final report

National Monitoring Network Scoping Study – Business Case

Executive summary

Across the broadacre agricultural industries (red meat, wool and grains) data on financial and physical performance are currently collected and analysed by a range of organisations in the not-for-profit and commercial sectors. These data sets are;

- collected using different protocols
- have varying geographic coverage
- varying enterprise and business data coverage
- stored using varying software packages, and
- analysed using different methodologies.

The National Monitoring Network (NMN) Scoping Study aimed to;

1) Identify the potential industry stakeholders who could contribute to, and benefit from, the development of an NMN.
2) Consult with relevant stakeholders to explain the NMN concept and seek their input to the business case and/or potential support for the NMN initiative.
3) Scope stakeholder interest in being involved in an NMN and propose a mechanism and structure to efficiently and consistently collect data and make it available to collaborators for analysis and interpretation.
4) Develop a Business Case to present to potential investors that provides the value proposition for investors, data contributors and individual producers submitting data to NMN.

This Scoping Study involved literature review, project analysis (current and previous), preparation of discussion papers and detailed consultation with some 26 organisations currently collecting data from 2,200 broadacre farms across Australia. This data collection is in addition to the 1,638 participants in the Australian Agricultural Grazing Industries Survey (AAGIS) undertaken by the Australian Bureau of Agricultural and Resource Economics (ABARE).

The consultation phase found that 22 of the organisations consulted were supportive of the development of an NMN and identified with the value proposition associated with;

- the collection and analysis of data using a consistent protocol and methodology
- having access to a larger and more comprehensive data set with which to benchmark their clients and provide strategic business advice
- the value to industry of a consistent and comprehensive data set for setting research and development priorities, undertaking evaluation and research and informing policy formation.

Whilst supportive of the concept of NMN, there was a significant level of concern about the reality of implementing an NMN which would have industry support and be sustainable in the long term. Some of the difficulties identified included;

- reaching consensus on a data collection protocol and analysis methodology
- recognition of the substantial prior investment by consultancy firms in systems to collect and analyse data
- ensuring that an NMN enhanced existing private sector consulting services and did not compete with them
- convincing producers to authorise the submission of their data to an NMN

- ensuring best practice in data base management, analysis and protecting client privacy.
- sustaining long term industry support and funding for the initiative.

This Business Case takes the generally high level of support for the concept of an NMN and presents a model for implementation that addresses the concerns identified during the consultation phase. The Business Case proposes a Pilot Phase for NMN in which;

1) The NMN governance and management structures are established.
2) The database is established and tested in a limited number of regions.
3) A validation project is undertaken with ABARE and AAGIS to identify the potential to increase the level of enterprise level reporting from the survey and validate/compare the output generated by AAGIS and NMN.

Subject to a successful two year Pilot Phase, full implementation of an NMN should be considered by the investors.

Contents

1. Rationale for National Monitoring Network

Across the broadacre agricultural industries (red meat, wool and grains) data on financial and physical performance are currently collected and analysed by a range of organisations in the not-for-profit and commercial sectors. These data sets are;

- collected using different protocols
- have varying geographic coverage
- varying enterprise and business data coverage
- stored using varying software packages, and
- analysed using different methodologies.

The National Monitoring Network (NMN) Scoping Study identified 26 independent organisations collecting data from some 2,200 broadacre farms across Australia. This list is by no means exhaustive, but it does identify the substantial quantities of data that are being collected in addition to the Australian Agricultural Grazing Industries Survey (AAGIS) survey, which currently covers 1,638 broadacre farms.

There is currently no available framework or network to support the aggregation of data sets to enable a more robust, comprehensive and consistent analysis of production system attributes and performance.

Whilst the AAGIS data set provides national coverage and a consistent methodology, industry has limited access to the raw data for research purposes and the lack of enterprise-level production information and financial analysis has been identified by industry as a limitation. The methodologies used by ABARE to weight the data collected in order to derive population estimates is not well understood or accepted by industry. AAGIS currently collects data from 1,638 farms nationally. Whilst this is considered a statistically significant dataset, the robustness of the reports at the Statistical Local Area (SLA) and Local Government Area (LGA) would be enhanced by increasing the data set size to 2,300 (ABARE, personnel communication).

A number of issues support the development of an NMN for the broadacre industries.

1) Not-for-profit investors in research, development and extension (RD&E), including State and Federal Governments and research and development corporations (RDCs), are increasingly being asked to demonstrate the impact of their investments on farm performance from a triple-bottom-line perspective, using ex-ante and ex-post evaluation. While data derived from an NMN will not directly provide evidence of practice change and R&D impact, it will provide important input data to evaluators using a range of modelling tools and analysis to evaluate R&D outcomes.

2) Data are required for identifying R&D priorities and informing policy development in the agricultural sector. A substantial data set covering the broadacre industries would increase the capacity of R&D organisations and industry to identify future research priorities and provide quality research to inform policy debates.

3) The Federal Government is seeking definitive evidence of increased collaboration and cost-efficiencies between state agencies, CSIRO and RDCs, as demonstrated by the recent Primary Industries Standing Committee initiative to develop RD&E Frameworks for all agricultural industries, and the Productivity Commission Enquiry in Rural RDCs.

4) Government departments, such as ABARE, have significant capacity to analyse data, but increasingly face limited resources for data collection. At the same time, ABARE is under pressure from industry to collect additional data and to meet the differing needs of government and industry. The costs of collecting data through AAGIS are

rising in response to changes in scope of data collection and analysis and general costs increases within the economy.

5) Data sets containing financial and/or production information, including those from the private sector, are typically limited in their geographic and demographic coverage, and are inconsistent in the protocols and methodologies they use for data collection, analysis and/or reporting. The development of standard protocols for data collection and an NMN-agreed methodology for analysis would allow private sector advisors to compare the performance of their clients with a national and regional data set. It would also increase communication, collaboration and capacity within the private advisory sector, and thus the potential for enhanced cost-efficiencies within and between private service providers. Importantly, it is critical that any implementation of an NMN recognises and enhances the potential for commercial advisory services and does not compete or de-value them in any way. These benefits should ultimately flow through to their clients in the form of enhanced benchmarking within their industry sectors.

6) There is significant potential to collaborate across the broadacre farming sector to efficiently collect a single set of data which can be used by the sheepmeat, beef, wool and grains sectors, and reduce the burden on individual producers or businesses, who often provide separate and/or fragmented data to a range of agricultural industries and organisations.

The outputs that will be delivered by a National Monitoring Network are listed in Table 1.

Table 1: Outputs from the National Monitoring Network

	Output
1.	A set of production and financial data relevant to the red meat, wool and crop industries, collected using a consistent protocol.
2.	A data set, which can be used by all the broadacre industries to extract financial and production information using a standardised methodology.
3.	A data set for comparative analysis with the AAGIS survey.

The outcomes that could be expected from a National Monitoring Network are listed in Table 2.

Table 2: Outcomes from the National Monitoring Network

	Outcome
1.	Agreement across the not-for-profit and commercial advisory sectors on the appropriate protocol for data collection for the purposes of an NMN.
2.	Agreement across the not-for-profit and commercial advisory sectors on the appropriate methodology for analysis of production and financial information for the purposes of a NMN.
3.	Improved data availability for identifying future research priorities and informing policy debates.
4.	Evidence of increased collaboration and efficient use of resources across the rural research and development corporations.
5.	Increased collaboration with and support for commercial advisory services, through capacity building and resources to encourage producers to participate in data collection and benchmarking.
6.	Improved data availability for undertaking evaluation of research and development investments.

