPERATIVE BULK HANDLING**

CBH is a unique organisation with a history almost as long as the grain industry it serves. The co-operative’s commitment to maintaining a partnership with its Western Australian grain grower members has helped build an industry that has been the backbone of the State’s rural economy since the beginning of the bulk handling system in 1933.

This partnership has also been the basis of CBH’s strength and success.

CBH has constantly evolved, innovated and grown with operations today extending along the value chain from grain storage, handling and transport to marketing, shipping and processing. Now Australia’s biggest co-operative and a leader of the nation’s grain industry, CBH is controlled by 4,200 Western Australian grain growers.

The co-operative exists for their benefit and the advancement of the grain industry in Western Australia.

### **2.1 The drivers for innovation and technology development at CBH**

CBH has a long and rich history for service innovation; of constantly seeking to reinvent its storage and handling offering to Western Australian grain growers and their marketing customers.

Developments such as Quality Optimisation, the introduction of Grain Express and the investment in rolling stock have been of such significance that they have not just created enhanced value for CBH members but in some respects, changed the very fabric of the local grain industry.

The business operations of CBH as a co-operative are very much based in the company’s purpose; to create and return value to the grain growers of Western Australia.

This commitment is enshrined in the CBH constitution that the co-operative exists to promote the development of the grain industry; a sector worth in excess of \$3.5 billion to the Western Australian economy annually.

CBH provides the all-important platform from which growers can supply international grain markets; in the process, ensuring that they can remain competitive with other international origins of supply.<sup>1</sup>

It is this drive for competitiveness that underpins the requirement for CBH’s development and adoption of technology.

## **3.0 CBH’S FOCUS FOR INNOVATION**

Western Australian grain growers face the inherent challenge that while global demand for grain is increasing, the nature of commodity markets means that this enhanced demand may not necessarily translate into higher prices.

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<sup>1</sup> Note that around 90% of Western Australia’s 11 million tonne annual harvest is exported.

USDA data suggests that Asia will consume considerably larger quantities of wheat (Figure 1) however this increased consumption is unlikely to have any attendant short term impact on prices (Figure 2).

Asia will buy more wheat (20% annually)

No impact on prices in the short term

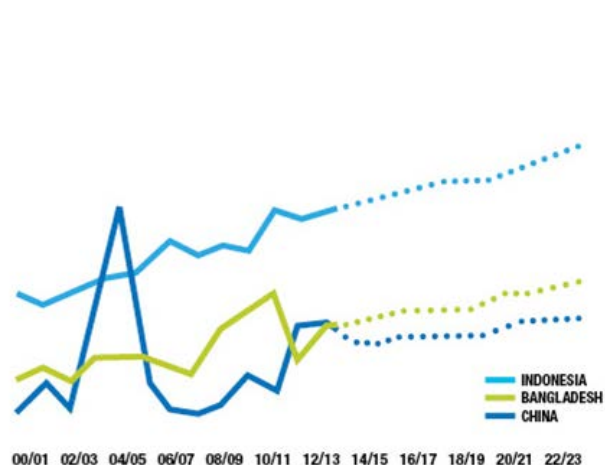


Figure 1 - Projected demand for wheat- 2023

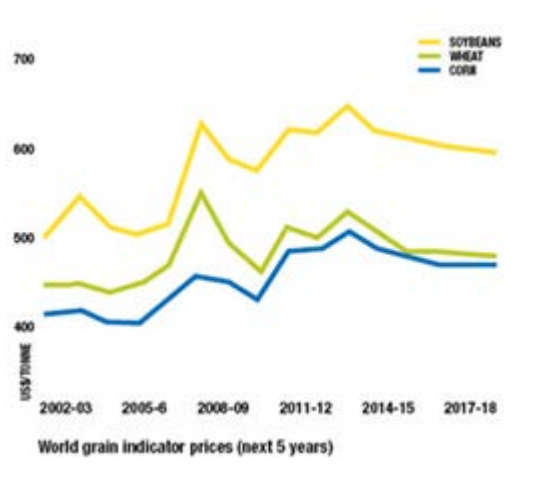


Figure 2 - Indicator of grain prices - five years to 2018

CBH's focus for innovation therefore adopts an applied methodology with a focus on service improvement, (rather than any mode of applied research) and can be classified into three broad themes:

- Service innovation that **enhances the value** of growers' grain (maximises the value paid by grain buyers);
- Development that **minimises costs** in the Western Australian grain supply chain; and
- Measures that ensure the CBH network remains **efficient, effective and sustainable**.

