

National Land & Water Resources Audit

An Initiative of the Natural Heritage Trust

**PROSPECTUS FOR A NATIONALLY
COORDINATED INDUSTRY SURVEY**

November 2005



**Natural
Heritage
Trust**

*Helping Communities
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An Australian Government Initiative

This report has been produced in partnership with:

abare

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The National Land & Water Resources Audit is an initiative of the Natural Heritage Trust. The Audit provides data, information and nationwide assessments of Australia's land, water and biological resources to support sustainable development.

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Purpose

The purpose of this prospectus is to propose the integration of a Nationally Coordinated Industry Survey (NCIS) with existing ABARE production and financial surveys of farm enterprises and to outline to potential co-investors the ensuing gains in effectiveness and efficiency.

The benefits to co-investors, such as the Australian Government, Research and Development Corporations (RDCs) and state jurisdictions include the ability to:

- address major information gaps in current collections relating to the adoption of specific management practices and capacity to change;
- improve the reliability of estimates through a larger sample frame; and
- obtain information on a wider range of agricultural industries.

Scope of NCIS

To enhance the effectiveness and efficiency of current national data collection activities by undertaking a nationally coordinated industry survey to deliver:

- a core set of production, financial and farm household information allocated to cadastral boundaries;
- a set of new information on the uptake of specific land management and business practices, and landmanagers' capacity to change and aspirations, and the relative ease of adoption of different practices; and
- information on the impact of major government programs [such as the National Action Plan for Salinity and Water Quality (NAP), the Natural Heritage Trust (NHT) and Agriculture – Advancing Australia (AAA)] and potentially industry programs.

National data collections currently provide a variety of information on specific regional or industry issues. However, there are few nationally consistent and ongoing sources of data capable of informing Australia-wide policy and programs for natural resource management (NRM) and structural adjustment. Existing data collections take place at either a broad national scale or at detailed regional scales, and the two cannot currently be linked. The focus of a NCIS is to provide a whole-of-government perspective to data collection in order to avoid duplication and inconsistencies across collections, and to reduce survey respondent burden.

Such a survey would also provide an opportunity to address major data and information gaps in current collections. Key information gaps include the links between natural resource condition, land management practices, land use, and the influence of social and economic factors. There is a need to explore the aspirations of farm business managers, their capacity to change and adopt new land and business management practices, and the attributes of those practices. Detailed

industry or regional level data, then, needs to be collected within a nationally consistent survey framework.

Why ABARE surveys

The Australian Bureau of Agricultural and Resource Economics (ABARE) is Australia's largest applied economic research and policy analysis agency, with sixty years of operational experience. ABARE has approximately 150 professional staff, providing relevant, timely and independent economic research and policy advice to a range of clients on a broad range of national and international issues. ABARE has a worldwide reputation for the quality of its research and for the contribution it makes to national and international economic debate.

At the core of ABARE's activities are the farm survey design and collection infrastructure that underpins the annual Australian agricultural and grazing industries survey (AAGIS) and the Australian dairy industry survey (ADIS). The same infrastructure also supports periodic regional or industry specific surveys designed to monitor farm level economic performance, NRM issues, and the social well being of farm households. A selection of some of the commissioned surveys ABARE has undertaken for government and industry clients is provided in Table 1.

Table 1: Selected ABARE surveys and supplementary questionnaires^a

<i>Survey (Funded by)</i>	<i>Year</i>
Resource Management Supplementary (DAFF)	2004-05
NSW Vegetation Survey (ABARE)	2004-05
Gippsland Irrigation Survey (Gippsland Vegetable Growers Association)	2003-04
Farm Business Programs Supplementary (DAFF)	2003-04
Flock and Pasture Management (AWI)	2003-04
Land Use Supplementary (DAFF)	2003-04
Queensland Drought Strategies (QDPI)	2002-03
Burdekin Catchment Survey (DEH)	2001-02
Resource Management Supplementary (DAFF)	2001-02
Uptake of new technology in the dairy industry supplementary (DA)	2001-02
Small farms and other industries survey (DAFF)	2001-02
Intentions of dairy farmers supplementary (DA)	2000-01
Grain Technology Adoption Supplementary (GRDC)	2000-01
Pasture and Livestock Management Supplementary (MLA)	2000-01
Wool Technology Adoption Supplementary (AWI)	1999-2000
Uptake of new technology in the dairy industry supplementary (DRDC)	1999-2000
Change in services for farmers and farm families supplementary (DOTARS)	1999-2000
Farm household expenditure supplementary (DAFF)	1998-99
Sustainable grazing, attitudes and practices supplementary (MLA)	1998-99
Resource management supplementary (DAFF)	1998-99

^a Supplementary questionnaires are undertaken in conjunction with ABARE's annual Australian agricultural industries survey and/or Australian dairy industry survey.

