



An Economic Analysis of GRDC Investment for Support of the Wheat Variety Classification Scheme (WVCS)



GRDC Impact Assessment Report Series:

Title: **An Economic Analysis of GRDC Investment for Support of the Wheat Variety Classification Scheme (WVCS)**

November 2010

GRDC Project Code: ATR00008

This report was commissioned and published by the GRDC.

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ISBN No. 978-1-921779-22

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Executive Summary

GRDC has been responsible for continuing with and remodelling the former Wheat Variety Classification Scheme administered by the former regulator Australian Wheat Board International (AWBI). GRDC contracted AWBI to continue with their previous role for a 6 month period and then facilitated the establishment of the Wheat Classification Council (WCC) to initially manage the classification guidelines and support the Variety Classification Panel. Another role of the WCC was to assess support for a continuation of the scheme and determine what structure and function any new scheme may embrace.

Both face-to-face consultations and intake of public submissions were achieved by the WCC during 2009 and 2010 with financial support from GRDC. This resulted in an unambiguous level of support for wheat classification to continue in order to support the quality position of Australian wheat in the world market.

An economic analysis of continuing with the wheat classification scheme during the transition period and thereafter has been attempted in order to identify the key benefits from the scheme and assess whether it is in the industry's interest to financially support a new scheme into the future. Any such analysis is complex due to the nature of wheat classification affecting key components along the wheat marketing supply chain including growing, storage and handling, marketing, and end-use, as well as wheat breeding.

In attempting to define the benefits from continuation of the scheme, it was necessary to construct a counterfactual scenario of what may have happened along the supply chain and in wheat breeding if the scheme was not continued after 2008.

The benefits identified are presented in the table below. An attempt was then made to value some of the identified benefits in order to construct a benefit cost analysis of the investment in the scheme. The benefit cost analysis included costs of the GRDC transition funding as well as the ongoing likely annual cost of the classification scheme of \$1 million per annum.

Value estimates were made for three benefits including:

- Continued quality image and consistent quality of Australian wheat parcels marketed resulting in the maintenance of a price premium for a proportion of exported bulk wheat
- More efficient wheat breeding
- Improved varietal decisions by growers

Based on the assumptions made, the net present value was positive with an expected net present value of \$93 million over 30 years at a 5% discount rate, a benefit-cost ratio of 6.4 to 1, and an internal rate of return of 112%.

A Monte Carlo analysis that included probability distributions of 6 variables supported the positive finding with only a very low chance of the investment returning a negative NPV or a benefit cost ratio less than 1.

Benefits Identified for Continuation of the Wheat Variety Classification Scheme after
Market Deregulation

<u>Industry Productivity and Profitability</u> <ul style="list-style-type: none">• Sustained brand names which continue the quality image of Australian wheat• Consistent quality of aggregated wheat parcels marketed• Lowered storage and handling costs• More efficient and transparent pricing• Improved varietal decisions by growers• Greater certainty for wheat breeders resulting in more efficient breeding
<u>Environmental</u> <ul style="list-style-type: none">• Nil
<u>Social</u> <ul style="list-style-type: none">• Capacity building along the value chain

1. Introduction

"Consumers of wheat, bread and other products made from wheat insist on having the desired products in a definite form (bread of certain kinds, crackers, pastes etc) and of a definite quality, to such an extent that substitution of one type of wheat for another and lower grades of certain kinds of wheat for higher grades of the same kind also is materially limited; and these limitations are reflected in the demand for specific types and grades of wheat that are particularly adapted to the production of specific products" Jasny (1940)

Wheat classification is a differentiation process for categorisation of a wheat variety into a specific grade based on tested processing characteristics and end product quality information. The grading enables market requirements to be recognised and taken into account by organisations breeding new wheat varieties. To achieve consistent differentiated end product quality, wheat varietal classification focuses entirely on the genetic potential of wheat varieties. In contrast, wheat receival standards categorise grain deliveries on a combination of:

- i. The variety, as declared by the grower; and
- ii. The impact specific seasonal conditions and farming practices (the environment) has on various aspects of the grain itself.

The classification for particular varieties may differ between regions as a variety may perform differently quality-wise between environments. Hence there are a series of classification zones where the grade for a specific variety may differ. Categorisations are usually made with several years of data.

The classification process has two functions:

- i. defining target wheat grades based on knowledge of market requirements
- ii. classifying specific varieties into these grades

Prior to the deregulation of Australian bulk wheat exports in 2008, the variety classification scheme was conducted by the Australian Wheat Board International (AWBI). The AWBI produced guidelines that complemented the receival standards established through Grain Trade Australia (GTA).

GTA (formerly the National Agricultural Commodity Marketing Association (NACMA)), was formed in 1991 to standardise grain standards, trade rules and grain contracts across the Australian grain industry in order to enable the efficient facilitation of trade across the grain supply chain (http://www.graintrade.org.au/About_GTA)

Wheat quality has been historically a principal strength of the Australian wheat industry including physical characteristics, low moisture content, cleanliness, freedom from infestations, processing capability and end use suitability (WEMCC, 2007).

After deregulation, GRDC took responsibility for wheat classification at the request of the Minister for Agriculture, Fisheries and Forestry following a recommendation by the Wheat Industry Expert Group in 2008. GRDC initially contracted AWBI to continue with their previous role for a 6 month period. GRDC then facilitated the establishment of the Wheat Classification Council (WCC, 2010) to initially manage the classification guidelines. The Wheat Classification Council (WCC) commenced in

February 2009 with the appointment by GRDC of its grower Chair, Robert Sewell AM. The WCC currently comprises members representing key stakeholders of the Australian wheat industry including marketers/traders/handlers, wheat breeders, and domestic users, but really has no legal standing. Council members fund their own participation on the Council with GRDC providing support for the grower Chair and an executive officer.

One of the WCC's principal roles is to continue to translate market requirements into wheat breeding and classification targets thereby maintaining the continuous development and availability of wheat varieties that meet the requirements of the industry's existing and potential markets.

It is understood that the model under which the WCC is still operating is that established by GRDC in 2008 and depicted in Figure 1.

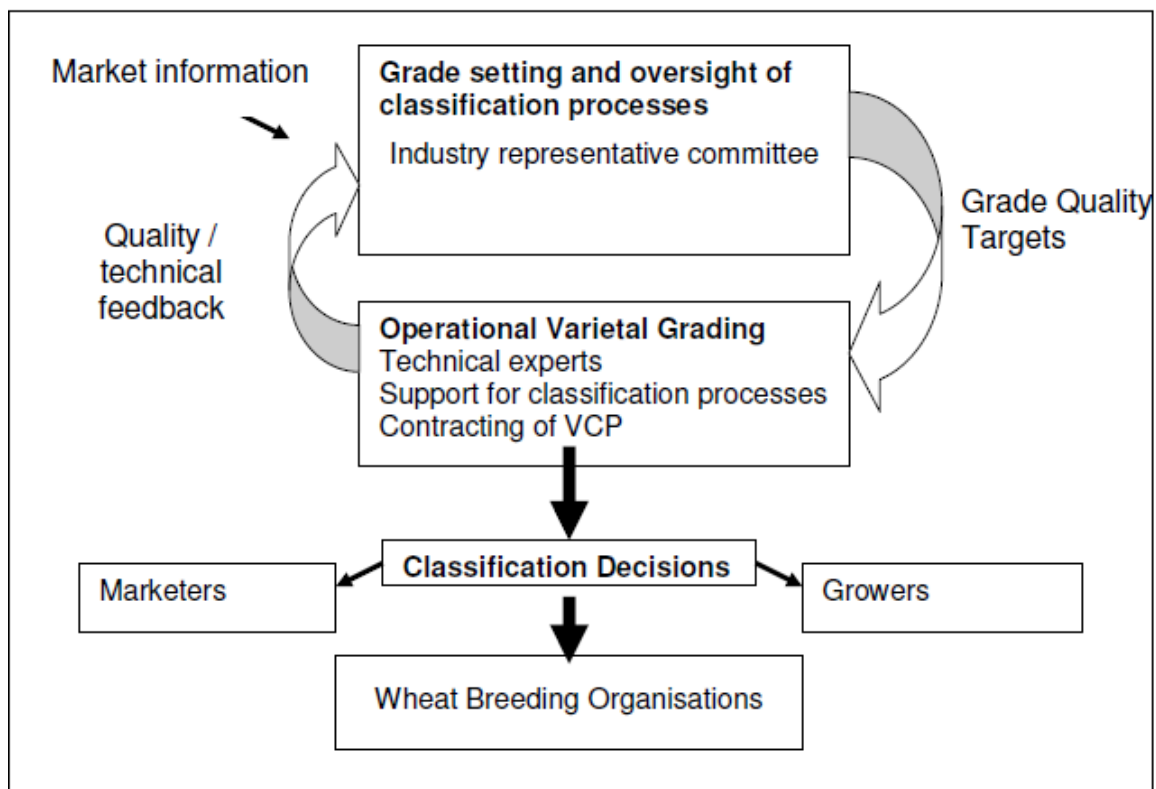


Figure 1: Representation of the Two Tier Model for Wheat Varietal Classification (Source: GRDC, 2008)

As an interim measure, GRDC contracted with the Bread Research Institute (BRI) to continue with the Wheat Variety Classification Scheme (WVCS) over the period 2009 to 2010. This funding was to give further support to the Wheat Classification Council. Technical expertise was also supplied to the WCC by the Wheat Quality Objectives Group (WQOG) and the Variety Classification Panel (VCP).