2. Key Issues for an NMN to address

Findings from the Consultation Phase

The consultation phase of the NMN Scoping Project identified and interviewed 26 organisations currently collecting production and physical data and providing benchmarking analysis to their clients. The majority of these organisations were in the private sector and located in southern Australia. In total, these 26 organisations hold data for some 2,200 clients, with 400 data sets limited to whole farm financial data and 1,800 data sets including enterprise-level production and financial information. For the organisations interviewed, the majority (22) were interested in participating and contributing to an NMN.

However, only a small number of northern beef consultancies and/or corporations were identified, that currently collect production and financial data and participate in benchmarking activities. Within this sector there was virtually no interest to participate in an NMN, because of the high level of variability in resources on pastoral properties, the tendency to move livestock between stations throughout the year and a high level of participation in the AAGIS survey.

For the southern agricultural sectors, where strong support existed for an NMN, there was a high level of concern as to whether the project would be successful. This scepticism was based around the difficulty of getting agreement on the protocol for data collection and methodology for analysis, as well as potential negative producer reaction in response to their data being provided to another entity.

The firms that did not indicate interest in participating were concerned about the potential for an NMN to increase competition for their business, namely by building capacity in other smaller consultancy firms. Across the board, there was strong feedback from private sector consultancy firms that for an NMN to be successful, it must operate in a way that added value to commercial sector activities but did not compete with or erode their service offer to producers. The consultation identified that contribution of data to an NMN was likely to   involve additional work, through modification of data collection protocols, preparation and validation of data for submission and seeking approval from clients to submit data to NMN. The quality of data submitted to an NMN and the privacy of client identity were considered fundamental for support and its ongoing success. A long-term commitment to an NMN by industry and RDCs was also considered fundamental to success.

During the consultation phase, service providers were asked if they would be willing to provide data to an NMN at no cost, or if payment would be required to encourage participation. There was a range of views on this issue with some organisations indicating that they could see sufficient value in an NMN to submit data at no cost; others indicated that payment would be required to either;

- cover the costs of data preparation and manipulation to comply with the NMN protocol
- pass on a possible "on-selling" payment to producers that agreed to submission of their data
- reflect the intellectual property and expertise developed by consultancy firms in collecting and manipulating data over time.

While a significant quantity of data is currently collected across the southern broadacre agriculture sector, it is acknowledged that the data is concentrated in particular geographic regions around existing service providers. The distribution of data is unlikely to provide adequate coverage across all regions, or to be a statistically significant sample across many regions.

ABARE and the AAGIS Survey
The AAGIS survey is based on a sample of 1,638 selected from a population of 54,709 farms with an Estimated Value of Agricultural Operations (EVAO) greater than $40,000. The sample is stratified across the Statistical Local Areas (SLAs) to ensure statistical significance. The proportion of farms surveyed in any SLA is dependent on the population size and the variability in EVAO. For larger populations with lower variability in EVAO, a smaller sample size is required for statistical significance compared to smaller populations and/or those with higher variability in EVAO. The AAGIS survey tends to sample a greater proportion of larger farms that have greater variability in EVAO than smaller farms. The data collected by AAGIS is subsequently weighted so that population estimates are similar to ABS census survey estimates, ie weighted to represent an industry average.

The number of farms sampled per SLA to ensure statistical significance is provided in Table 3. These figures provide the best available estimate of the minimum number of farms that an NMN would need to sample by SLA to achieve statistical significance. As previously reported, ABARE have indicated that they would prefer to have a sample size of 2,300 to increase the robustness of reporting enterprise averages at the more regional levels. The number of farms that would need to be surveyed at the SLA level with a sample size of 2,300 is provided in the last column of Table 3. These figures provide guidance to NMN as to the level of sampling that would be required at the SLA level in order to ensure statistical significance and robust reporting at a more regional level than SLA. A map of SLAs used by ABARE is provided in Figure 1. SLAs are formed from the aggregation of Local Government Areas (LGAs). Reporting at a regional or LGA level will require larger sample sizes to ensure statistical significance of the data. ABARE can and does report at the LGA level where sufficient data sets are available to protect the identity of survey respondents. It is feasible that an NMN will also be able to report at regional or LGA level in some areas where sufficient data exists.

Establishment of an NMN will require an assessment of the distribution of contributing data sets at the SLA level. This will identify any SLAs where adequate data is already being collected and other areas where additional data collection will be required.

Table 3: AAGIS sample size by SLA (2009) for a survey with 1,600 and 2,300 broadacre farms.

SLA Code	SLA	Population	Sample Size (n=1,638)	% of population in sample (%)	Sample Size (If n=2,361)
111	NSW: Far West	656	29	4.4	42
121	NSW: NW Slopes and Plains	3,082	75	2.4	108
122	NSW: Central West	3,815	83	2.2	120
123	NSW Riverina	4,731	96	2.0	138
131	NSW: Tablelands (North & Central	4,167	76	1.8	109
132	NSW: Coastal	1,757	45	2.6	65
221	Vic: Mallee	1,312	51	3.9	73
222	Vic: Wimmera	1,745	66	3.8	95
223	Vic: Central North	2,379	73	3.1	105
231	Vic: Southern and Eastern Victoria	6,743	115	1.7	166
311	Qld: Cape York & Qld Gulf	51	14	27.5	20
312	Qld: West and South West	487	36	7.4	52
313	Qld: Central North	682	39	5.7	56
314	Qld: Charleville & Longreach	715	38	5.3	55
321	Qld: Eastern Darling Downs	1,595	65	4.1	94
322	Qld: Darling Downs & Central Highlands	3,358	106	3.2	153
331	Qld: South Qld Coastal	2,412	68	2.8	98
332	Qld: North Qld Coastal	489	35	7.2	50
411	SA: Northern Pastoral	300	25	8.3	36
421	SA: Eyre Peninsula	1,104	42	3.8	60
422	SA: Murray Lands & York Peninsular	2,901	74	2.6	107
431	SA: South East	2,022	65	3.2	94
511	WA: Kimberley	28	12	42.9	17
512	WA: Pilbara and Central Pastoral	185	12	6.5	17
521	WA: Central and Southern Wheatbelt	3,507	83	2.7	120
522	WA: North and East Wheatbelt	1,403	48	3.4	69
531	WA: South West Coastal	1,741	50	2.9	72
631	Tasmania	1,171	72	6.1	104
711	NT: Alice Springs Districts	39	9	23.1	13
712	NT: Barkly Tablelands	21	8	38.1	12
713	NT: Victoria River Downs District	74	20	27.0	29
714	NT: Top end Darwin and NT Gulf	37	8	21.6	12
	Total	**54,709**	**1,638**	**3.0**	**2,361**