ABARE's skills in interpreting survey data and identifying contributing factors are illustrated in recent research examples such as analysis of the farm income effects of drought (published in the September 2003 edition of Australian Commodities) <http://abareonlineshop.com/product.asp?prodid=12581>.

In addition, the ABARE report *Natural resource management on Australian farms* presents results from a 2001-02 survey. That survey was designed to investigate awareness and management of land degradation by Australian broadacre and dairy farmers, as well as influences on the management of land degradation – including participation in Australian government NRM (<http://www.abare.gov.au/surveys/resourcemgmtsurvey.html>).

Proposed budget

Three options (discussed below) based on the current ABARE surveys provide for a mix of expanding sample sizes for industries currently surveyed, expanding the range of industries surveyed, and/or targeting particular industries or regions with increased sample. The estimated costs of the three options are comprised of survey and questionnaire design, collection of data for additional sample points, and reporting of simple descriptive statistics.

The number of additional sample points and the best mix of options will depend on the budget available. Increased sample sizes would allow results to be analysed at a finer resolution (such as industry by region) and/or survey estimates to be produced with greater reliability. The current survey sample size and range of industries covered are shown in Table 2.

1. A budget of \$200 000 would provide for around 180–220 additional sample points. Such a budget would be best targeted at expanding the range of industries surveyed (for example, by including cotton and horticulture) or targeting particular industries or regions with increased sample.
2. A budget of around \$500 000 would provide for around 450–550 additional sample points. Such a budget would allow some additional industries to be targeted as well as boosting sample sizes for industries currently surveyed.
3. A budget of around \$750 000 would provide for around 680–830 additional sample points allowing some combination of all three options.

Potential gains

Existing NRM data collections in Australia are typically designed for meeting sets of objectives that are consistent with particular program or disciplinary perspectives. Such collections also tend to be focused on particular industries or regions. From a whole-of-government perspective, the existing fragmentation of data collections results in some duplication, inflexibilities and greater respondent burden.

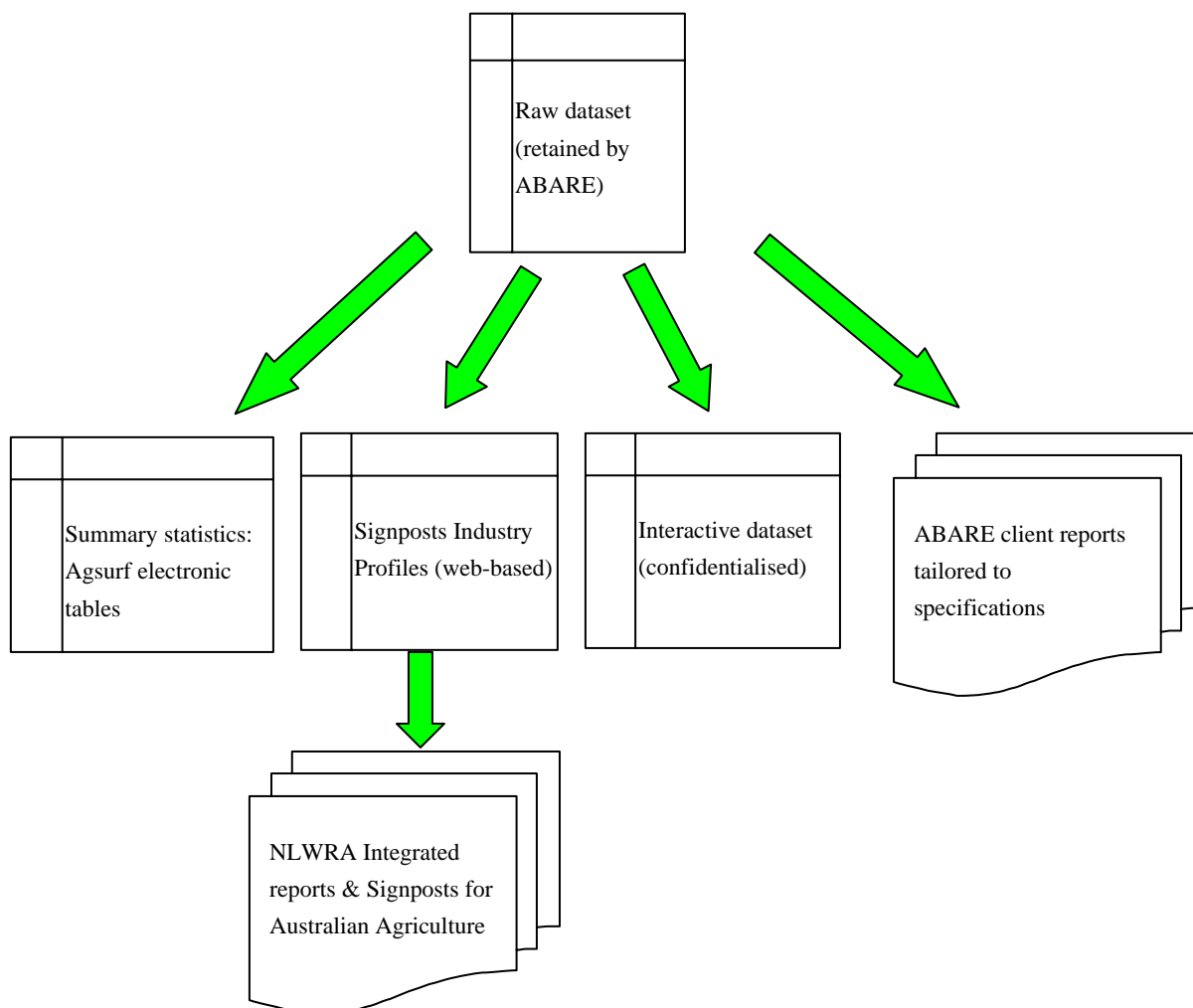
Designing a data collection system around an integrated conceptual framework provides for a common language to be used and for organising ideas to facilitate greater collaboration and cohesion across NRM policies and programs. Combining such a framework with existing survey infrastructure such as ABARE's farm surveys enables results to be better targeted to meeting the needs of decision makers while ensuring the survey estimates are more reliable, consistent and repeatable over time and across a range of industries and scale.