During this transition period, the key issues facing GRDC and the WCC were:

- i. Was there a continuing need for the classification scheme in a deregulated marketing structure?

- ii. Were the benefits provided by the scheme greater than the costs of continuing with it?
- iii. If so, who should pay for its continuation, based on the principle that beneficiary pays?

2. Project Investment

Transition Projects Funded by GRDC

The transition projects providing continuity to wheat classification and funded by GRDC are listed in Table 1. The broad aim of these projects was to provide continuation of the WVCS over a two year period (calendar years 2009 and 2010).

Table 1: Transition Classification Scheme Projects Funded by GRDC

Project Code and Title	Other Details
QOG0002: Industry Good Transmission Project	Organisation: AWB (International) Ltd Period: June 2008 to December 2008 Investigator: Cindy Mills
BRI00042: Management of Wheat Variety Classification Operations	Organisation: Bread Research Pty Ltd Period: January 2009 to December 2010 Investigator: Michael Southan
CMI00001: Executive Support to Chair of Wheat Classification Council	Organisation: Cindy Mills Period: January 2009 to January 2010 Investigator: Cindy Mills
RSE00001: Chair of Wheat Classification Council	Organisation: Robert Sewell Period: January 2009 to June 2010 Investigator: Robert Sewell

Table 2 provides a summary of the specific objectives of each project.

Table 2: Specific Objectives by Project

Project Code and Title	Objectives
QOG0002: Industry Good Transmission Project	<ul style="list-style-type: none"> • To conduct the classification of wheat varieties and related activities for industry until 31 December 2008 according to the then current procedures and guidelines. • To provide on an 'as needs basis', information and strategic input to industry planning processes, particularly those aiming to address the ongoing provision of industry good services.
BRI00042: Management of Wheat Variety Classification Operations	<p>The broad aim of this project was to provide continuation of the Wheat Variety Classification Scheme for the period from 2009 to 2010. Specific objectives were:</p> <ul style="list-style-type: none"> • To deliver wheat variety classification against the existing classification grades by assessing quality data of new wheat lines relative to the performance of known control varieties and grade quality parameters in order to place those new lines into grades.

	<ul style="list-style-type: none"> • To support the Wheat Classification Council through provision of information and by providing a secretariat function to it. • To ensure clear communication, information flow and explanation of classification decisions and quality targets to wheat breeders, growers and other stakeholders as appropriate, to provide transparency and meaningful feedback. • To manage the relationship between breeding organisations and the Variety Classification Panel including providing an avenue for additional data to be submitted. • To assist in the exchange of information between marketers and wheat breeders.
CMI0001: Executive Support to Chair of Wheat Classification Council	<ul style="list-style-type: none"> • To provide executive support to the WCC Chairman and the WCC itself, coordinate the WCC activities and act as secretary to the WCC. • To provide assistance in developing the WCC strategy, vision, mission, policy and processes and administer the implementation of the WCC goals and objectives as set by the WCC. • To provide assistance to the GRDC with the transition to new business arrangements for wheat classification in 2011.
RSE00001: Chair of Wheat Classification Council	<ul style="list-style-type: none"> • To establish an industry group called the Wheat Classification Council (WCC). • To hold and chair meetings of the WCC. • To develop clear processes for how the WCC will conduct its business (e.g. internal meeting processes, how it will provide oversight to wheat classification operations, how it will gain market intelligence to inform itself about trends in wheat quality, how it will gain industry input into suggested changes to classification grade parameters, how it will make decisions as a council, and how it intends to communicate back to GRDC and industry in general). • To provide supporting documentation to GRDC for any recommendations regarding changes to the parameters to classification grades. • To liaise with industry to determine the need for wheat classification to continue beyond December 2010 and, if it is to continue, how it is proposed that industry fund wheat classification. • To report to GRDC how industry wants to take wheat variety classification forward by March 31 2010.

Investment Inputs

Estimates of the funding by GRDC for the transitional projects by year are provided in Table 3.

Table 3: Investment by GRDC for Years Ending June 2009 to June 2011 (nominal \$)

YE June	QOG0002	BRI00042	CMI0001	RSE00001	Total
2009	430,534	400,000	29,250	35,000	894,784
2010	0	669,158	103,083	51,000	823,241
2011	0	88,054	103,000	30,000	221,054
Total	430,534	1,157,212	235,333	116,000	1,939,079

Source: GRDC Services Contracts

3. Activities and Outputs

A summary of the principal activities and outputs from the projects is reported in Table 4.

Table 4: Summary of Activities and Outputs

Project Code and Title	Principal Activities and Outputs
QOG0002: Industry Good Transmission Project	<ul style="list-style-type: none"> • Classification was conducted over this period according to the then current AWBI Classification Guidelines and procedures. • There were several panel sittings conducted between March and December 2008 to provide Preliminary and Final Classification decisions, where staff met with breeding program panel meetings to discuss classification decisions. • The inter-laboratory testing (used to assess laboratory suitability to produce data for classification) was conducted according to the then current protocols and procedures. • Assessment was conducted of the data and information available within AWBI that may have been useful for the conduct of industry good activities in the future. • Several activities were undertaken to support classification as agreed by both the AWBI and GRDC. These included a review and revision of the laboratory proficiency program to develop a program that could be conducted independently of AWBI, the planning and conduct of the Wheat Breeders Forum and the chairing and administration of the LMA (Late Maturing α-amylase) Steering Committee.
BRI00042: Management of Wheat Variety Classification Operations	<ul style="list-style-type: none"> • Classification of varieties according to the Wheat Variety Classification Guidelines. • Managed the selection process for new members of the VCP. • Contracting and managing contracts of the independent technical experts on the VCP. • Organising meetings of the VCP and the WCC. • Recording detailed outcomes and assessments from these meetings for dissemination to breeding organisations and other key stakeholders.

	<ul style="list-style-type: none"> • Reporting classification grading decisions: <ul style="list-style-type: none"> - for pre-release lines, to the owners; - for released lines, to wheat breeding organisations, marketers, GTA, growers and other stakeholders. • Identifying and capturing issues for discussion at the Wheat Classification Council meetings. • Coordinated the udon noodle expert sensory evaluation program as described in the Wheat Classification Guidelines. • Acting as a 'clearing house' for sensitive export market data - compiling, prioritising and analysing data prior to discussion at the WCC to ensure commercially sensitive information is protected. • Analysing current crop quality data (as available) to determine grade benchmark quality. • Chairing the Late Maturing a-amylase (LMA) Steering Committee. • Following-up on quality issues identified by the WCC and reporting back on progress. • Liaising with breeding and marketing organisations to ensure flow of information and issues management. • Identifying and recommending changes in approaches to variety classification. • Managing laboratory accreditation / proficiency program providing feedback to laboratories as well as the VCP on laboratory performance. • Organising an annual forum for breeders and marketers to exchange information.
CMI0001: Executive Support to Chair of Wheat Classification Council (WCC)	<ul style="list-style-type: none"> • Provision of Support to Chairman of the WCC. • General administration of the WCC including support to the ongoing operation of WCC/classification activities. • Website maintenance and updating. • Communication of WCC activities. • Assistance with development of new arrangements.
RSE00001: Chair of Wheat Classification Council	<ul style="list-style-type: none"> • Established the industry group called the Wheat Classification Council (WCC). • Acted as Chairman of the WCC for the duration of the period. • Development of effective strategies and working arrangements for the WCC. • Consultation with industry including invitations for submissions to be made by various groups affected by wheat classification. • Determined that there was an industry need for wheat classification to continue beyond December 2010. • Options defined for further development of a wheat classification scheme and its funding.