Source: www.abare.gov.au/ame/agsurf/agsurf.asp

Figure 1:
Australian broadacre zones and regions
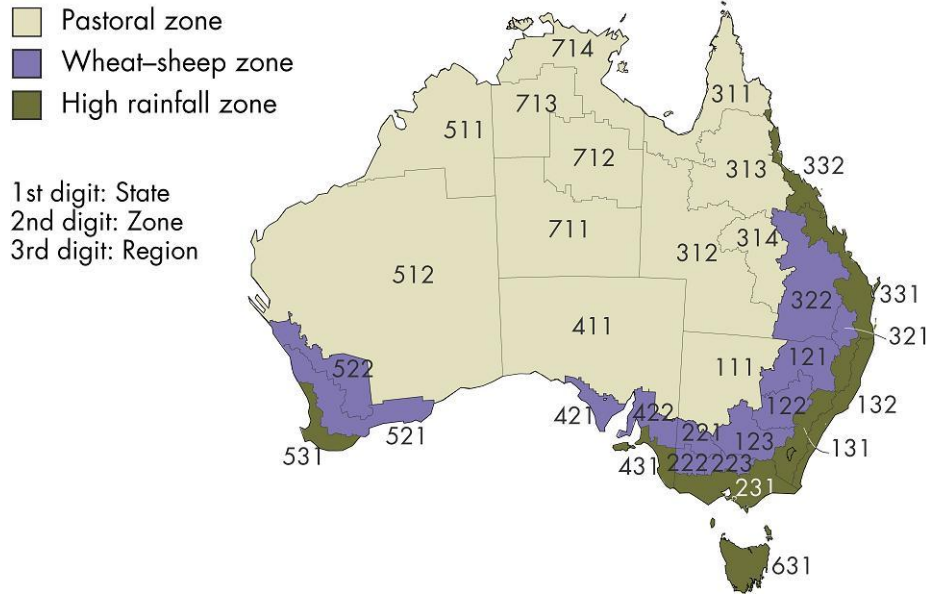
3. The recommended model for a National Monitoring Network Framework

It is recommended that an NMN proceed as a Pilot Project for 2 years in a limited number of SLAs. This Pilot Phase should focus on:
- Developing the structures, protocols and methodologies to support NMN;
- Building relationships and confidence within industry for NMN; and,
- Working with ABARE and AAGIS to investigate the potential to increase the output of enterprise-level data from both NMN and AAGIS and allow comparison and validation between the two data sets.

Working with a limited number of SLAs during the Pilot Phase will allow the project to establish using a smaller and more manageable data set, and allow time to validate and compare with data from the AAGIS survey. While the data for the Pilot Phase of NMN should be limited in geographic coverage, the membership of the Management Committee and Technical Committees (Section 8) should be drawn nationally to allow for a smoother transition to a fully-operational NMN model covering all agricultural zones in the future.

The recommended SLAs in which to run the Pilot Phase are NSW Riverina, Southern and eastern Victoria and the Central and Southern Wheatbelt of WA (Table 3). These regions are recommended, based on the number of organisations currently collecting regional data and their level of interest in participating in NMN; this area also includes the Victorian DPI's "Livestock Monitor Project" as a major source of enterprise-level data. It is also most likely that NMN and AAGIS will have sufficient data in these regions to report at the regional and LGA level in addition to the SLA level.

It is also recommended that the Pilot Project engages with ABARE to investigate the potential for generating enterprise-level data and information from AAGIS for comparison and validation with NMN. This recommendation is discussed further in Section 5.

The Recommended Model for NMN
The key operational elements of an NMN are detailed in Table 4 and represented diagrammatically in Figure 2. The management and governance framework for NMN are detailed in Section 8.

Table 4: Proposed National Monitoring Network Model

Feature	Key elements
Data contribution	- Data will be contributed by service providers, such as consultancy firms, accountants and not-for-profit entities, including state agencies. - Producers will not be able to submit data direct to the NMN; they will need to do so via a service provider. This will build goodwill with existing service providers and potentially enhance their capability. - Provision of data via service providers will allow improved quality control of input data. It will also ensure that NMN does not compete with the private sector and provide the opportunity for expert interpretation of output with the producer. - Organisations will be paid for data submitted in accordance with the agreed protocol and achieving quality assurance standards. Payment for data recognises the substantial background IP and developmental capital provided by existing service providers in collecting data and benchmarking clients. It also provides a

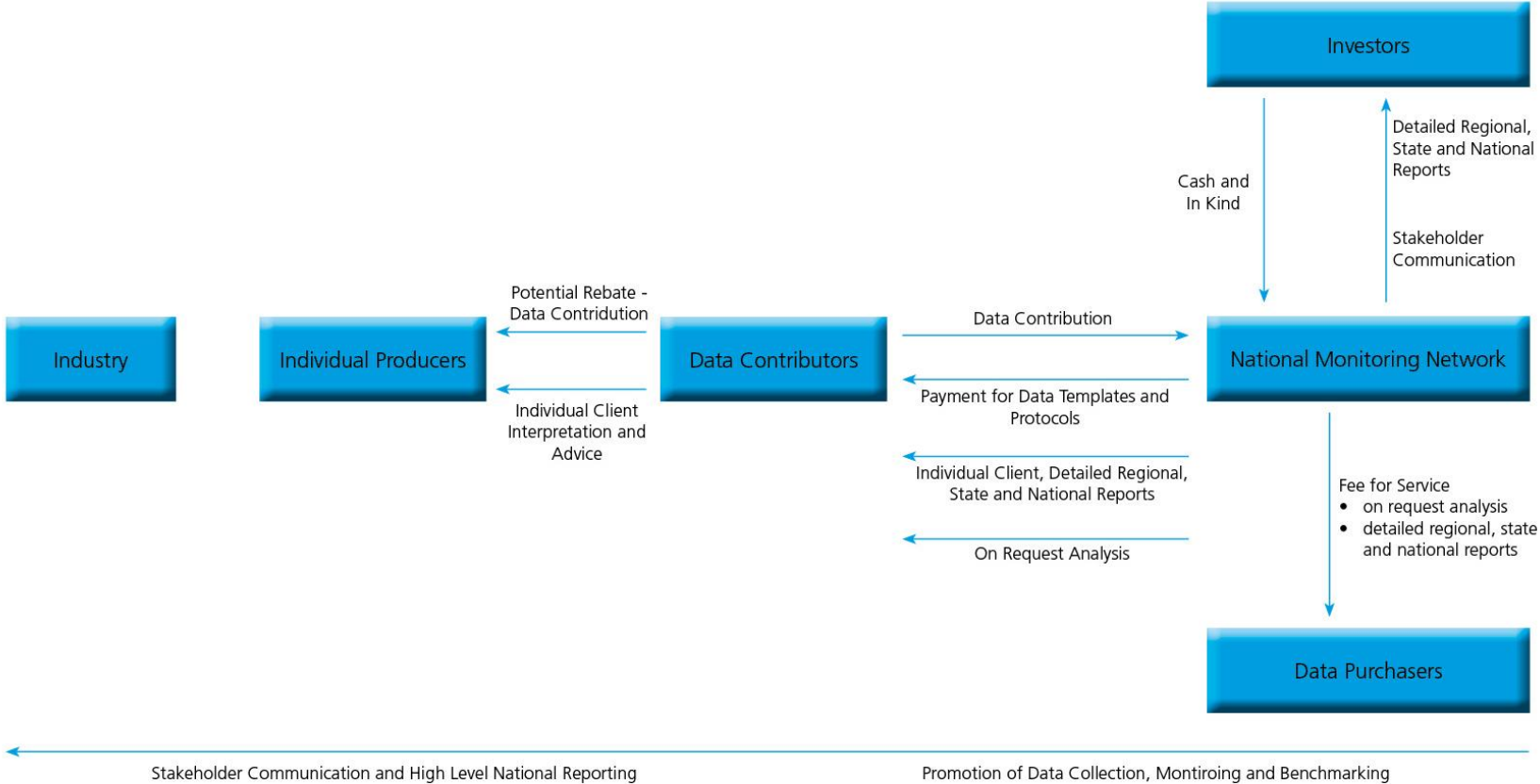|	
	level of authority with regards to the quality of data that NMN will accept.
	• NMN will provide a budget to support communication activities that profile the benefits of data collection, monitoring and benchmarking to producers. This budget will be used to support organisations seeking to grow participation in benchmarking in their region. Specific emphasis will be placed on growing participation in regions where the sample size is not statistically significant.
	• The relationship between contributing organisations and NMN will be formalised through a contract.
Data collection	• Data will be collected and collated for submission using a protocol developed by the Technical Committee.
	• The protocol will ensure that all data required is collected and validated as per NMN requirements and contributed in a timely manner.
	• In developing the protocol the Technical Committee will take into consideration the views and requirements of organisations providing advisory services to producers as well as the needs of RDCs and agencies using the data for evaluation and policy formation.
	• The Technical Committee will not be required to achieve a consensus on the protocol, but will be required to recognise the differing views and make a decision that best meets the needs of stakeholders.
	• The Technical Committee may consider the inclusion of supplementary questions to the NMN data set on an annual basis. The inclusion of these supplementary questions will require consideration of the complexity and length of the existing data collection, the marginal value of the supplementary questions and any additional costs incurred in collecting the information.
Privacy and authority	• Organisations submitting data will be provided with a unique and confidential code to identify their organisation as the submitting party in the database.
	• Similarly, organisations submitting data will be provided with a unique identifier for each producer whose data is submitted to NMN. This identifier will remain unique to that producer regardless of whether or not they continue to submit data to NMN or change consultancy firm.
	• The identity of producers will be known only by the producer and the organisation through which their data is submitted to NMN.
	• The location of the producer's farm by postcode and LGA area will be required by NMN. Information will only be released at the LGA level if there is sufficient data to protect the identity of individual businesses within that LGA.
	• NMN will provide each submitting organisation with a template document, which seeks authority from each individual client to submit their data to NMN.
	• The documentation and submission of data will be compliant

