

Investment plan



Department of
Primary Industries

Addressing feed supply and demand through total grazing pressure management



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Published by NSW Department of Industry

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First published: September 2018.

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Publication citation: Waters C, Reseigh-O'Brien J, Pahl L, Atkinson T, Burnside D and Revell D (2018).

Addressing feed supply and demand through total grazing pressure management. NSW Department of Primary Industries.

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Industry vision

Total grazing pressure management in the Australian Rangelands has delivered sustained productivity growth and has responded to changing market preferences and community expectations.

Industry is better equipped to adapt to drought and climate variability through the effective management of all herbivores.

Red meat production in the Southern Australian Rangelands is able to verify minimal negative environmental impacts and demonstrate continual environmental improvement. Over time, this will enable a defensible case for the increasing social licence of the red meat industry.

By 2024 this program of work will:

- Equip producers and jurisdictions with the means to quantify current total grazing pressure impacts and provide a predictive tool that identifies density/damage functions to inform proactive management decisions;
- Raise awareness of 1,500 land managers (~ 25 percent of the pastoral industry of Southern Australian Rangelands) of cost-effective total grazing pressure management;
- Directly engage 2000 landholders in co-learning and information exchange activities;
- Have 100 landholders contributing meta-data to the R&D program; and
- Establish at least 24 co-learning and monitoring sites within six nodes across three states (QLD, NSW, and SA).

Background

The need to manage total grazing pressure (TGP)

Total Grazing Pressure (TGP) has been defined as the combined grazing pressure exerted by all managed and unmanaged herbivores on the vegetation, soil and water resources of rangeland landscapes. TGP is important because it influences the demand for forage (feedbase) by all herbivores, relative to supply. A central tenet in TGP management is therefore achieving the balance between supply and demand for feed, and avoiding an imbalance occurring when feed demand exceeds feed supply. This imbalance can be detrimental to animal welfare, livestock productivity and damage resource condition.

Less than half the herbivory in Southern Australian Rangelands is managed by pastoralists. Recent estimates suggest that a total of 28.93 million DSE are currently grazing these areas, of which 15.57 million DSE are unmanaged Macropods and goats and 13.36 million DSE or about 45 per cent of this are livestock. The numbers of unmanaged herbivory is highest in areas protected behind the National Dog Fence, where most of the sheep in the Southern Australian Rangelands are now grazing. In areas beyond the National Dog Fence, there is still an issue in managing significant numbers of unmanaged Macropods which are competing with cattle for forage.

The quantity and quality of forage available for all herbivores within the Southern Rangelands is frequently low, and as seasonal conditions deteriorate, there is direct competition between managed and unmanaged species for forage. With an expected increase in the frequency of variable seasons, this issue will only increase, exacerbating the decline in the prerequisite natural resource base. This will subsequently impact on short and long term production and threaten the social licence to operate for livestock industries. This will be most apparent when high densities of herbivores coincide with periods of low rainfall.

Livestock management which rotationally graze paddocks and allows effective rest and recovery of pastures can maintain higher levels of ground cover, increase floristic diversity and perennial grass content as well as increasing long-term soil organic carbon levels. While various forms of rotational grazing and pasture spelling are being practiced by land managers, grazing by Macropods in particular may reduce the benefits pastoralists may gain from early destocking, and resting pastures to allow recovery. Finally, land managers are obtaining no benefit from grazing Macropods, and there are contested views on the cost they impose upon the pastoral business through both impacts on resource condition and feedbase.

Land managers and service providers views about TGP

Land managers (n=219) and service providers (n=47) across the Southern Rangelands responded to a survey about their approach to grazing management, and the challenges imposed by unmanaged herbivory. The numbers of unmanaged herbivores reported by land managers match regional government monitoring program results. Respondents regard unmanaged herbivory as a significant problem affecting the economic performance of their pastoral businesses as well as having environmental impacts. Unmanaged herbivores commonly include goats and kangaroos but respondents viewed that camels, donkeys and pigs also needed to be included when referring to unmanaged herbivores, with pigs being of increasing importance.