4. Outcomes

A summary of the principal outcomes from the projects is reported in Table 5.

Table 5: Summary of Outcomes

Project Code and Title	Outcomes
QOG0002: Industry Good Transmission Project	<ul style="list-style-type: none"> • Facilitated continuity of maintenance of the wheat classification scheme during the exit of AWBI from their previous responsibility. • Allowed classification activities to be continued and a smooth handover of responsibility from AWBI during the last part of calendar 2008.
BRI00042: Management of Wheat Variety Classification Operations	<ul style="list-style-type: none"> • Allowed the continuity of functional operations of Australian wheat variety classification and the continuance of the Variety Classification Panel. • Allowed continuity of dissemination of information such as grading decisions to breeding organisations and other key stakeholders. • Maintained the protection of sensitive export market data. • Maintained the management of laboratory accreditation and laboratory performance.
CMI0001: Executive Support to Chair of Wheat Classification Council	<ul style="list-style-type: none"> • Maintained the operation of the WCC including administration, web site management and communication functions. • Contributed to the development of new arrangements for the structure and function of the WCC.
RSE00001: Chair of Wheat Classification Council	<ul style="list-style-type: none"> • Strong support evident for a continuation of a wheat classification scheme as it had contributed to the quality management and the market reputation of Australian wheat. • Recognition of the need for all industry sectors to support any future scheme. • Progress is now being made within the industry to establish an ongoing structure and operations for a wheat classification scheme.

In summary, these four projects have first maintained and protected the original classification functions of the WCC within a period of transition from a regulated to an unregulated commercial marketing system. The investment has provided a platform for development of industry management and an improved structure and function of the wheat classification process. It should be noted that in the two years since deregulation, the existing classification system has been retained by the industry without any formal agreement or mandate.

The successful completion of these projects, particularly via the support given to the WCC, has tested the extent of industry support for wheat classification. At this stage this support seems strong from all sectors consulted by the WCC including marketers, exporters, local grain processors and domestic end users, those involved in storage and handling, the wheat breeders and the grain growers.

Substantial consultation by the WCC (both face to face and intake of public submissions) during these projects (calendar 2009 and 2010) has resulted in an expressed need for wheat classification to continue in order to support the quality image, reputation and position of Australian wheat in the market place. Industry support is unambiguous.

The next issue currently being addressed is associated with structure and operations and how any new structure should be controlled and funded.

Principal recommendation

The recommendation by the WCC to maintain the classification system was based on the understanding that it has contributed to the quality management and reputation of Australian wheat.

The principal recommendation from the WCC regarding future arrangements was that the WCC, in conjunction with GRDC, needed to work with Grain Trade Australia (GTA) to establish an independent skills-based legal entity responsible for future classification arrangements. This entity needed to focus on variety classification supported by market and production data, technical resources, continuing grower consultation, and an education/extension function.

Funding model and annual budget

The funding model is still being developed but it is generally accepted from each sector that each will need to make funding contributions towards establishing and maintaining a new classification legal entity (exporters, domestic users, storage and handling businesses, growers (through GRDC) and breeding companies). The budget for the new entity is predicted to be in the order of \$1 million per annum.

5. Benefits

Benefits in Relation to What?

The investment by GRDC in transitioning the wheat classification arrangements from a regulated to an unregulated marketing system appears to have proceeded smoothly to date. In identifying the benefits from the GRDC investment in the transition and thereafter it needs to be appreciated that this investment should not be considered R&D where GRDC makes a deliberate investment choice. The fact is that the GRDC was charged by the Minister with the facilitation and development of changed arrangements. In this case, any benefits identified would need to be assigned to both GRDC and the decision to have GRDC involved.

Potential counterfactual scenarios (without the GRDC investment) could have been:

- Breeders may have emphasised yield more than quality and other agronomic performance criteria
- Breeders may have set their own quality targets without any input from marketers and marketers would have no choice but to purchase whatever grain was grown with potential segregation issues
- Marketers may have set their own quality targets and contracted grain production to meet their requirements, again with potential segregation issues.

No doubt there are a myriad of combinations of these and other counterfactual scenarios that could be constructed, including different structures other than what may eventually emerge from the transition period.

The approach taken to identifying the benefits from GRDC's investment is to assess such benefits in relation to what would have happened without the investment. In this case, the most likely scenario for the counterfactual (that is, without GRDC investment) is considered to be:

'The scenario is that a single wheat classification scheme would no longer have operated, possibly a continuation with the current classes for a period, after which some or all wheat marketers would have developed their individual classification schemes. It is possible that a disorderly transition may have occurred, with a potential deterioration of the current quality image of Australian wheat and higher costs of physical distribution and less efficient breeding operations. These negative impacts would have lessened over time as the system would have gravitated to an improved structure and function. It is possible that the counterfactual would have eventually have evolved into a system similar to what is likely to be developed under the GRDC transition investment scenario.'

The counterfactual above should be viewed as a framework only for considering the potential benefits from continuing on with the existing classification approach. The set of benefits potentially delivered by a centrally controlled WCC are discussed below.

The Set of Benefits Identified

The set of benefits identified and discussed below include:

- Sustained quality image in the market place and consistent quality of wheat parcels
- More efficient and transparent pricing
- Greater certainty for wheat breeders
- Improved varietal decisions by growers
- Lowered storage and handling costs in aggregating types

Sustained quality image in the market place and consistent parcel quality

The existing trade names for Australian wheat grades are not protectable even though they have been used for many years. However, the grades have wide recognition and understanding in world export markets. The maintenance of the current standardised grade names under a classification scheme, and the maintenance of the WVCS itself, could have sustained the level of demand for Australian wheat types and hence price maintenance against rest of world competition for the past two years.

However, if there had been no initiative, the bulk of marketers/traders would have initially continued with the current scheme, largely due to most not having sufficient technical expertise to develop their own classification system. Those without expertise may have increased their technical knowledge. Some marketers may have established their own classification schemes, based on knowledge of characteristics of existing varieties.

The system may have progressed satisfactorily until new varieties were released. Given technical information made available by the breeders of the new varieties,

some marketers would have made classifications into the previous scheme or their new schemes. Other marketers may have classified the new varieties into different classes based on different interpretations of the data. Further, wheat breeders releasing new varieties may have promoted their varieties to maximum grades that did not always hold true. It should be noted that at least 16 new bread varieties have already been released during 2008/09 and 2009/10 (Andreas Betzner, pers comm., 2010).

If marketers viewed that it would be in their own interests to develop their own classification schemes, there would have been a significant additional investment required by some marketers in in-house technical expertise. While breeders may have provided consistent technical information to all marketers, the testing and trials from which the data had been derived may not have been consistent, creating greater interpretation constraints for marketers.

Under centrally organised testing and interpretation, wheat marketers benefit by being able to purchase grain parcels of consistent physical quality allowing them in turn to improve export marketability and best capture value from product sales. This is beneficial for export markets where users value wheat consignments that consistently deliver what they require. Australian end users (e.g. flour mills) gain also from the consistency in their pricing and purchase of parcels of wheat with known milling and flour qualities. Without this consistency, or even with lowered confidence in the consistency, prices paid for Australian wheat in the international market would most likely be lower as purchases from other wheat exporting countries increased.

Against this scenario is the possibility that some marketers (perhaps those with existing technical expertise and developing their own classification scheme) would actually service the export market more effectively than with the existing scheme. This would be unlikely to occur for bulk exports and more likely to develop in the smaller container trade. However, benefits from such specific market segmentation could be delivered in a deregulated wheat marketing system as currently exists, with or without an industry-wide WVCS.

A range of alliances and alternatives may have eventuated. One possibility is that some wheat breeding companies would have been integrated/aligned with marketers so that product from some varieties would have been sold only by the one marketer. Growers in some regions may have lost some flexibility in sales once a variety is grown, but they would still have a choice of whether to grow such a variety or not.