### 3.1 Enhancing grower value

#### Quality optimisation

In what was one of the most significant innovations in the wheat industry, Quality Optimisation (QO) was rolled out to growers across Western Australia in time for the 2011/12 harvest period.

Historically, growers have, prior to delivering grain in CBH's storage network, blended grain (wheat) on farm in order to maximise grain value; in simple terms a process of combining wheat of lower quality with wheat of higher quality in order to "blend up" to a highest overall possible average.

The QO system developed by CBH allows growers to *virtually* blend their individual wheat loads via CBH's online platform after all their wheat has been delivered into the CBH network (rather than having to physically blend the various qualities of wheat on-farm).

CBH's consolidated network in turn ensures that wheat is blended and subsequently out turned to international customers in line with agreed trade standards.

Nearly 2,700 growers took up QO in its first full harvest, with close to 4.6 million tonnes of wheat *optimised* and just under 2 million tonnes shifting grades. The conservative benefit to growers of QO

<sup>2</sup> Source - USDA Production Grains Supply and Distribution Database 1960-2012

from these grade *uplifts* equates to at least \$4 per tonne across the 2011-12 wheat crop - close to \$24 million.

### 3.2 Ensuring lower costs

The Western Australian agriculture industry is challenged to compete with grain produced throughout the world, some of which is supported by foreign government subsidies. Similarly, growers are competing with emerging producers from regions such as the Black Sea, who operate from a very low cost base and with minimal regulatory obligations.

The CBH business measures value as 'direct value to growers'; allowing the company to invest in areas such as storage and handling capacity and site throughput - providing growers with the best possible storage and handling service at the lowest possible price.

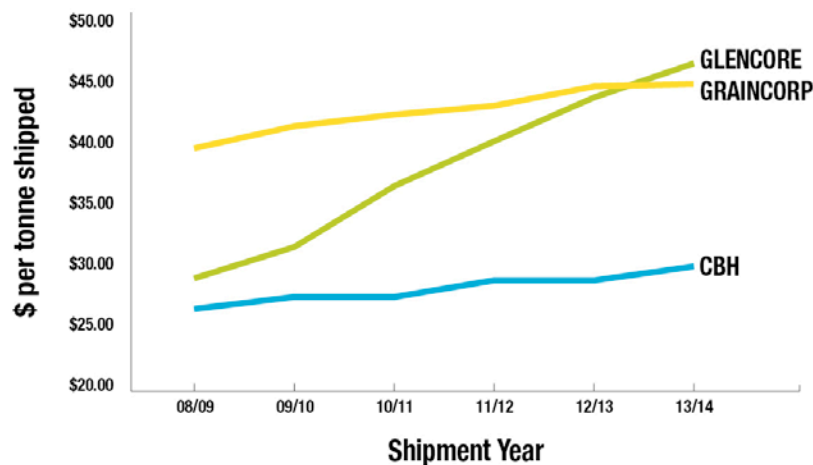


Figure 3 - Storage and handling fee comparison

To this end, service innovation has played a key element in CBH providing the most competitive storage and handling service and charges in Australia.

#### **Rail investment**

In 2010/11 CBH took the decision to pursue enhanced above rail efficiencies by investing \$175 million in new rolling stock (locomotives and wagons) to be operated by a new above rail operator for the dedicated service of grain haulage in Western Australia. This infrastructure has a range of advantages; not least of which:

- New locomotives delivering higher horsepower, with more efficient tractive effort than the old ARG grain locomotive fleet (which has an average operational age of over 35 years);
- Considerable improvements in reliability; fuel savings; higher grain hauling capabilities and modern technologies that can greatly reduce train operating costs (e.g. auto stop/start - reduces idling costs);
- State of the art wagon technologies including increased payloads, auto-hatch and discharge doors creating a safer and faster discharge. The CBH wagons are shorter in length allowing for a greater number to be loaded at many of the length restricted sidings, resulting in significantly more tonnes per trip and at reduced cost; and
- Testing of these wagons has shown significantly reduced track wear through improved design, therefore enhancing the rail network and reducing the need for maintenance.