Although, land managers and service providers are prepared to tolerate some forage demand from Macropods and unmanaged goats, they see current levels as being too high. Further, they believe unmanaged herbivory is costing them more than the estimates provided by responsible state agencies and the literature.

Land managers responding to the survey would like to see a reduction in unmanaged herbivory but recognise that some current control technologies are not cost-effective or payback periods are unknown. They would like to see improved technologies – especially in being able to control unmanaged herbivores and wild dogs spatially – and some financial assistance with implementing these methods.

Key messages are presented as follows.

- Land managers and service providers in the Southern Rangelands indicated that a reduction in forage demand from unmanaged herbivores was required.
- Land managers were prepared to tolerate some forage demand from unmanaged herbivores but levels needed to be less than currently maintained.
- Unmanaged herbivores commonly include goats and kangaroos. However, importantly, camels, donkeys and pigs need to be also included when referring to unmanaged herbivores.
- Land manager perceptions of numbers of unmanaged herbivores match regional monitoring undertaken by government agencies.
- Land managers and service providers recognised that resource condition is impacted by managed and unmanaged herbivores.
- The management of livestock was reported as having both positive and negative impacts on resource condition, but this could be managed.
- Survey respondents indicated a negative impact on pasture resulted from an inability to provide pasture rest and recovery time due to unmanaged grazing pressure.
- Unmanaged herbivores were reported as having negative impacts on resource condition, but cannot be easily/readily managed.
- Land managers reported the impact of Macropods on business profitability is at odds with that reported in the scientific literature.
- Land managers and other stakeholder groups believe that kangaroo management and fencing will have the greatest impact on TGP management over the next five years.



Recent and current investment in TGP

From 2004 to September 2012, the Western CMA (NSW) invested approximately \$9.4 million in some 284 projects involving TGP management (largely feral goat management). Western LLS has continued to invest in direct on-ground grants to landholders with the objective of improving natural resource outcomes.

The 2014 TGP incentive funding program committed \$2.8 million to 58 landholders to erect 1005 km of TGP fencing, 42 trap yards and undertake grazing management plans. The project objective is to ‘... increase productivity, native vegetation and soil health by reducing total grazing pressure, particularly of unmanaged goats’ (URS 2015). Conservative estimates suggest at least 1 million hectares in western NSW are currently being managed within TGP fencing either through incentive funding or within carbon farming areas.

Seven Collaborative Area Management or ‘cluster’ groups have been formed as part of a South West NRM (SWNRM), QLD state government funded initiatives. These groups of land managers came together and formed associations, allowing them to purchase fencing materials at a reduced cost. These groups then built exclusion fences surrounding their properties, helping each other and sharing fencing equipment. Once these fences are completed, the groups work to mitigate shared issues within the clusters. Some of these issues include unmanaged herbivores which apply an unsustainable grazing pressure and wild dogs that predate livestock.

The Collaborative Area Management project aims to increase diversity on properties, allowing land managers to continue with or return to sheep enterprises which anecdotally may benefit local towns through increased employment associated with the wool industry. Our best estimates suggest that approximately 7 million hectares in SW Queensland are now managed within cluster fencing.

Anecdotal evidence suggests both TGP and cluster style fencing continues to be erected independent of incentive programs in NSW, Queensland and WA. Motivation for exclusion fencing is primarily occurring to protect livestock from wild dogs but also excluding goats and Macropods.

Future needs

Despite the requirement for land managers to manage the natural resource on pastoral leases or freehold land to at least maintain resource condition, an inability to control the unmanaged herbivore populations precludes effective rest and recovery of pastures. Land managers are prepared to tolerate some forage demand from unmanaged herbivores, but in some areas, view the current populations of unmanaged herbivores is placing unprecedented demand for forage, which is negatively impacting pastoral businesses and the resource base. In addition, there is a view that this TGP exaggerates the effects of drought and accelerates the negative impacts on resource condition.