In conclusion, it is likely that the likelihood of a market price fall for a proportion of Australian wheat exports would have been greater than the likelihood of price maintenance or a price rise. The price fall without the WVCS may have taken a few years before becoming manifest and would have most likely been manifest in the premium quality end of the export market.

More efficient and transparent pricing

More efficient pricing will be encouraged in a deregulated market from the additional stock and throughput data provided currently by ABS and ABARE since deregulation. Efficient markets rely on both sellers and buyers having access to quality information on stocks and sales. This will occur with or without a WVCS.

In addition, the retention of an industry WVCS is likely to maintain pricing efficiency between grades as the same information will be taken into account by both sellers and buyers. Confidence by marketers and their clients should be higher compared to that existing within the counterfactual scenario.

Varietal choice by growers

The maintenance of grower confidence in the classification process is likely to lead to improved grower decisions on variety choice due to better knowledge of variety performance in their own region and the comparative prices that wheat types produced in that region could capture. This can be compared to the counterfactual arrangements which, for new varieties, may not have covered all regions and/or may not have been based on verifiable objective data.

Perhaps of more importance is that without a WVCS, growers may have been reluctant to grow new varieties due to uncertainty as to its likely grade (and therefore likely price) when they come to sell.

Either way, growers may end up growing sub-optimal varieties, when new varieties are released. As new varieties become older, information about the variety would most likely increase with a return to more efficient varietal choice.

Greater certainty for wheat breeders

Wheat breeders will benefit from a WVCS from two sources. The first purpose of the current wheat classification scheme is to provide breeding targets. Such targets are what varietal characteristics are required in the market place in the long term as signalled by current and future demand trends. As a single desk seller of wheat, AWBI used to collect relevant market intelligence and make it available to wheat breeders. It could be argued that this role could now be undertaken by the wheat marketers.

However, it is not clear how this would operate as a source of independent data as:

- marketers may not agree on future priorities and trends due to influences of the markets they predominantly service
- marketers may be unwilling to bring to the table information that they perceive to give them a competitive advantage

There would appear to be a need for a WCC to collect independent data to replace the AWBI role as a need for grade changes appears (new grades developed or old grades dropped) to meet changing demand. Breeders need long-term signals from the market place; not just short-term changes in demand as may happen under a myriad of classification schemes. Breeders need stability as breeding is a long-term operation.

Wheat breeders benefit from the tests performed through knowledge of how new varieties fit within the end product requirements and hence receive guidance regarding breeding strategies through their own testing providing performance results for different breeding lines. The higher level of certainty for wheat breeders under the targets provided by a centralised WVCS provides a more efficient use of breeding resources and improved targeting of new variety development.

Without a WVCS, a simple model of producers growing varieties that provide the highest returns as reflected by demand expressed in the market place would still exist. However, breeders are intimately involved in the value chain and require a

system of information that provides certainty in the decision to develop and release a specific variety. This is costly in itself and any efficiency gain is worthwhile.

The second function of a WVCS is to assign breeder varieties to the established grades that are then marketed and traded. This assignment is based on the functional properties of the varieties and their grain end uses such as extraction and dough strength that serve as critical objective characteristics in breeding decisions.

If there were no classification of new varieties, all new varieties released would be classed as feed wheat under the current system. This would be unlikely to occur and the individual characteristics of the new varieties would take on an important role.

As new varieties are bred, and are not classified as per the counterfactual scenario, the overall grading system would deteriorate in delivering quality parcels. Marketers would put new varieties with old varieties that may not deliver a consistent quality. Such pooling would not be beneficial to the industry in the longer term and the Australian wheat quality image could suffer as defined earlier. If customers are put off by one or two bad experiences that don't meet quality required, then they may switch to wheat from other countries and market share of Australian wheat may be lost. As with any trading mechanism, some wheat marketers may be in the play to make a profit in the short term.

Even with a WVCS, some marketers could still mix varieties inappropriately and so give the industry a bad name. This is a wider concern of deregulated marketing rather than being addressed by the grade classification itself. It could be addressed by having accredited exporters with accredited trading to meet buyers' needs within a grade so the brands are not jeopardised.

On the other hand, a marketer could assemble lines if the required characteristic information for each variety was available, and then put varieties together to service a particular requirement. This could be achieved in the short term with existing variety knowledge and with the appropriate expertise. As mentioned earlier, it would not be possible to do this for a new variety unless information for the new variety was made available to all marketers. While such information would be available from breeders, its interpretation would require expertise within each marketing organisation to be able to do this effectively. If each marketer serviced their own classification system with information collected from breeders it could be costly to maintain as an effective decision tool. Assigning the new variety to a class would make it easier for marketers.

Further, it would not be feasible to leave it to the breeder to assign each new variety to a grade. It is in the interest of the breeder to promote top grades for their varieties, as they benefit from increased end point royalties the more seed that is sold.

In summary, two benefits from the WVCS in relation to breeders are the independent long-term market signals and the independent standardised information on new varieties so that it can be easily understood and used by the traders.

Lowered storage and handling costs in aggregating types

Because of the logistical necessity of aggregating into larger lines of product, some standardisation of product grade (according to market demand) is required. This is likely to be less costly with an agreed standardised set of grades relevant to each

variety grown in each region. Otherwise, under multiple classification schemes there may be a requirement for greater segregation of grades and hence higher storage and handling costs.

If such higher costs were desirable in terms of generating added benefits from increased market segmentation, such costs may be able to be absorbed with still an overall more profitable market result. This could occur both with and without a WVCS.

Segregation for every variety, while the most efficient for meeting end-use needs, would be prohibitively costly and would be unlikely to occur in the bulk wheat market due to the large number of varieties grown, unlike barley. While greater servicing of specific market segments could be desirable, if a class in the bulk wheat market had less than say 50,000 tonnes produced per season, the integrity of such a lot may not be worth preserving and probably better serviced under contract and handled by the container trade.

Overview of Benefits

It is difficult to predict what proportion and extent of benefit categories defined above would have been captured under an independently developed set of standards/grades. Further, there would likely to have been some duplication of functions by marketers in developing and initiating their own classification systems.

Central tenets underpinning the benefits from a centralised system are the inclusion of the needs of wheat breeders in the industry value chain as well as the logistical necessity for aggregation of wheat from different varieties into common grades known and trusted for performance in the market place.

An overview of benefits in a triple bottom line categorisation is presented in Table 6.

Table 6: Categories of Benefits from the WVCS Investment

<p>Industry Productivity and Profitability</p> <ul style="list-style-type: none"> • Sustained brand names which continue the quality image of Australian wheat • Consistent quality of aggregated wheat parcels marketed • Lowered storage and handling costs • More efficient and transparent pricing • Improved varietal decisions by growers • Greater certainty for wheat breeders resulting in more efficient breeding
<p>Environmental</p> <ul style="list-style-type: none"> • Nil
<p>Social</p> <ul style="list-style-type: none"> • Capacity building along the value chain

Public versus Private Benefits

The benefits identified from the investment in the WVCS will be predominantly private benefits, namely to those in the marketing and added value chains. Some public benefits may be captured from a more efficient and profitable wheat growing industry at both national and regional levels.

Additionality

As this investment was not discretionary for GRDC, the additionality issue is not relevant. However, it is suffice to say that the Government saw themselves as responsible for reconciling this industry policy issue as an implication of their decision to deregulate Australian wheat marketing.

Distribution of Benefits along the Grains Supply Chain

Initial benefits from the WVCS may occur initially at different points along the supply chain. Given competitive chain subsectors, the benefits will be distributed along the grains supply chain and passed back or forward to other industry sectors.

Benefits to other Primary Industries

There were no benefits to other primary industries.

Match with National Priorities

The Australian Government's national and Rural R&D priorities are reproduced in Table 7.

Table 7: National and Rural R&D Research Priorities 2007-08

Australian Government	
National Research Priorities	Rural Research Priorities
1. An environmentally sustainable Australia	1. Productivity and adding value
2. Promoting and maintaining good health	2. Supply chain and markets
3. Frontier technologies for building and transforming Australian industries	3. Natural resource management
4. Safeguarding Australia	4. Climate variability and climate change
	5. Biosecurity
	<i>Supporting the priorities:</i>
	1. Innovation skills
	2. Technology

As acknowledged earlier, this investment is more marketing focused rather than R&D focused. However, the GRDC investment in the continuation of the WVCS could be said to contribute to Rural Research Priorities 1 and 2.