At the same time, information will be collected on each enterprise's cadastral boundaries, allowing the links between natural resource condition, land management practices, land use, and the influence of social and economic factors to be explored.

Potential Outputs

The proposed data collection could provide an integrated dataset of land and business management practices, farm production, financial and farm household information that will enable the links between financial and physical farm performance and management practices to be analysed. A range of outputs will be generated as a result of the project, as described in Diagram 1, and will be tailored to the requirements of individual clients and the nature of the particular outcome or issue to be investigated.

Diagram 1 Potential NCIS Products



Summary statistics via the internet

Descriptive statistics – such as averages per farm, cross-tabulations, comparative analyses, and distributional statistics by industry and region – could be made available through a platform of internet based delivery. ABARE currently presents farm survey data through the internet based package *Agsurf* (<http://www.abareconomics.com/interactive/ag surf/index.htm>), with data available at national, state, industry or ABARE regional levels and output able to be selected interactively by users. Other methods for interactive delivery of survey data will require further consultation with stakeholders to determine actual requirements, subsequent development costs, and the possible development of arrangements for providing access to unit level records

(subject to ABARE/investor confidentiality concerns being addressed). The level of reporting possible will depend on the sample size chosen for each industry and region. For example, the current AAGIS survey is designed to provide reliable estimates for the broadacre cropping and grazing industries by ABARE regions

ABARE Client reports

Co-investors in the survey will be able to stipulate their specific requirements for reporting. The NLWRA will be commissioning a report on the current level of adoption across industries and relationships with land managers' capacity to change, aspirations and the ease of adopting individual practices. The report will include a spatial representation of capacity to change along with cases studies exploring the costs/benefits of adopting alternative management practices.

Confidentialised dataset with unit record data

A confidentialised dataset could be generated to allow individual users to have interactive access to unit record data. This will enable users to conduct ad hoc enquiries of the survey data to:

- produce means, correlations or other descriptive and summary measures;
- use data as input into mathematical models or for other types of analysis (e.g. factor analysis); and
- provide graphical or pictorial representations of the characteristics of a population.

Signposts for Australian Agriculture Industry Profiles

Information from the Unit level dataset will form a basic input into the Signposts electronic profiles being funded under a related Audit project – Signposts for Australian Agriculture Stage 3. Examples of the current Signposts for Agriculture industry profiles are available at the Audit's website: <http://www.nlwra.gov.au/projects.asp?section=70#outputs> and will be expanded to link economic, social and environmental outcomes with contributing business and land management practices.

NLWRA Integrated reports

Information from the Unit level dataset and Signposts Industry profiles will be used in a number of integrated reports funded through other projects by the Audit – including the Signposts for Australian Agriculture report on agriculture's contribution to ecologically sustainable agriculture.