The uptake of exclusion fencing provides an unprecedented opportunity to manage TGP across extensive areas of SE Australia but as yet there is limited direct evidence of benefits to resource condition and primary production beyond financial benefits from reduced dog predation. Further, in recent years, practical non-lethal, non-fencing methods to influence livestock grazing distribution have been developed in Western Australia, referred to as Rangelands Self-herding and are currently being evaluated but is virtually unknown in SE Australia. The review identifies a range of other TGP management options and no immediate need for further research in developing new options is required. However, despite a range of other TGP management options (including re-introduction of the dingo and guardian animals) no comprehensive economic analysis of the cost-effectiveness of various TGP management options or the impacts on resource condition has been undertaken. Many of the TGP management options that have been recently adopted across the Southern Australian Rangelands remain locally specific with little networking to share insights or coordination beyond state boundaries. This precludes the development of a community of practice to support rangeland pastoralists understanding the implications of and evaluating alternative management options available.

Government surveys on changes in Macropod and goat populations employ different methods as well as information being fragmented across jurisdictions making a defensible, reliable assessment of TGP for the Australian red meat industry difficult. These surveys are also undertaken at temporal and spatial scales that preclude land managers making timely decisions to respond to TGP. Southern rangeland land managers are vulnerable to the consequences of unmanaged TGP with an inability to identify temporal and spatial changes in herbivore distribution at a paddock scale and to assess the consequences to feedbase and resource condition. There is an absence of technology products for land managers to provide this information which can underpin management decisions.

Rangeland managers require real-time information and cost-effective technologies to be able to manage total grazing pressure. To improve management of existing enterprises, the rangeland pastoral industry need to be able to:

- Identify early when an imbalance between forage supply and forage demand is imminent so that they can take action;
- Quantify the impact on resource condition, forage availability (and financial return) from grazing herbivores and current grazing approach; and
- Quantify the impact of non-managed herbivores accessing spelled paddocks, allowing land managers to determine how much to invest in control of unmanaged herbivores.

Changing consumer preferences are dictating that the red meat industry is able to demonstrate production system practices that use natural resources wisely and show care and health of animals. Globally, expectations for sustainability development and addressing climate change impacts are also driving a need for the red meat industry to meet these expectations. The management of total grazing pressure provides an opportunity for southern rangeland pastoral industries to increase livestock productivity, meet changing consumer preferences for sustainably produced meat and fibre and maintain its social licence to operate.



Value proposition

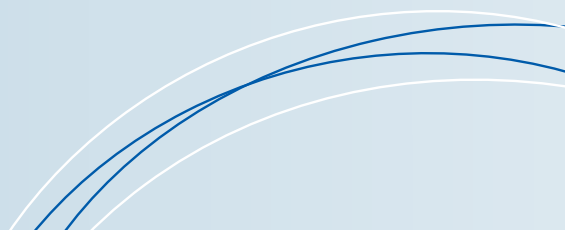
By identifying early when an imbalance between forage supply and forage demand is imminent land managers can take action and be proactive in decision making optimising feedbase for livestock enterprises and ecological function.

Providing evidence of productive and sustainable practices that may be required in differing markets allows the red meat industry to meet market specifications of livestock products and commit to forward contracts. This will capture emerging market opportunities associated with land management (e.g. carbon and environmental services).

Investment plan

Investment themes

Three main themes were identified as sub-programs (Table 1). Over-arching each of these themes is a “Total Grazing Pressure Management Network” which will provide on-going program extension and delivery for the three sub-programs. A fourth sub-program will work to deliver policy reform and is considered necessary to support the investment plan but undertaken independently by Meat and Livestock Australia. Indicative budgets are provided and assume at least an additional 50 % in-kind contribution from collaborators.