6. Measurement of Costs and Benefits

Investment costs

The investment costs included in the analysis are from two sources:

- i. the investment by GRDC in the transitional arrangements over the past two to three years, as provided in Table 1.
- ii. the likely continuing annual investment in the WVCS after the future arrangements are fully developed. This has been estimated at \$1 million per annum. The issue of who pays for the ongoing annual investment is discussed later.

These two investment flows are combined in the analysis and therefore any benefits commence accruing in periods after the first investment in July 2008. Given the current level of support and future expectations for the WVCS, it is likely that the operations and functions of the WVCS may not change markedly between the transition period and thereafter, so that the incidence of benefits are treated as virtually seamless.

Benefits

As indicated above in consideration of costs, benefits from the transition period are combined with those from the likely ongoing scheme that is proposed, and the two evaluated together in the analysis.

The benefits valued in the analysis are those from continuing a single wheat classification scheme compared with the scenario of wheat marketers developing their own classification scheme. A second counterfactual scenario also addressed is that without an organisational and procedural structure as has been provided by GRDC, it is possible that the industry would have eventually developed a similar structure to what is currently proposed, but with some inefficiencies in the short term and a delay in capturing long-term benefits. However, the benefits from this second scenario depend on the benefits identified in comparing the WVCS proposed with the first counterfactual. More detail is provided on the second scenario later.

The benefits valued include:

- Continued quality image and consistent quality of Australian wheat parcels marketed resulting in the maintenance of a price premium for a proportion of exported bulk wheat
- More efficient wheat breeding
- Improved varietal decisions by growers

Potential benefits identified earlier but not valued in this analysis include:

- More efficient and transparent pricing
- Lowered storage and handling costs
- Capacity building along the value chain

In valuing the three categories of benefits, assumptions were required that are not necessarily well supported from the literature or other sources. The assumptions should be seen as only indicative for illustrating some of the potential benefits from an industry agreed WVCS. In addition to a deterministic analysis, an approach was taken of using probability distributions of what might be considered the most important assumptions. This secondary approach was driven to stress the uncertainty involved and to produce an indicative range of investment criteria that may result.

Marketing benefit

The possibilities of what would have occurred without a new WVCS operation in regards to the market have been discussed earlier in section 5. The conclusion was there was a higher likelihood a market price fall would have occurred for a proportion of Australian wheat exports than for the likelihood of a price rise. However, the price fall may have taken a few years before becoming strongly manifest. The benefits were based on the maintenance of existing brand names and the greater consistency of future parcels of bulk wheat being marketed, particularly classes in the higher quality end of the market.

The key assumptions for valuing this benefit are the price premium maintained and the proportion of bulk wheat exports that would maintain the price premium. **For the purposes of the analysis, the proportion of wheat that may lose the price premium is assumed equal to the proportion of exports that is classified as Australian Prime Hard (15%). The price premium loss was set conservatively at 1% of the export price.** Average Australian export quantities and export prices were assumed (See Table 8 for details).

It is possible that export parcel consistency could have been maintained in the long term if breeders had made available information on new varieties to marketers and all marketers had increased their technical expertise in order to interpret varietal information to allow them to meet buyers' requirements in export parcels. If this were the case, the price premium benefit would not exist and the only saving provided by the WVCS would be the avoided cost of additional in-house technical expertise valued at \$20,000 per marketer for 15 marketers. This second approach to valuing the market benefits is used in a secondary analysis as an alternative to the price maintenance scenario.

Lowered costs in wheat breeding

It is assumed that wheat breeding effectiveness would remain the same with or without the WVCS. With 4 breeding programs and some of the 20 marketers feeding back long-term signals that might include vested interests, there may be potential confusion of long-term market requirements being received by breeders. As a result it is assumed that the four breeding companies would probably each carry out their own market demand studies in addition to receiving information from some marketers. **This would be expected to cost each breeding company an additional \$60,000 per annum or a total of \$240,000 per annum.** The WVCS could be expected to save these costs of annually commissioning long-term market demand studies as such information would be provided by the WVCS and is already allowed for as part of the WVCS budget of \$1 million per annum.

Improved varietal growing decisions

Improved decisions in varietal choice, particularly regarding new varieties, would be made with greater confidence in the knowledge of the grade (and hence price) for competing varieties. In the counterfactual scenario, it would be likely there would be competing varieties for sowing with less information than currently, resulting in poorer varietal choice by some growers in some regions. This is assumed to result in lowered returns to growers (lower average prices or yields) than may otherwise prevail with more complete information independently assembled and communicated for new varieties. **The assumptions made to value this benefit are a 1% yield gain foregone for 2.5% of wheat grown due to growers not taking full advantage of improved varieties in the early years after release.** Quantities and prices assumed are detailed in Table 8.

Distribution of benefits

All sectors of the supply chain are likely to share in the benefits valued. All business units compete in a particular sector so that competition should ensure that benefits are not captured totally by a single sector. Does competition occur?

The Productivity Commission (PC) has recently completed an inquiry into the new Wheat Export Marketing Arrangements following deregulation in July 2008 (PC, 2010a). The draft report states that competition in the exporting of bulk wheat has progressed smoothly and has generated net benefits to the industry from exports to

a larger number of countries than previously. Further, increasing on-farm storage and competition between transport modes and storage and handling operators are leading to improvements in supply chain efficiency. The additional monthly information by state on wheat stocks, exports and domestic use (collected by ABS and funded by the Australian Government as an interim measure) has been assisting the efficient operation of the wheat market by providing information to buyers and sellers.

The report recommends that the existing accreditation scheme for exports cease as from September 2011; as well, the access test for the bulk handling companies who also export should be abandoned from 2014. In future, maintenance of competition should rely solely on the Trade Practice Act.

If it is assumed that the PC position on competition is correct, the benefits from a WVCS will be distributed according to the elasticities of supply and demand for wheat/services operating between each step in the supply chain. However, it is not possible to apportion the long-term benefits to particular sectors without making a whole series of untested assumptions.

Beneficiary pays

If the distribution of benefits is likely to be throughout the chain, and the concept of beneficiary pays is adopted, then it is reasonable to assume that all sectors of the chain should contribute to the cost of the WVCS.

Wheat classification was viewed by the Productivity Commission (PC, 2010a) as being an industry good with any benefits being restricted to the wheat industry. Industry goods such as wheat branding and information to service the free market should also be best managed and paid for via an industry-led body. The PC also states that the most efficient approach to funding market information is through an existing compulsory industry levy. By implication, a similar approach could be argued for the industry good delivered by a wheat classification scheme.

As the costs of levies are likely passed along the supply chain in a similar fashion to benefits as discussed earlier, then it does not matter necessarily at what point in the supply chain the funds for financially supporting a WVCS are collected. Freebairn and Edwards (1982) pioneered an analysis into the distribution of research gains in multistage production systems. Their paper concluded that cost reductions in one part of the system provided benefits along the supply chain including for producers and consumers. Under the conditions examined they showed that the distribution of benefits was the same whether the impact occurred at the non-farm input, farm or marketing sectors. The relative distribution depended on the elasticity of demand and the supply elasticities of value added at each stage of the production chain. Also, the cost of research would be shared between producers and consumers in the same ratio as the benefits from research as had been established for single stage markets (IAC, 1976).

If the GRDC levy system was used to fund the WVCS, then this would be equitable and efficient as it is most likely that the incidence of costs and benefits would be the same for each member of the supply chain. Under the existing PIERD Act, this may not be possible. However, the recent draft report by the Productivity Commission on the Rural Research and Development Corporations (PC, 2010b) recommends a change that would seem to allow GRDC to support funding the WVCS via its R&D levy provided certain conditions are met:

“The Primary Industries and Energy Research and Development Act 1989 (Cwlth) should be amended so that the statutory Rural Research and Development Corporations (RDCs) can add marketing to their functions, where this is supported by the majority of levy payers and approved by the Minister for Agriculture, Fisheries and Forestry. The amendments should ensure that government contributions to any RDC that takes on marketing functions are only used to fund research and development, as defined in the Act” (PC, 2010b, p 185).

While this appears a promising and efficient solution, there are two reasons why this may not be the preferred industry solution to funding a WVCS:

- i. There may be some unease about the competitive aspects of part of the supply chain so that the incidence of costs and benefits may not be as expected.
- ii. A new structure for the WVCS may be more closely ‘industry owned’ if costs of the scheme are more visibly seen to be contributed by the different sectors.