	with the Privacy Act (1988) and individual producers may choose to cease data submissions at any time.
Storage of data	- An NMN database will be housed in on a secure computer server maintained by the chosen service provider. - The service provider will be required to provide appropriate and secure backup for the database. - Appropriate restrictions on access and usage will be agreed and contracted with the service provider.
Analysis	- The Technical Committee will recommend to the Management Committee an appropriate methodology for analysis and reporting of data in the NMN. - In developing the methodology, the Technical Committee will take into consideration the views and requirements of organisations providing advisory services to producers as well as the needs of RDCs and agencies using the data for evaluation and policy formation. - The Technical Committee will not be required to achieve a consensus on methodology, but will be required to recognise the differing views and make a decision that best meets the needs of stakeholders. The purchase of data from contributing organisations will provide an appropriate level of authority for the Technical Committee in making a decision on methodology. - Analysis will be undertaken by the Service Provider under instruction from the NMN Manager and Technical Committee.
Reporting	- The Service Provider will generate reports from the NMN database in accordance with a template developed by the Technical Committee. These reports will be developed on an annual basis, in as short a time as possible, after the end of the reporting period. The most appropriate reporting period (financial, calendar or production year) will be determined by the Technical Committee. - Data contributions must be made according to an agreed timeline to ensure the maximum value of the reports generated. - A national and regional report will be provided for each organisation contributing data. - Individual reports, identified by ID only, will also be provided to the contributing organisation for feedback and consultation with individual clients. These reports will compare and contrast the individual business to the average of the region (SLA and LGA) and the nation. - A generic national report will be made publically available at no cost, reported through media outlets and disseminated through stakeholder electronic media. The generic national report will provide high level indicators of performance at the national level. - Detailed national and regional reports will be available to the public on request but will attract a charge. No publicly-released reports will identify any individual contributing organisation or producer. - Regional reports at the LGA and SLA level will only be made public where a minimum threshold sample size has been

	achieved such that the identity of individuals submitting data remains confidential. • The distinction between information provided free of charge in the generic national report and information provided in detailed regional reports will be determined by the Technical Committee.
Special request analysis	• Organisations contributing data to NMN will be able to request data analysis using alternative methodologies. • These requests will be considered by the Technical Committee on a case-by-case basis and will attract a different style of branding to differentiate them from the standard NMN reports. • There will need to be an upper limit to the quantity of service that NMN can provide to individual organisations without charge. • Special request analyses from organisations not contributing data will attract a fee for service. These requests will be considered by the Technical Committee on a case by case basis. The Technical Committee will ensure that the privacy and anonymity of producers and contributing organisations is preserved in these cases.
Governance	• The recommended structural and governance arrangements for NMN are set out in Section 8. The key structures are a Management Committee, Technical Committee, NMN Manager and NMN Service Provider
Communication and promotion of data collection	• The NMN Scoping Project has identified that participation in data collection and benchmarking across broadacre agriculture is relatively low. • In total, 26 organisations collecting data from 2,200 farms have been identified during the project. • It is recommended that the project budget include funding to assist service providers to communicate the value of data collection and monitoring to industry and as a mechanism to improve business performance. • Communication activities will assist in providing a value proposition to service providers by potentially growing their client base and overcoming concerns that NMN may increase competition amongst service providers. • The communication program will also assist in increasing participation in areas where the sample size may not currently be adequate.
Communication with Stakeholders	• Keeping stakeholders up-to-date with project developments and outputs will be paramount for success. • An adequate budget will be provided to develop regular and comprehensive reporting to stakeholders from the Management and Technical Committees.

Process Map for National Monitoring Network

4. The Value Proposition for Investors, Data Contributors & Primary Producers

There are potentially four ways that an organisation or individual can participate in an NMN. An organisation may be an investor in the initiative, a provider of data to the network or a purchaser of outputs from the analysis. Individual producers are also important stakeholders in NMN, without their support for data contribution an NMN cannot proceed.

The value proposition for each stakeholder group is provided in Table 5.