Overview of investment priorities for “Addressing feed supply and demand through total grazing pressure management” program			
Stakeholder Advisory Panel			
Who: RD&A expertise, land manager representatives, wildlife managers, animal welfare adviser Role: External program integration; Stakeholder an industry views			
Program Director			
Role: RD&A Plan management and coordination; Program contractual protocols; Internal and external program integration; Engagement and communication; Succession and capacity building; Program monitoring and evaluation			
Total grazing pressure management network			
Role: Development and delivery of stakeholder engagement and communication plan for each sub-program.			Peak Industry Councils and farmer organisations
Program Manager	Program Manager	Program Manager	
Sub-program 1 <i>Technical capacity for industry to manage all herbivores</i>	Sub-program 2 <i>Realising the production and environmental benefits of total grazing pressure management</i>	Sub-program 3 <i>Widespread adoption of evidence-based, effective total grazing pressure management</i>	Sub-program 4 <i>Legal capacity for industry to manage all herbivores</i>
Outcomes <ul style="list-style-type: none"> • Identification of herbivore density/ damage thresholds for TGP • Industry verified tool for TGP management • Industry pathways to manage TGP identified 	Outcome <ul style="list-style-type: none"> • Acceptable trade-offs between the environmental value of TGP management and farm profitability identified • Identification of spatial and temporal impacts on resource condition • Increased access to new markets 	Outcome <ul style="list-style-type: none"> • Locally relevant guideline to deploy TGP options • Industry use of cost-effective TGP management options maximised • Reduced risk of early adoption 	Outcomes <ul style="list-style-type: none"> • Policy framework which accommodates TGP management • Community recognition of the impact of unmanaged herbivores • Cross jurisdiction agreement for industry to responsibly manage Macropod populations
Projects 1.1 Assessing feasible solutions to identify an imbalance between feed supply and herbivore demand 1.2 Pilot and validate a tool to predict paddock scale hot spots and hot times for herbivore activity	Projects 2.1 On-farm benchmarking of environmental value of TGP management 2.2 Establishing a mechanism for trading and delivery of environmental services for the red meat industry	Projects 3.1 Establishing a network of co-learning sites. 3.2 Identification of cost effective TGP management options	Projects 4.1 National task force to co-ordinate and develop TGP management policy
\$1,170,000	\$490,000	\$450,000	\$150,000
Timeframe 1.1 Stage 1: Proof of concept: 6-9 months (\$60,000) Stage 2: Prototype development: 12 months (\$450,000) 1.2 Stage 3: Pilot for tool prototype: 3-4 years (\$360,000) Stage 4: Implementation: 2 years (\$300,000)	Timeframe 2.1 On-farm benchmarking: 4 years (\$440,000) 2.2 Trading environmental services: 6-12 months (\$50,000)	Timeframe 3.1 Establish a network of co-learning sites: 6 months (\$170,000) 3.2 Cost effective TGP management: 12 months (\$280,000)	Timeframe 4.1 National TGP Task Force: 12-18 months (\$150,000)

Stakeholders groups

Industry Research and Development Corporations	Government	Universities and Commercial Providers	Agricultural Sector Stakeholders	Finance & Commercial Sectors	Industry Lobby Groups	Philanthropic Investors
Meat & Livestock Australia <ul style="list-style-type: none"> • Sheepmeat Council of Australia • Australian Meat Industry Council Australian Wool Innovation (AWI) Goat Industry Council of Australia (GICA) Grains Research and Development Corporation (GRDC)	Federal (Department of Environment and Energy; Agriculture and Water Resources) State (NSW Department of Primary Industries (NSW DPI); Queensland Department of Agriculture and Fisheries (QDAF); Primary Industries and Rural Solutions South Australia (PIRSA))	University of Sydney (USyd) University of New England (UNE) University of Queensland (UQ) University of Southern Queensland (USQ) University of Adelaide (UoA) FarmMap4D Cibo Labs CSIRO	Producers and Land Managers NRM Bodies The Rangeland Alliance Kangaroo industry Retailers (Fencing)	Banks (NAB; Westpac; Rabo Bank) Retailers (Woolworths; Coles) Mining companies	NSW Farmers AgForce Queensland Livestock SA Pastoralists and Graziers Association of WA Animal Welfare groups	The PEW Charitable Trusts