Summary of Assumptions

A summary of the key assumptions made is shown in Table 8.

Table 8: Summary of Assumptions

Variable	Assumption	Source
Investment Costs		
Transition Period	GRDC funding	Table 3
Post 2010	\$1 million per annum	Consultant estimate
Marketing benefit (Main)		
Maximum price fall avoided	1%	Consultant estimate
Maximum proportion of wheat exports affected	15%	Consultant estimate based on Australian Prime Hard exports as percentage of total exports (GGA, 2010)
Average quantity of wheat exported in five years to June 2009	12,592,000 tonnes per annum	ABARE (2009)
Average export price for wheat in five years to June 2009	\$315 per tonne	ABARE (2009)
Benefit timing	Benefits commence in 2010/11 and increases to maximum by 2013/14	Consultant estimate
Marketing benefit (Alternative to Main)		
Number of marketers having to employ additional technical expertise	15	Consultant estimate
Cost of technical expertise	\$20,000 per marketer per annum	Consultant estimate
Lowered costs in wheat breeding		
Maximum cost of market demand studies avoided	Cost of \$60,000 per annum avoided by four wheat breeding	Consultant estimate

	companies	
Benefit timing	Benefits commence in 2010/11	Consultant estimate
Improved varietal grower decisions		
Yield loss avoided	1%	Consultant estimate
Proportion of wheat grown affected	2.5%	Consultant estimate
Average export price for wheat in five years to June 2009	\$315 per tonne	ABARE (2009)
Average total production of wheat in five years to June 2009	18,477,000 tonnes per annum	ABARE (2009)
Benefit timing	Benefits commence in 2010/11 and increase to maximum by 2011/12	Consultant estimate

Results

All past costs and benefits were expressed in 2009/10 dollar terms using the CPI. All benefits after 2009/10 were expressed in 2009/10 dollar terms. All costs and benefits were discounted to 2009/10 using a discount rate of 5%. The base run used the best estimates of each variable, notwithstanding a high level of uncertainty for many of the estimates. All analyses ran for the length of the investment in the transition period plus 30 years from the last year of investment in the transition projects (2010/11).

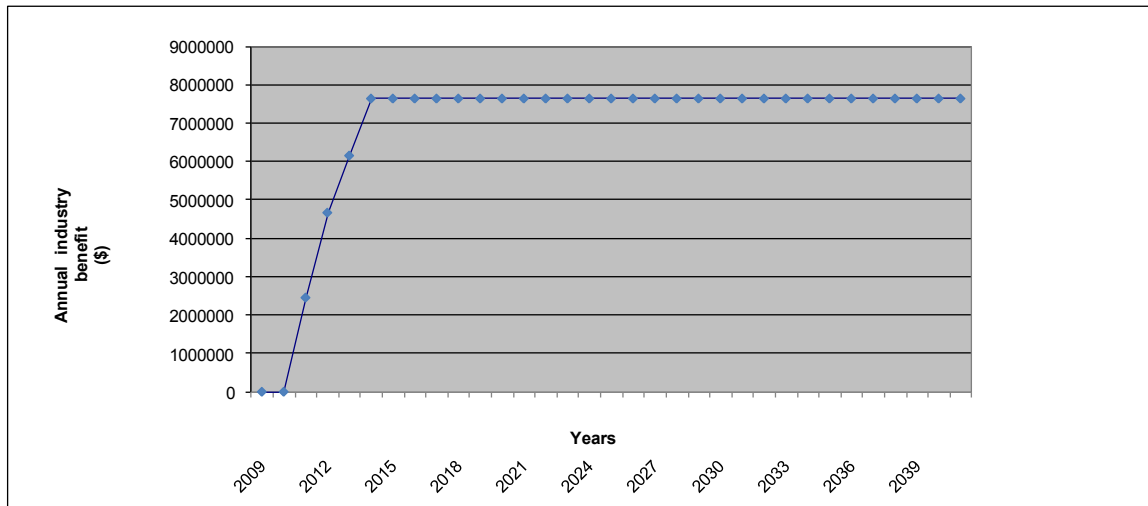
Investment criteria were estimated for the total investment. Criteria could have been estimated for the GRDC investment in the transitional period (5% of the total investment) plus its contribution to the ongoing funding, but this latter parameter was uncertain. If this were carried out, the rate of return to GRDC would have been somewhat lower compared to the rate of return to the total investment due to the timing of the transitional funding (only GRDC) being earlier than the mainstream funding over the 30 years. The investment criteria estimated for the total investment are reported in Table 9.

Table 9: Investment Criteria for Total Investment for Each Benefit Period (discount rate 5%)

Criterion	0 years	5 years	10 years	15 years	20 years	25 years	30 years
Present value of benefits (m\$)	2.34	29.88	54.57	73.93	89.09	100.97	110.28
Present value of costs (m\$)	2.48	6.60	9.83	12.36	14.35	15.90	17.12
Net present value (m\$)	-0.14	23.28	44.74	61.56	74.74	85.07	93.16
Benefit cost ratio	0.94	4.53	5.55	5.98	6.21	6.35	6.44
Internal rate of return (%)	negative	110.8	112.4	112.5	112.5	112.5	112.5

The annual gross benefit cash flow for the investment in an ongoing WVCS is shown in Figure 2.

Figure 2: Annual Benefit Cash Flow



Benefit Sources

The proportion of benefits estimated from each source of benefit is provided in Table 10. As each benefit defined in Table 10, is likely to be shared along the supply chain, the relative magnitude of benefits estimated cannot be assigned directly to growers, breeders and marketers.

Table 10: Source of Benefits Estimated for the Continuation of the Wheat Classification Scheme (discount rate 5%, 30 years)

Source	Present Value of Benefits (PVB) (\$ m)	Proportion of PVB (%)
Marketing benefits	84.54	77
Improved varietal choice	22.00	20
Reduced wheat breeding costs	3.74	3
Total	110.28	100

Sensitivity Analyses

Sensitivity analyses were carried out on several variables and results are reported in Tables 11 to 13. All sensitivity analyses were performed using a 5% discount rate with benefits taken over the life of the investment plus 30 years from the year of last investment. All other parameters were held at their base values.

Table 11 shows the investment criteria when the discount rate is varied. The benefit cost ratio is not particularly sensitive to the discount rate, since most of the investment in the WVCS is ongoing investment with benefits captured early rather than a large initial investment followed by time-distant benefits.

Table 11: Sensitivity to Discount Rate
(Total investment, 5% discount rate, 30 years)

Criterion	Discount Rate		
	0%	5% (Base)	10%
Present value of benefits (\$m)	227.34	110.28	64.17
Present value of costs (\$m)	32.47	17.12	11.06
Net present value (\$m)	194.87	93.16	53.11
Benefit cost ratio	7.00	6.44	5.80

Table 12 shows the sensitivity of the investment criteria to changed assumptions regarding the marketing benefit. The very conservative assumption of only 20% of the base assumption still provides a positive return at the 5% discount rate. However, the more aggressive assumption of double the base assumptions provides a very large present value of benefits and high rates of return.

Table 12: Sensitivity to Changes in Assumptions on Prices and Proportions Used in Valuation of Marketing Benefit
(Total investment, 5% discount rate, 30 years)

Criterion	Price and proportions		
	0.2% price and 3% quantity affected	1% price and 15% quantity affected (Base)	2% price and 30% quantity affected
Present value of benefits (\$m)	29.12	110.28	363.90
Present value of costs (\$m)	17.12	17.12	17.12
Net present value (\$m)	12.00	93.16	346.78
Benefit cost ratio	1.70	6.44	21.26
Internal rate of return (%)	35.5	112.5	329.3

Table 13 shows the sensitivity to the assumption that there would be no price fall in the counterfactual scenario. Instead it is assumed that the counterfactual includes a cost borne by the marketers from increasing their technical capacity to understand and interpret the data for new varieties generated by the plant breeders. This analysis uses the 'alternative' assumption for market benefits as defined in Table 8. This assumption is that with the WVCS 15 marketers avoid the cost of increasing their technical expertise at a cost of \$20,000 each per annum. It is then assumed that parcel consistency will be maintained without any price fall for any wheat. This provides a bottom line or minimum benefit for this aspect of a WVCS.

The results show that with the alternative assumption of a cost increase to marketers and no wheat affected by a price fall without the WVCS, the investment is still estimated to provide a positive return.