Table 5: NMN stakeholders and value propositions

Stakeholder Group	Value Proposition
Investors	During the consultation phase, three organisations indicated an interest in investing in an NMN. These organisations included AWI, GRDC and a large corporate organisation. The value in NMN for these organisations included; • One consistent time series of data across the broadacre industries. • Analysis of this data using a consistent methodology. • Information at the enterprise level both in terms of financial and productive performance. • An alternative data set for comparison and validation with AAGIS; and, • A data set suitable for use in evaluation of investments, setting of research priorities and informing policy debates.
Data Contributors Producers	In total 26 organisations currently collecting production and financial information for broadacre producers were interviewed during this project. Overall, 22 expressed an interest in contributing data to NMN. The value proposition that NMN offers for these organisations includes; • Monitoring of clients against a larger and more comprehensive data set on a national, regional, or industry basis. • A standard set of performance, historical and forecasting indicators generated by NMN for use in their businesses. • The ability to undertake additional analyses or alternative methodologies upon request. • Access to a network of consultants and NMN personnel to support data collection, analysis and interpretation within the consulting business. • Access to expertise employed by NMN to manage and analyse data. • Access to upgraded software and templates for data management. • The development of a consensus position on monitoring and benchmarking methodologies and protocols for industry. • Contributing to industry development, and of the shaping of RD&E priorities. • The potential to grow their client base, through participation in NMN, and to focus their efforts on interpretation of data and client services rather than data management and analysis. • The opportunity to receive a financial return for data submissions, which can be used to offset their costs and/or

	passed on to clients in the form of lower benchmarking fees.
Producers	Individual producers were not consulted directly during this project, however the consultancy organisations were quick to point out that unless the project offers tangible value to producers, they will not consent to submission of their data to NMN. The value proposition for producers from NMN has been identified as; - The ability to monitor their performance against a larger and more comprehensive data set on a national, regional or industry basis. - The ability to monitor their performance against a standard set of indicators that are applied nationally across the red meat, crop and wool enterprises. - Information on alternative business models that may demonstrate superior business performance. - Contributing to the shaping of RD&E priorities. - The opportunity to reduce the costs of benchmarking (if their consultant passes on some of the return from NMN data contribution); and, - The ability to identify and demonstrate their superior business performance for the purposes of seeking finance and/or developing new business opportunities.
Purchasers of information	During the consultation phase eight organisations identified themselves as potential purchasers of information and reports from NMN. In the main these organisations were state agencies, banks and large corporate agricultural companies. NMN offered the following value proposition to these organisations; - One consistent time series of data across the broadacre industries. - Analysis of this data using a consistent methodology and performance indicators. - Information at the enterprise-level, both in terms of financial and productivity performance that could be compared with their own data set, or was not available from their own data sets. - An alternative data set for comparison and validation with AAGIS; and, - Data and information for undertaking research and business development.

5. Overcoming Barriers to Participation

The model for NMN has been designed to overcome a number of barriers to participation that were identified during the consultation phase of the project. These barriers and the proposed solutions are discussed in this section.

5.1 Payment for data

During the consultation phase potential data contributors were asked if they saw sufficient value in an NMN to contribute data at no cost to the project. There were a range of views expressed on this issue. Some respondents saw sufficient value in NMN to indicate that they would contribute data at no cost. Others indicated that they would seek to sell data to the project in order to cover the additional costs of preparing and submitting data in a modified format and/or to reflect the significant background IP and/or capital investment that their organisation had made in collecting and analysing production and financial data. A number of respondents indicated that their clients would expect a financial return from the "on-selling" of their data to a NMN.

A few respondents indicated that they may be unwilling to sell data to NMN, as it could reduce their competitive advantage in using data for projects, research and communication activities within their organisation.

From a limited amount of information made available to the project team, consultancy firms appear to charge between $500 to $600 per annum for data collection, analysis and benchmarking of business and enterprise performance.

The NMN model recommended in this paper includes payment for data submitted to NMN. There are several reasons for making this recommendation:
1. Without payment, it will be difficult to secure adequate data submission to an NMN.
2. Submission of data will require changes to data collection and preparation routines in most consultancy firms.
3. Payment for data will allow the Technical Committee to determine a suitable template for data submission and methodology for analysis, without having to reach a consensus with all data contributors.
4. Payment for data will improve the authority of the Service Provider to ensure compliance with protocols and reject data that does not meet quality assurance requirements.

On the basis of the NMN scoping interviews, a payment provision of $200 per farm dataset submitted (in accordance with the NMN protocol) is recommended. This is based on the need to acknowledge the current costs of data collection in private consultancy firms and provide the opportunity to offset additional costs in preparing data for NMN and/or provide a rebate to clients for the "on-selling" of data.

Each individual consultancy firm will be able to make a commercial judgement as to whether part of this payment should be passed on to clients in the form of reduced fees, or a rebate. Some consultants were concerned that "on-selling" data may create a negative sentiment amongst their clients. A payment for data submitted to the NMN provides flexibility to pass on some form of saving to clients, in order to encourage participation and manage potential negative sentiment.

5.2 Competition with the private sector

Most consultancy firms interviewed during this project indicated that the establishment of an NMN should not create competition for private sector consultancy businesses. There was almost universal support for the concept that an NMN only accept data provided through a recognised service provider (consultancy and/or accountancy firm). Allowing producers direct access to an

NMN for benchmarking services was seen as a potential threat to the services offered by farm management consultants.

Larger consultancy firms with significant resources allocated to benchmarking were more sensitive to NMN, namely as a potential commercial threat to their business model. These organisations indicated that NMN may reduce their competitive advantage by building capacity for benchmarking in smaller firms and reducing their ability to use data sets for projects, research and communication activities. Equally, these firms acknowledged the value of a NMN framework for whole-of-industry application, as well the fact they did not have the resources to provide such a framework themselves.

Other firms saw the NMN concept as a great opportunity to reduce the resources currently allocated to data management, and thereby focus their consultancy businesses on interpretation of reports and providing clients with strategic advice in response to the benchmarking data received from an NMN. This perspective aligns strongly with the belief that the greatest value from data collection and benchmarking is achieved when the information is interpreted in consultation with an expert, who can assist the producer to make strategic business decisions that will improve performance.

To overcome these concerns, the NMN model requires that all data is submitted through a service provider, such as a consultant or accountancy firm.

5.3 Promote the increased uptake of data collection and benchmarking – promotion budget

To maximise the quality of reporting from an NMN, a statistically significant sample will be required across the participating regions. As already noted in this report, currently available data is concentrated into geographic areas around existing consultancy practices. For comprehensive coverage, it will be necessary to promote the value of data collection and benchmarking to broadacre producers and attempt to increase the participation levels, especially in some target regions. A promotion and communication campaign in collaboration with consultancy firms will provide mutual benefit to both an NMN and consultancy firms.

Increased participation in data collection and benchmarking will provide widespread enterprise and business benefits through improved farm performance and provide an opportunity for consultancy firms to increase their client base.

The communications program should focus in areas where the current sample size is not statistically significant. The initiative will also assist in building relationships with consultancy firms that are concerned that NMN may reduce their competitive advantage.

5.4 Privacy and IP Protection

Many of the organisations consulted during this project highlighted the importance of rigorously protecting the identity of their clients and their business. Under the model proposed in Section 3, each consultancy will be issued with an individual identification number, which will remain confidential to specific NMN staff. The consultancy firm will issue individual identification numbers to each producer for whom they will submit data.

Data submitted to NMN will only be identified by the:
- Individual ID number of the submitting consultancy;
- Individual ID number of the producer; and,
- Postcode and LGA in which the producer resides (except where a small sample size in any given LGA risks inadvertently identifying the individual).

The identity of producers will not be known to staff or consultants engaged by an NMN.

This mechanism will ensure that business and producer identity is protected at all times.