These arrangements provide a higher level of reliability, enhanced usage rates and greater productivity and have had a significant impact on the efficiency of the rail task. During the 2012/13 harvest, CBH were able to reduce rail freight rates to growers by an average of seven per cent.

#### **Energy efficiency**

As high user of electricity (with annual expenditure in excess of \$10 million), CBH has made considerable effort to develop innovation in energy management. The last three years have seen an almost 30% reduction in usage by way of demand reduction, the curtailment of load at peak periods and reduction in operating equipment usage “at idle”.

CBH has also trialled renewable energy technology such as the installation of three solar power generators (380 kilowatts) at grain handling and workshop facilities at Bibra Lake, Geraldton and Forrestfield - providing onsite generation capacity; mitigating rising electricity prices and network costs.

It is estimated that the annual savings from these three sites could be considerable; in utility costs (up to \$180,000) and greenhouse gas emissions (approximately 525 tonnes of carbon dioxide).

### ***EyeFoss***

The EyeFoss™ Image Analyser is a grain assessment tool developed by CBH and FOSS that provides revolutionary capacity to measure grain quality.<sup>3</sup>

The EyeFoss™ has been designed specifically to remove subjectivity from wheat and barley visual quality assessments like sprouted grain, weed seeds and un-millable material, as well as grain defects such as insect damage, mould, frost and germ damage.

Using new image analysis technology, grain passes under a 3D laser, 2D lights and camera to capture data. This data is then processed using a series of calibrations to determine grain quality. The EyeFoss™ can assess 10,000 kernels, or a standard half litre sample, in just four minutes without adding any time to the sampling process.

This means marketers purchasing grain out of the CBH system can be assured of acquiring grain of the highest possible standard.

### ***ProFoss***

CBH has long sought a solution to the problem of extracting small to medium parcels (500 - 2,000 tonnes) of unique grain quality from within large horizontal storages. These limitations are largely due to complexities such as identifying exactly where the unique parcels are located within the storage and managing these parcels through the export supply chain.

The ProFoss *in-line* analyser seeks to assess grain moisture and protein levels in real time during out loading (from site storage into rail and/or road transport) without the need to physically collect samples - providing a full understanding of quality before the grain is received at port; allowing the grain to be segregated prior to export.

The trial of the ProFoss instrument is ongoing.

### **3.3 An effective and sustainable supply chain**

On the back of considerable ongoing investment, the CBH storage and handling system is considered among the most efficient, and the lowest cost, system in Australia. Over the last five years, in excess of \$500 million has been spent on capital expenditure and maintenance activities across the network.

Innovation in maintenance and the effective application of labour remains a central element for CBH to maximising operation of its network into the future.

### ***Maintaining infrastructure***

Corrosion is one of the biggest issues for any company with a large and aging asset base, not least of which when those assets are located in coastal regions where the harsh marine environment accelerates deterioration.

CBH's port facilities form a critical element of the export supply chain requiring ongoing development in maintenance innovation, for example:

- Developments in fresh water wash downs;

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<sup>3</sup> FOSS is a leading supplier of innovative analytical solutions with manufacturing, research and development facilities.

- Application of silane siloxane to concrete structures (prevent ingress of chlorides); and
- Cathodic protection system to the Kwinana Grain Jetty.

### ***Maximising available labour***

Recent research of the Australian agricultural sector suggests that the rural workforce is declining at a considerable rate. Allen Consulting (2012) suggest this could be as much as 30 per cent over the next ten years.

A central tenet therefore of CBH's focus for innovation is ensuring that CBH's service to growers can be both maintained into the future - examining opportunities for "unmanned" functionality at country receival sites. This includes the processes for grain sampling and weighing which have historically required the application of increasingly scarce labour.

Similarly, CBH is examining the feasibility to utilise safety initiatives that can position equipment operators "away from higher risk environments"; for example operating grain in-loading equipment (MLS machines) remotely by way of touchscreen and camera systems.

### **FOR FURTHER INFORMATION**

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