Table 13: Sensitivity to Changes in Assumptions on Marketing Benefits: No Price fall but Employment of Additional Expertise Avoided by the WVCS
(Total investment, 5% discount rate, 30 years)

Criterion	No price fall and no quantity affected but additional expertise employed	1% price and 15% quantity affected (Base)
Present value of benefits (\$m)	30.42	110.28
Present value of costs (\$m)	17.12	17.12
Net present value (\$m)	13.30	93.16
Benefit cost ratio	1.78	6.44
Internal rate of return (%)	40.7	112.5

One other sensitivity result was that the break-even annual cost of the WVCS, given the assumptions for benefits was just over \$7 million.

Advancing the Benefits

Earlier in this analysis it was suggested that the counterfactual scenario could have eventually produced a system similar to what is now expected. So in the event of a WVCS evolving in the counterfactual to the same point but its evolution delayed by five years compared with what has happened, a further set of investment criteria were estimated. Both benefits and costs were assumed to be delayed five years and the annual benefits and annual costs adjusted accordingly. The resulting net present value was \$31.2 million and the benefit cost ratio 6.69. The net present value has fallen compared to the base analysis due to the benefits being delayed.

Monte Carlo Analysis

The following probabilistic analysis uses a set of probability distributions for specific variables used in the analysis. The variables and their distributions used in this stochastic analysis are defined in Table 14. The distributions for all variables were assumed triangular.

A Monte Carlo simulation process with 5,000 iterations was applied to generate probability density functions of two investment criteria, the net present value for the WVCS and the benefit cost ratio.

Table 14: Variables and their Probability Distributions

Variable	Minimum	Most likely	Maximum
<i>Future Cost of WVCS</i>			
Cost of ongoing WVCS (\$ per annum)	500,000	1,000,000	1,500,000
<i>Marketing Benefit</i>			
Market export wheat price fall avoided (%)	0	1	2
Proportion of export wheat subject to price fall (%)	0	15	30
<i>Lowered costs in Wheat Breeding</i>			
Cost of market demand studies	0	60,000	120,000

avoided per breeding company (\$)			
Improved varietal choice decisions			
Yield loss avoided (%)	0	1	2
Proportion of wheat grown affected (%)	0	2.5	5

Figure 3 shows the distribution of the net present value for the retention of the WVCS. For the simulations run made, the results showed that the net present value is most likely (90% confidence) to lie in the range of \$21.1 million to \$193.2 million. Also, given the assumptions made there is less than a 1% chance that the net present value of the investment will be negative.

Figure 3: Distribution of Net Present Value for Retention of the WVCS (Total investment, discount rate 5%, 30 years)

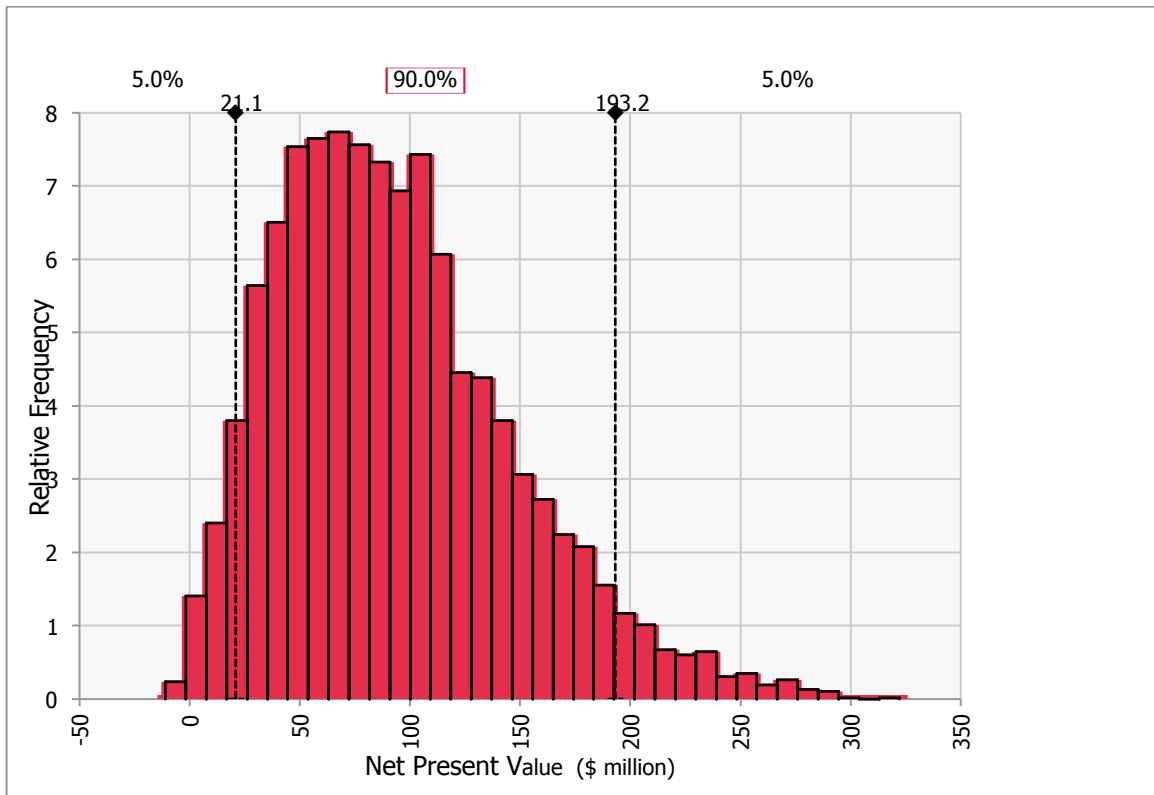
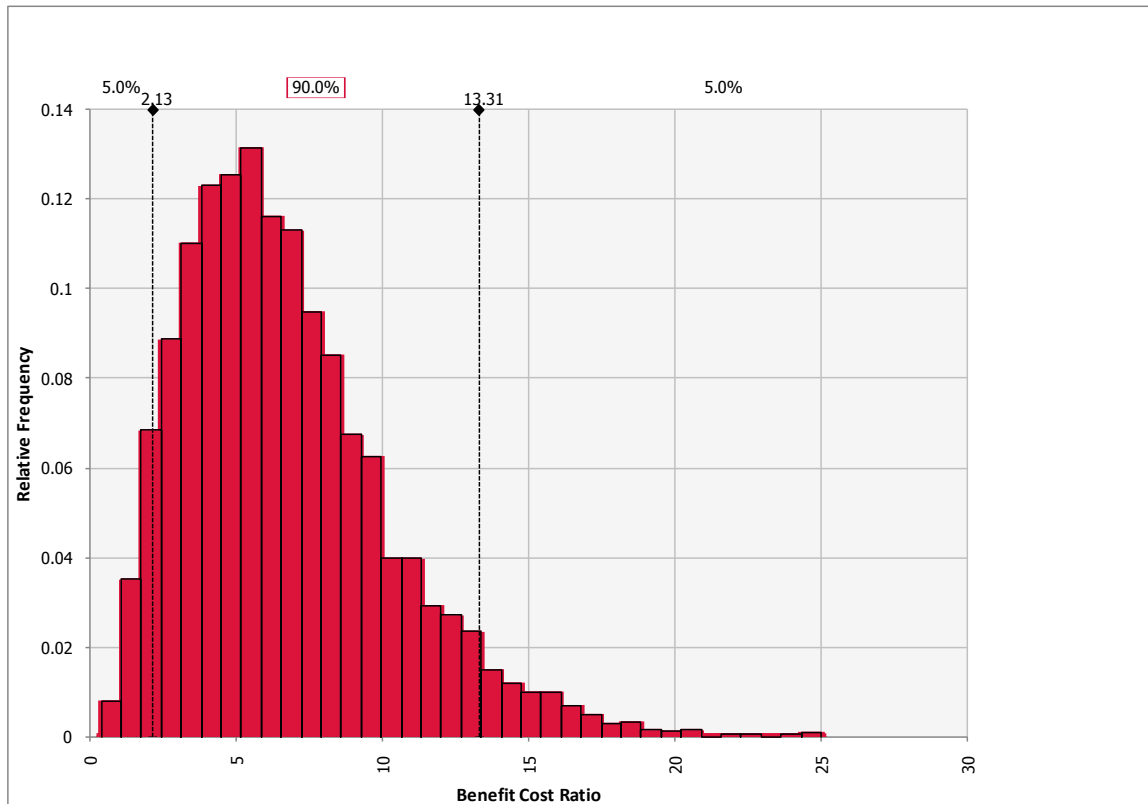


Figure 4 indicates the benefit cost ratio is likely to range between 2.1 and 13.3 with a less than 1% chance of being less than 1. In other words, given the assumptions made, there is greater than a 95% probability that the investment returns will be positive at a 5% discount rate.