5.5 Quality of data and analysis

Potential data contributors and ABARE are seeking re-assurance that an NMN will be provide a high quality data set, collected and managed with integrity and adherence to best practice. The establishment of an NMN and its associated Management and Technical Committees will be in accordance with these requirements. The literature review highlighted the importance of using standard accounting principles in undertaking analysis and generating performance ratios. In accordance with best practice, NMN protocols will adhere to standard accounting principles.

Ultimately, the NMN Manager will be responsible for ensuring that the data set and its management comply with the highest of standards. They will be responsible to the Management and Technical Committees and the industry in this regard.

5.6 Collaboration with other RDC co-funded projects – Farm Prophet, Think Profit, AAGIS

The consultation phase of the project identified a number of other projects that have potential linkage to an NMN.

The *Farm Prophet* project funded by GRDC is well-advanced in establishing an online data collection and benchmarking system for mixed farmers in southern Australia. Details of this project are provided in Appendix 4.

The *Think Profit* Project, funded by AWI, is working with livestock consultancy firms to reach consensus on protocols for data collection and a methodology for analysing farm performance. There is the potential for this project to provide an NMN with a well-developed protocol and methodology, for whole farm and enterprise level analysis, that could be quickly adopted by an NMN.

MLA is currently funding the development of an online business analysis tool to help producers generate financial and production efficiency indicators for red meat, wool and grains businesses. This project also has the potential to provide an NMN with a readily adoptable methodology. The alignment of extension activities related to the new online tool and promotion of NMN should also be considered by MLA.

It will be important for NMN to encourage collaboration and linkage with these – and any new - related projects during the implementation phase.

5.7 Working with the Australian Bureau of Agricultural and Resource Economics

Staff at ABARE, have indicated that the conditions and agreements under which they collect data would not allow them to contribute data to an NMN, but they would be interested in working with an NMN to compare and contrast information generated from the two data sets.

The data collected by ABARE is collected for a specific purpose and does not currently include enterprise level financial or production based analysis and/or reporting. ABARE have indicated that it would be possible for them to undertake enterprise-level analysis for grains and wool using their current database. For the red meat sector, they would need to collect additional data on turn-off weights and kilograms of meat sold in order to provide enterprise-level analysis for that sector. ABARE have indicated a willingness to consider this additional data collection, subject to

approval from the ABS Survey Clearing House. It is important to note that requests to expand data collection protocols in the past have been rejected by the ABS Survey Clearing House.

ABARE definitions and methodology are publically available and, if adopted by an NMN, would allow direct comparison between the two databases. Alternatively, ABARE can run analyses using alternative methodologies on a fee-for-service basis.

ABARE have noted that it will be a challenge for an NMN to meet the competing needs of private consultants, producers, RDCs, and state and federal agencies.

It is recommended that a Validation Project be established in the Year 1 Pilot Phase of an NMN. An allowance of $50,000 has been included in Year 1 for a project to work with ABARE. The project, would require comprehensive scoping, but should include:
- Development of enterprise-level reports for wool and grains from the existing ABARE database;
- Scoping the additional data collection requirements for enterprise-level reporting in the red meat sector;
- Understanding the similarities and differences in protocols for data collection and analysis methodology between the two data sets; and,
- Validation and comparison of output between AAGIS and NMN data.

5.8 Data Collection in the Northern Beef Industry
As noted in Section 2, this project identified significant resistance within the northern beef production region to participation in an NMN. The interviews undertaken for the northern sector included a small number of consultants and staff from some of the large corporate beef companies. Resistance to establishment of an NMN was based on:
1. The difficulty in making valid comparisons with the widely varying environments and natural resources (water and land types) found on large pastoral properties in the north;
2. The tendency for large corporate entities to transfer livestock between properties at different times of the year to take advantage of seasonal conditions and available infrastructure; and,
3. The relatively high level of existing participation in the AAGIS survey, due to the high level of sampling intensity required in the region (Table 3).

A number of these concerns can potentially be addressed in the methodology developed for an NMN. Ultimately, it is desirable that an NMN has national coverage, including the northern beef production region. It is therefore recommended that the Validation Project with ABARE during the Pilot Phase investigates the potential to enhance the data collection and enterprise-level reporting from the AAGIS data collected for the northern beef sector.

The potential to collate data collected as part of industry-funded R&D projects in northern Australia should also be investigated during the Pilot Phase of an NMN.

6. Information Technology (IT) Requirements for a National Monitoring Network

During the consultation phase of this project, some seven organisations expressed interest in providing services to an NMN in the form of database management. It is recommended that the service provider chosen for the project is independent of any existing entity that provides benchmarking services to clients. This will ensure that the NMN is recognised as an independent industry resource, managed and run by industry. The contributions of business entities that currently benchmark their clients will be recognised through the purchase of data sets and the payment of commercial consulting rates to members of the Management and Technical Committees.

The proposed IT structure for an NMN is based on a centralised Microsoft SQL database with a web-based front end for data entry and file upload.

Software as a Service
To enable centralised management of an NMN database, it is proposed to establish a "Software as a Service" (SaaS) structure. This SaaS system will enable the database to be housed on a Microsoft SQL language database server and accessed by data contributors, information purchasers and investors via a web-driven interface, with varying levels of access authority.

The SaaS system will allow for remote online data entry or file upload and access to a standard set of reports. The system can be accessed any time for maintenance and data remains confidential and secure.
It is recommended that access to a Microsoft SQL server is secured through a hosting (rental) agreement rather than purchase. Hosting via an external service provider will allow:
- Access to leading edge technology as it is released to industry;
- Backup and disaster recovery protocols embedded within the hosting agreement; and,
- A system that can be expanded as the size of the data base grows.

A practical example of where SaaS has been effectively used in agriculture can be observed with Fairport Technologies' "Paddock Action Manager", which can be accessed via a web interface and allows multiple individuals to contribute paddock records.

Data entered into the Microsoft SQL server will undergo a quality assurance routine before being submitted to an NMN database.

Microsoft SQL is the most widely used database language. It has a mix of functionality and power; is relatively easy to use and has an intuitive command structure. For this reason there are more Microsoft SQL database administrators available than for alternative languages. Using a widely available language will reduce risk and cost to an NMN.

7. Costs

The estimated costs of establishing an NMN and maintaining it on an annual basis are provided in Tables 6 and 7.

The costs in Table 6 relate to Year 1 of the Pilot Phase, where an NMN is collating an estimated 450 data sets from the three recommended SLAs, and undertaking a validation project with ABARE (Section 3).

Table 7 contains the annual costs of a fully-operational NMN, collating 2,300 data sets nationally. To proceed to this level, assumes the Pilot Phase is successful and the project is approved for national implementation.

Tables 6 and 7 reflect the full costs of establishing and maintaining a NMN with an outsourced NMN Manager and Service Provider and fully-funded members of the Management and Technical Committees. There is the potential for the cash costs to be reduced through the negotiation of in-kind contributions and collaborations with interested parties and investors, such as ABARE, state agencies, private consultants and other industry/RDC funded projects.

The Pilot Phase costs (Table 6) are approximately 70% of the ongoing costs of a fully operational NMN (Table 7). The high costs in the Pilot Phase are associated with the work involved in establishing the database, running the Management and Technical Committees and working on a validation project with ABARE.

Costs include the operations of the Management and Technical Committees and a contracted Manager for three days per week. It is recommended that a consultant be engaged for the Pilot Phase of the project. Subject to an NMN being fully operational at a national level, the Management Committee may then consider employing a manager on a full time basis.