Survey methodology

Data collection method

The proposed method for collecting farm level information is to conduct face to face interviews. The key reasons for this preference are three-fold. First, using existing ABARE survey infrastructure (including the questionnaire, sample design methodology and data editing) provides a ready vehicle for conducting such a survey at minimum cost. Second,

conducting face-to-face interviews provides the only method for collecting the required level of detail and reliability of financial and other complex information. Advantages of face-to-face interviews over other survey methods (such as telephone or mail out surveys) include higher response rates and improved data quality. Third, data collected in the existing AAGIS and ADIS surveys allow a full profile of average physical and financial performance of surveyed farms to be analysed in conjunction with other data (such as land management and business practices).

During an interview, the core questionnaire typically takes around 2–3 hours (depending largely on the complexity of the survey respondents farming operations) with supplementary surveys providing an additional half hour. ABARE's experience has found a survey of such length to be an ideal compromise between maximising the detail of data that can be collected while minimising respondent burden.

Telephone interviews are less expensive than face-to-face interviews. However, there are limits to the number and complexity of questions that can be asked and non-response may be higher than with face-to-face interviews. Mail out surveys are also less expensive than face-to-face interviews, but generally suffer from low response rates and are limited in the number and complexity of questions that can be asked.

Ultimately, ABARE will be guided by client's specific data collection requirements and it is possible that the less expensive data collection techniques may be used, possibly for social information.

Questionnaire design

The core AAGIS/ADIS questionnaire provides comprehensive data on land area and land value; crop production and sales; irrigation (including water use by crop and pasture); livestock production and sales; farm receipts and costs; labour, debts and assets; and capital market value. These data will be complemented by supplementary questions to collect information on a range of business and natural resource management issues in addition to physical and financial data. Supplementary questions can be tailored to specific industries or regional issues that will be identified through consultation with co-funding organisations. These supplementary questions are intended to address issues such as uptake of specific land management and business practices, capacity to change and adopt specific management practices, and the impact of major government and industry programs.

Under a separate project, the Audit has commissioned the Bureau of Rural Sciences (BRS) and Hassall and Associates to work with Australian Government, RDCs and state jurisdictions to identify information priorities with respect to business and land management practices and to provide recommendations on appropriate questionnaire design for use at various scales of survey implementation. The two projects will report by April 2006 in time to be incorporated within the design of the NCIS, and are entitled:

- *The development and pilot of a set of indicators, survey methodology and tools to assess landmanagers' capacity to change and adopt sustainable management practices(BRS),*
- *National data and information priorities on business management practices (Hassall and Associates)*

Sample frame and size

ABARE proposes to use an Australian Bureau of Statistics (ABS) listing of key characteristics and industry information for all agricultural establishments in Australia as the frame for defining the target population and selecting the sample. Within this frame, target farms can be identified by state, region, industry and size classifications. An advantage of this method is that benchmark data – used to weight individual farm data in producing averages – provided by the ABS allows estimation of the degree to which surveyed farms are ‘representative’ of an industry in a particular region (that is, statistical estimates of sampling errors can be attached to the survey data). Rigorous design around the ABS sample frame also allows ABARE’s surveys to be repeatable over time.

For this proposal, actual survey sample sizes will depend on the number of industries required to be covered, depth of coverage desired (that is, national level versus state or regional), the type and variability of data to be collected, and desired confidence levels. Current sample sizes for ABARE surveys are shown in Table 2 as a guide to the sample sizes required to provide reliable and detailed estimates for an industry or region. Actual sample sizes will depend on the budget available and the desired scope of industry/regional coverage. Possible options might include a combination of:

1. Expanding the sample size for industries currently surveyed to enable data to be interpreted at a finer resolution.
2. Expanding the range of industries surveyed.
3. Targeting particular industries or regions with increased sample.

Survey cooperation

Obtaining cooperation from farmers in the survey will be important. With more than 25 years of experience conducting annual farm surveys ABARE has typically achieved high cooperation rates, perhaps because of its reputation for independence, integrity and confidentiality, while our trained field officers are able to quickly establish rapport with survey respondents by explaining who they are, why ABARE is doing the survey and how it will benefit the respondent by cooperating.

Reliability of the data

Primary considerations in designing appropriate survey sample sizes are the desired level of confidence in the data and the variability of the data to be collected. Essentially, the higher the level of confidence desired, and/or the more variable the data, the greater will be the number of sample points required. For example, producing estimates for an industry or region where farms are relatively similar in size and production characteristics will require fewer sample points than for an industry or region where there is a wide divergence in the size and production characteristics of farms.

Nested surveys

Nested surveys allow more detailed industry or region studies to be undertaken within the framework of a national survey. Information collected in the detailed surveys can be linked with the national survey via a common set of farm/respondent characteristics.