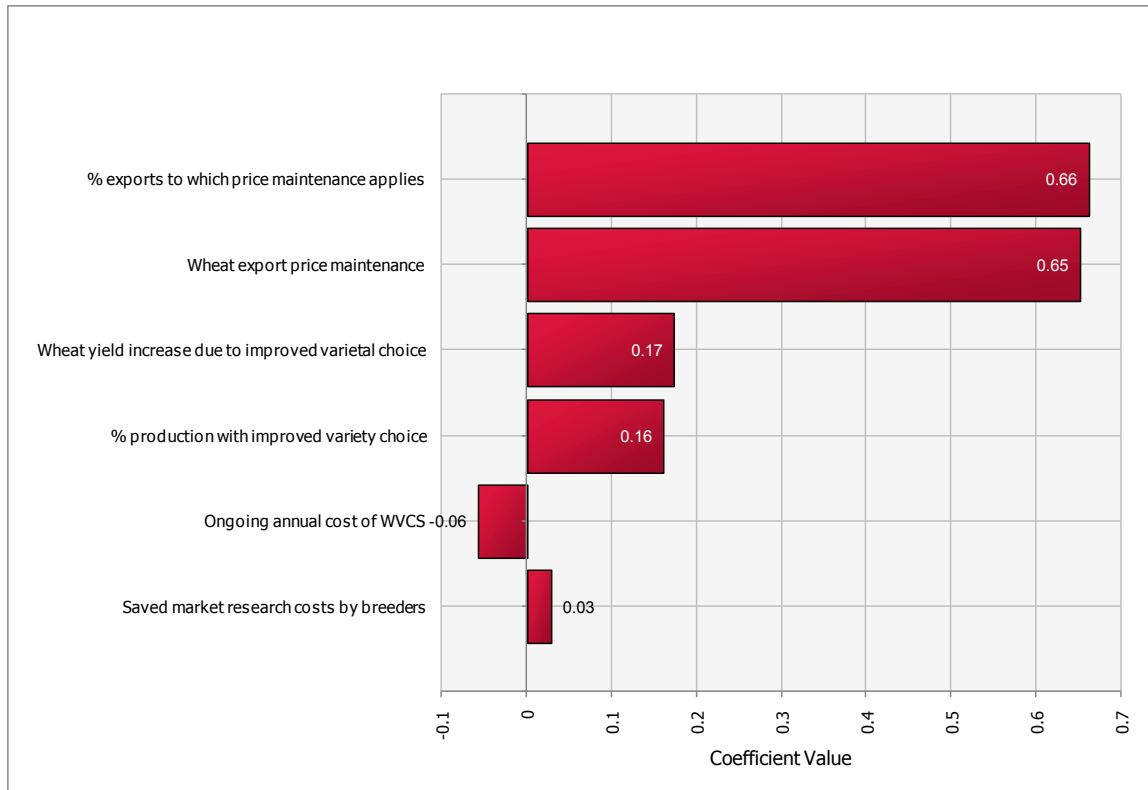
Figure 4: Distribution of Benefit Cost Ratio)
(Total Investment, discount rate 5%, 30 years)



Tornado Diagram

Figure 5 shows the individual input variables that are the most influential in driving the net present value of the investment in the WCVS (represented by regression coefficients). Variables associated with the marketing benefits are the most important drivers of value, followed by those variables affecting the varietal choice benefit, and then the annual cost of the WCVS.

Figure 5: Tornado Diagram for Net Present Value of the WVCS



7. Confidence Rating

The results produced are highly dependent on the assumptions made, many of which are uncertain. There are two factors that warrant recognition. The first factor is the coverage of benefits. Where there are multiple types of benefits it is often not possible to quantify all the benefits that may be linked to the investment. The second factor involves uncertainty regarding the assumptions made, including the linkage between the research and the assumed outcomes.

A confidence rating based on these two factors has been given to the results of the investment analysis (Table 15). The rating categories used are High, Medium and Low, where:

- High: denotes a good coverage of benefits or reasonable confidence in the assumptions made
- Medium: denotes only a reasonable coverage of benefits or some significant uncertainties in assumptions made
- Low: denotes a poor coverage of benefits or many uncertainties in assumptions made

Table 15: Confidence in Analysis of Investment

Coverage of Benefits	Confidence in Assumptions
Medium	Low

8. Conclusions and Lessons Learned

After deregulation of marketing within the wheat industry, GRDC took responsibility for wheat classification at the request of the Minister for Agriculture, Fisheries and Forestry following a recommendation by the Wheat Industry Expert Group in 2008. GRDC initially contracted AWBI to continue with their previous role for a 6 month period, facilitated the establishment of the Wheat Classification Council to initially manage the classification guidelines and, through the WCC and other groups in the supply chain is developing a legal structure to perform an ongoing role in wheat classification.

The investment by GRDC in transitioning the wheat classification arrangements after deregulation has been a complex assignment but appears to have proceeded smoothly to date.

The GRDC investment in the transitional projects have first maintained and protected the original classification functions of the classification system without any legal structure/agreement or formal mandate. The investment has provided a platform for development of industry management and a likely consensual structure and function of the wheat classification process.

The extent of industry support for a variety classification scheme has been tested during the transitional period. The support appears to be strong from all interests including marketers, exporters, local grain processors and domestic end users, those involved in storage and handling, the wheat breeders and grain growers. A legal structure is currently being pursued.

The first challenge in this analysis has been to identify the benefits that may accrue to the industry from wheat classification from both support during the transitional period and the ongoing arrangements thereafter. The second challenge was to place some value on the likely benefits arising and to compare these with the resources expended on the transitional period and the costs of an ongoing system.

The challenge in both identifying benefits and estimating values for them depends on some postulate of what would happen with no formal classification system. The most likely scenario for the counterfactual (that is, without GRDC investment) was considered to be:

The scenario is that a single wheat classification scheme would no longer have operated, possibly a continuation with the current classes for a period, after which some or all wheat marketers would have developed their individual classification schemes. It is possible that a disorderly transition may have occurred, with a potential deterioration of the current quality image of Australian wheat and higher

costs of physical distribution and less efficient breeding operations. These negative impacts would have lessened over time as the system would have gravitated to an improved structure and function. It is possible that the counterfactual would have eventually have evolved into a system similar to what is likely to be developed under the GRDC transition investment scenario.'

All sectors along the grains supply chain should benefit from an effectively run and ongoing WVCS. As the costs of levies are likely passed along the supply chain in similar fashion to benefits then the GRDC levy system could be used to fund the scheme pending industry support and advice from the Minister. Although likely to be the most efficient funding method, a GRDC levy might not be the most preferred by industry. This is because the similarity of the incidence of costs and benefits may not be accepted by industry as there may be some unease about the competitive aspects of parts of the supply chain. Further, and probably of most importance, a new structure for the WVCS may be more integrated and 'industry owned' if costs of the scheme are more visibly seen to be contributed by the different sectors.

The benefits identified included the following with value estimates attempted for the first three listed:

- Continued quality image and consistent quality of Australian wheat parcels marketed resulting in the maintenance of a price premium for proportion of exported bulk wheat.
- More efficient wheat breeding
- Improved varietal decisions by growers
- More efficient and transparent pricing
- Lowered storage and handling costs
- Capacity building along the value chain

The benefit cost analysis included costs of the GRDC transition funding as well as the ongoing likely annual cost of the classification scheme of \$1 million per annum. Based on the assumptions made, the net present value was positive with an expected net present value of \$93 million over 30 years at a 5% discount rate, a benefit-cost ratio of 6.4 to 1, and an internal rate of return of 112%.

Acknowledgments

Leecia Angus, Executive Manager, Corporate Strategy and Impact Assessment, GRDC

Andreas Betzner, Manager Wheat and Barley Breeding, GRDC

Vince Fernandes, Impact and Business Analyst, GRDC

John Harvey, Executive Manager, Varieties, GRDC

Robert Sewell, Chairman, Wheat Classification Council

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