The communications budget requirement will grow over time as NMN material is ready for distribution to industry and the number of SLAs included in the database grows.

An allowance of $50,000 has been included in Year 1 for a project to work with ABARE (Section 5.7).

The costs of maintaining the SQL server and web interface are based on outsourcing a full time database administrator (from the SQL host organisation) at an estimated cost of $130/hour. The costs of this position would be substantially reduced if the position was converted to a full time salaried position within an organisation.

Table 6: Estimated Budget Year 1 Pilot Phase of NMN

NMN Pilot Phase – Year 1	Description	Costs $
Management Committee • 4 one day meetings	Sitting Fees 6 members x 4 meetings x $1200/day Travel/Accommodation 6 x $1,000 x 4 trips	28,800 24,000
Technical Committee • 6 meetings, 4 two day face to face meetings and 2 teleconferences	Sitting Fees 6 members x 10 meeting days x $1200/day Travel & Accommodation 6 x $1,000 x 4 trips	72,000 24,000
NMN Manager • Consultancy 3 days per	Consultancy Fees 150 days x $1200/day Travel & Accommodation	180,000 10,000
Communications/Promotion		20,000
Validation Project with ABARE		50,000
Service Provider	Host SQL server (setup $500 & $255/month) Web interface (setup $10,000 & $820/month) Database administrator (Full time 1600 hours @ $130/hr)	3,560 19,840 208,000
Data Purchase	450 data sets x $200 each	90,000
Total		**730,200**

Table 7: Estimated ongoing annual costs – fully-operational NMN

Annual Costs	Description	Costs $
Management Committee • 4 one day meetings	Sitting Fees 6 members x 4 meetings x $1200/day Travel/Accommodation 6 x $1,000 x 4 trips	28,800 24,000
Technical Committee • 4 meetings, 2 two day face to face meetings and 2 teleconferences	Sitting Fees 6 members x 6 meeting days x $1200/day Travel & Accommodation 6 x $1,000 x 2 trips	43,200 12,000
NMN Manager • Consultancy 3 days per	Consultancy Fees 150 days x $1200/day Travel & Accommodation	180,000 10,000
Communications/Promotion		50,000
Service Provider	Host SQL server ($255/month) Web interface ($820/month) Database administrator (Full time 1600 hours @ $130/hr)	3,060 9,840 208,000
Data Purchase	2,300 data sets x $200 each	460,000
Total		**1,028,900**

Note: Potential exists for MLA to reduce the on-going costs of an NMN through co-investment from other RDCs such as AWI and GRDC and large corporate entities. In addition the on-going cash costs may be reduced through in kind contributions from collaborators.

8.   Management and administration structure

Many of the organisations consulted during the Scoping Study expressed a preference for the NMN to be managed by an independent entity that was controlled by the investors, data contributors and industry. The preference was to create a separate incorporated entity to manage the project, the associated database and resulting information flow from that data. Their rationale, was based on the need to ensure that the NMN delivered adequate benefit, in terms of data collected and reports generated, to producers and commercial entities submitting the data. There was also some concern about RDC or government entities having access to the data and using it for purposes not inferred by the data owners. There was strong sentiment that a government agency should not have the job of managing the database or the project, as this would slow down implementation and delivery of useful outcomes to data contributors and industry.

While the preference for an independent incorporated entity to manage and implement an NMN is acknowledged, it is not the recommended management structure for the Pilot Phase of the project. The consultants recommend that during the Pilot Phase, the project be managed within an RDC. To ensure maximum participation in the project and acceptance of its outputs, it is recommended that a Management Committee be formed to represent the interests of industry, investors and data contributors. Appointment to the Management Committee should be on the basis of skills and expertise, rather than proportional representation. The Management Committee needs to be small enough to ensure effective operation of the group and the project. The Management Committee would be responsible for governance and policy relating to the NMN, particularly in relation to adherence to privacy legislation, pricing for "on request" work and servicing any additional analyses requested by data contributors.

The Management Committee would be responsible for communicating with stakeholders and maintaining their support for an NMN. The Management Committee would also be expected to provide guidance and support to the RDC managing the Pilot Phase of the project.

The skills-based Technical Committee will be responsible for developing the protocols for data collection and methodology for analysis of data in the NMN. This group will also recommend additional "on request" work and NMN reporting templates to the Management Committee.

It is recommended that membership of the Management and Technical Committees be determined in the following way.
1. Establish a selection committee based on investors and industry representatives
2. Open call for nominations
3. Selection based on skills, expertise and ability to keep stakeholders informed of progress and developments
4. Defined term for the period of the Pilot Phase of the NMN project
5. Members (non agency and RDC) paid sitting fees at commercial rates, travel and out of pocket expenses

The NMN Manager will provide executive support to the Management and Technical Committees and implement their recommendations through a Service Provider, who will manage the database. The Manager will also be responsible for managing relationships with industry, data contributors, investors and ABARE. The NMN Manager will also be responsible for:
- ensuring that reports are generated in accordance with the approved template;
- delivery of regional and individual client reports to data contributors;
- communication of high-level industry reports to industry;
- sales of information to data purchasers; and,

- growth in participation in the project over time.

In the Pilot Phase of the project, it is recommended that a consultant be engaged for three days per week. Subject to successful evaluation and implementation of a national project, the Management Committee may consider full time employment of a manager.