Industry coverage

The ABS frame provides for comprehensive coverage of all agricultural industries. Currently, ABARE surveys provide in-depth data and analysis for cereal cropping, broadacre grazing and dairy industries for farm businesses with an estimated value of agricultural operations (EVAO) of \$22 500 or more. ABARE has periodically carried out surveys of other agricultural industries, sectors and regions subject to the availability of funding. Recent ABARE farm surveys have included: the honey industry, the wine grape industry and a survey of small farms.

Estimated populations for each industry are provided in table 2 as a guide to the industries that might be included in the survey. Appropriate sample sizes will then need to be determined for each level of industry and region required. Some factors that should be taken into account when choosing the industries to be added include number of producers, regional spread or concentration of the industry, and value of industry production as a percentage of all agricultural production.

Table 2: Agricultural industries covered by the Australian Bureau of Statistics

<i>Industry</i>	<i>ANZSIC code</i>	<i>Estimated population^a</i>	<i>ABARE sample in 2003-04^b</i>	<i>ABARE Survey</i>
Grain growing	0121	14 614	279	AAGIS
Mixed livestock–crops	0122	16 308	225	AAGIS
Sheep–beef	0123	8 541	106	AAGIS
Sheep	0124	12 018	205	AAGIS
Beef	0125	35 501	373	AAGIS
Dairy	0130	10 359	219	ADIS
Plant nurseries	0111	1 648	Not covered	
Cut flower and flower seeds	0112	685	Not covered	
Vegetable growing	0113	4 297	400	Vegetable survey
Grape growing	0114	6 535	70	Wine grape survey
Apple and pear growing	0115	971	Not covered	
Stone fruit growing	0116	1 244	Not covered	
Kiwi fruit growing	0117	33	Not covered	
Other fruit growing	0119	4 875	Not covered	
Poultry farming (meat)	0141	781	Not covered	
Poultry farming (eggs)	0142	474	Not covered	
Pig farming	0151	870	Not covered	
Horse farming	0152	1 757	Not covered	
Deer farming	0153	5	Not covered	
Other livestock farming	0159	802	Not covered	
Sugar cane growing	0161	4 560	Not covered	
Cotton growing	0162	566	Not covered	
Other crop and plant growing	0169	1 710	Not covered	

^a Count of establishments with an EVAO of \$5000 or more in 2004. ^b Establishments with an EVAO of \$22,500 or more in 2004. *Source:* Australian Bureau of Statistics, Australian Farming in Brief 2005, ABS Catalogue No. 7106.0. ABARE Australian agricultural and grazing industries survey and Australian dairy industry survey, 2004-05.

Collection and data management

Survey data will be collected for the 2005-06 financial year using face to face interviews conducted between June and November 2006 by ABARE survey officers. These officers interview the farm operators or managers to obtain physical and financial details of the farm business. Further information is subsequently obtained from accountants, selling agents and marketing organisations on the signed authority of responding farmers.

Considerable effort is made to reconcile the information obtained from the various sources to produce an accurate description of the physical and financial characteristics of each sample farm in the survey.

Governance arrangements

The development and implementation of the survey methodology is being guided by a Project Advisory Committee (PAC) comprising senior policy officers from the Departments of Agriculture, Fisheries and Forestry, and the Environment and Heritage, RDCs, a State/Territory representative, the Audit and BRS.

Proposed timeframe

Date	Milestone
October 2005	Contract with NLWRA finalised.
November 2005	Meeting of Project Advisory Committee and finalisation of workplan.
23 November 2005	Present preliminary concepts for survey, two draft information papers, case studies and information products to SENCC and AAC.
March 2006	Confirm level of co-funding, design sample frame and finalise information papers.
April 2006	Confirm priority information needs and associated survey questions.
November 2006	Finalise data collection.
March 2007	Confirm information product requirements with co-investors and collate survey results in a dataset and output files for Signposts for Australian Agriculture – Stage 3.
April 2007	Provide platform for web-based delivery of dataset.
June 2007	Final report(s).

Related activities

The project will run concurrently with and draw upon the results of other Audit projects (listed below).

Title	Status
A conceptual framework for coordinating the integration of socioeconomic information for NRM decision makers	Completed
Signposts for Australian Agriculture – National data and information priorities on business management practices	Starts: November 2005 Finishes: April 2006

The development and pilot of a set of indicators, survey methodology and tools to assess landmanagers capacity to change and adopt sustainable management practices	Starts: October 2005 Finishes: April 2006
Signposts for Australian Agriculture – Stage 3	Starts: November 2005 Finishes: June 2006

For further information

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