An independent Service Provider will be engaged, through a tender process, to establish the database and implement the protocols developed by the Technical Committee. The service provider will be responsible for:
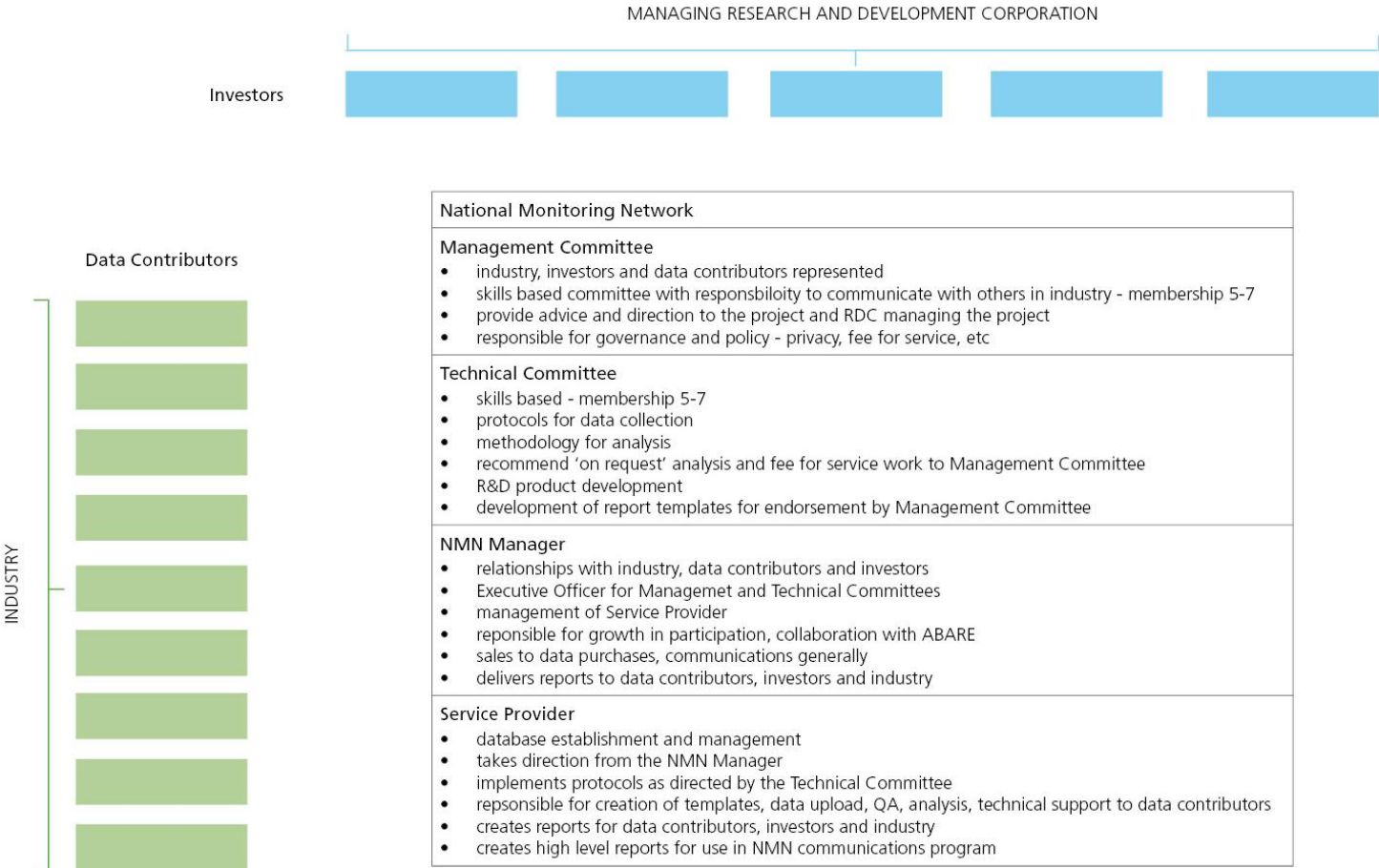
- data collation, upload and analysis;
- quality assurance of data, collation and analysis processes;
- generating reports; and,
- providing technical support for data contributors.

It is recommended that the Service Provider be independent of any existing organisation collecting data and providing benchmarking services to clients. This recommendation is made to remove any risks associated with an NMN becoming identified as a service provided by a particular private or public entity. The significant capacity and expertise that existing service providers have in collecting and managing data should be recognised and rewarded through purchase of data submitted to NMN and their contributions to the NMN Management and Technical Committees.

The recommended management and administration structure for NMN is set out in Figure 3. Following implementation and evaluation of the Pilot Phase of the project and subject to the project continuing, it is recommended that the investors and Management Committee consider transitioning the NMN management structure to one based on an independent incorporated entity, as recommended by those consulted during the project.

The management and administration structure proposed for the Pilot Phase of NMN bears many similarities to the Sheep Genetics structure. It is recommended that the Sheep Genetics model and the recent Business Model Review are explored during the establishment phase, to maximise the effectiveness of an NMN.

Management and Administration of the Pilot Phase of National Monitoring Network

MANAGING RESEARCH AND DEVELOPMENT CORPORATION

Investors

Data Contributors

INDUSTRY

National Monitoring Network
Management Committee • industry, investors and data contributors represented • skills based committee with responsbiloity to communicate with others in industry - membership 5-7 • provide advice and direction to the project and RDC managing the project • responsible for governance and policy - privacy, fee for service, etc
Technical Committee • skills based - membership 5-7 • protocols for data collection • methodology for analysis • recommend 'on request' analysis and fee for service work to Management Committee • R&D product development • development of report templates for endorsement by Management Committee
NMN Manager • relationships with industry, data contributors and investors • Executive Officer for Managemet and Technical Committees • management of Service Provider • reponsible for growth in participation, collaboration with ABARE • sales to data purchases, communications generally • delivers reports to data contributors, investors and industry
Service Provider • database establishment and management • takes direction from the NMN Manager • implements protocols as directed by the Technical Committee • repsonsible for creation of templates, data upload, QA, analysis, technical support to data contributors • creates reports for data contributors, investors and industry • creates high level reports for use in NMN communications program

9. Monitoring and Evaluation Framework

An evaluation framework using Bennett's Hierarchy is proposed in Table 8 for the NMN.

Table 8: Evaluation Framework for NMN

Bennett's Hierarchy	Indicator	Measured By
Inputs	Investors	$ - cash and in-kind Collaborations with other industry funded projects
Activities	Communication to industry stakeholders	Media and communication activity
	Promotion of benchmarking practices to producers	Media and communication activity
	Delivery of NMN reports to industry, service providers and data purchasers	Number and timeliness of reports delivered
Participants	Service providers submitting data	Number of service providers engaged
	Producers authorising the submission of data	Number of data sets submitted
	Industry participation in the Management and Technical Committees	Participation in committees
	Utilisation of data for evaluation, prioritising future RD&E investment and policy formulation	Assessment of NMN usage by RDCs, agencies and researchers
Reactions	Performance of NMN Manager, Service Provider, Management and Technical Committee	Annual performance reviews - 360^0
	Response of industry to NMN protocol for data collection and methodology for analysis	Direct feedback and quality of data submitted to NMN
	Response of industry to NMN reports	Direct feedback and quality of reports generated by NMN
	Usefulness of data for evaluation, prioritising future RD&E investment and policy	Assessment by RDCs and

	formulation	researchers
	Acknowledgement of cross industry collaboration in NMN by government and CRRDC	Feedback from DAFF and CRRDC
Changes in KASA	**Knowledge** • Improved understanding of the opportunities and value provided to industry by NMN. **Aspirations** • A commitment to train staff, collect and submit data to NMN. **Skills** • Increased data collection, collation and benchmarking skills in advisory service businesses. Increased capacity to provide strategic business advice to clients. • Improved investment analysis and evaluation and policy formulation within RDCs and industry **Attitudes** • Support for NMN and acknowledgement of its potential to add value to not-for-profit and commercial activities. • A willingness to invest in NMN through cash or data contribution for the long term.	Stakeholder consultation processes at the end of the Pilot Phase of the project.
Practice Change	1. Collection of production and financial data by industry using a consistent protocol. 2. Production and financial performance indicators for industry generated using a standard methodology. 3. AAGIS analysis and reporting with increased application and usefulness for industry. 4. Increased participation by producers in data collection, benchmarking and performance monitoring to improve business performance. 5. Increased collaboration between not-for-profit and commercial advisory services in broadacre agriculture.	

| End Results | 1. Agreement across the not-for-profit and commercial advisory sectors on the appropriate protocol for data collection for the purposes of the NMN.
 2. Agreement across the not-for-profit and commercial advisory sectors on the appropriate methodology for analysis of production and financial information for the purposes of the NMN.
 3. Improved data availability for undertaking evaluation of research and development investments.
 4. Improved data availability for identifying future research priorities and informing policy debate.
 5. Evidence of increased collaboration and efficient use of resources across the rural research and development corporations.
 6. Increased collaboration with and support for private advisory services, through capacity building and resources to encourage producers to participate in data collection and benchmarking. | |