Sub-Program 1. Stakeholders roles

Industry Research and Development Corporations	Government	Universities and Commercial Providers	Agricultural Sector Stakeholders	Finance & Commercial Sectors	Industry Lobby Groups	Philanthropic Investors
<p>MLA seek and secure funding including co-investment from AWI and GICA</p> <p>MLA to convene project initiation workshop including detailed project scoping</p>	<p>State: NSW DPI, QDAF, PIRSA, co-development and pilot of “proof of concept”; management of research sites to support evidence-based understanding of achievable production and environmental targets</p> <p>Support and seek funding streams</p>	<p>Cibo Labs/ FarmMap4D UQ and USQ to co-develop “proof of concept” and participate in field evaluation</p> <p>Cibo Labs develop and identify temporal and spatial changes in biomass</p> <p>UNE, NSW DPI (Biosecurity), USQ and USyd to develop methods to monitor herbivore populations</p> <p>NSW DPI, QDAF and PIRSA to develop methods to monitor livestock movement and production</p> <p>Commercial software developers</p> <p>UoA (Australian Institute of Machine Learning) to develop methods to integrate on-farm and GIS derived data</p> <p>Support and seek funding streams</p>	<p>NRM bodies support ongoing communication and adoption programs</p> <p>NRM bodies and The Rangeland Alliance to identify and facilitate industry forums, determine location of core/technology transfer sites and producer group participants</p> <p>Land managers and groups to participate in core and technology transfer sites</p> <p>Land managers industry champions</p> <p>NRM bodies support and seek funding streams</p>	<p>Banks (NAB; Westpac; Rabo Bank) co-investors</p> <p>Retailers (Woolworths; Coles) co-investors</p>		<p>PEW Foundation to champion program sponsorship</p>

Sub-Program 2. Stakeholders roles

Industry Research and Development Corporations	Government	Universities and Commercial Providers	Agricultural Sector Stakeholders	Finance & Commercial Sectors	Industry Lobby Groups	Philanthropic Investors
<p>MLA seek and secure funding including co-investment from AWI and GICA</p>	<p>State: NSW DPI, QDAF, PIRSA, management of research sites to support benchmarking, risk profile tool and identify trade-offs between environment and livestock production</p> <p>Federal: co-investment in on-farm benchmarking and environmental risk profile tool</p> <p>Support and seek funding streams</p>	<p>Universities to review suitable environmental indicators</p> <p>Cibo Labs and commercial software developer to develop environmental risk profile tool</p> <p>USQ, UQ and USyd development of environmental risk profile tool and develop mechanism for trading of environmental services</p> <p>UoA (Australian Institute of Machine Learning) to develop methods to integrate on-farm and GIS derived data</p> <p>Support and seek funding streams</p>	<p>NRM bodies identify and facilitate locating research and demonstration (technology transfer) sites</p> <p>NRM bodies supporting and co-ordination of research extension and development activities to support integration of adaptive management and early warning signals</p> <p>Pastoralists and industry groups participation in co-learning research (core and technology transfer sites)</p> <p>Land managers industry champions</p> <p>NRM bodies to develop locally relevant guidelines for identification of 'hot spots' (biomass/ composition)</p> <p>NRM bodies support and seek funding streams</p>	<p>Banks (NAB; Westpac; Rabo Bank) and retailers (Woolworths; Coles) to provide funding support to identify environmental co-benefit indicators</p>		<p>PEW Foundation to champion program sponsorship</p>

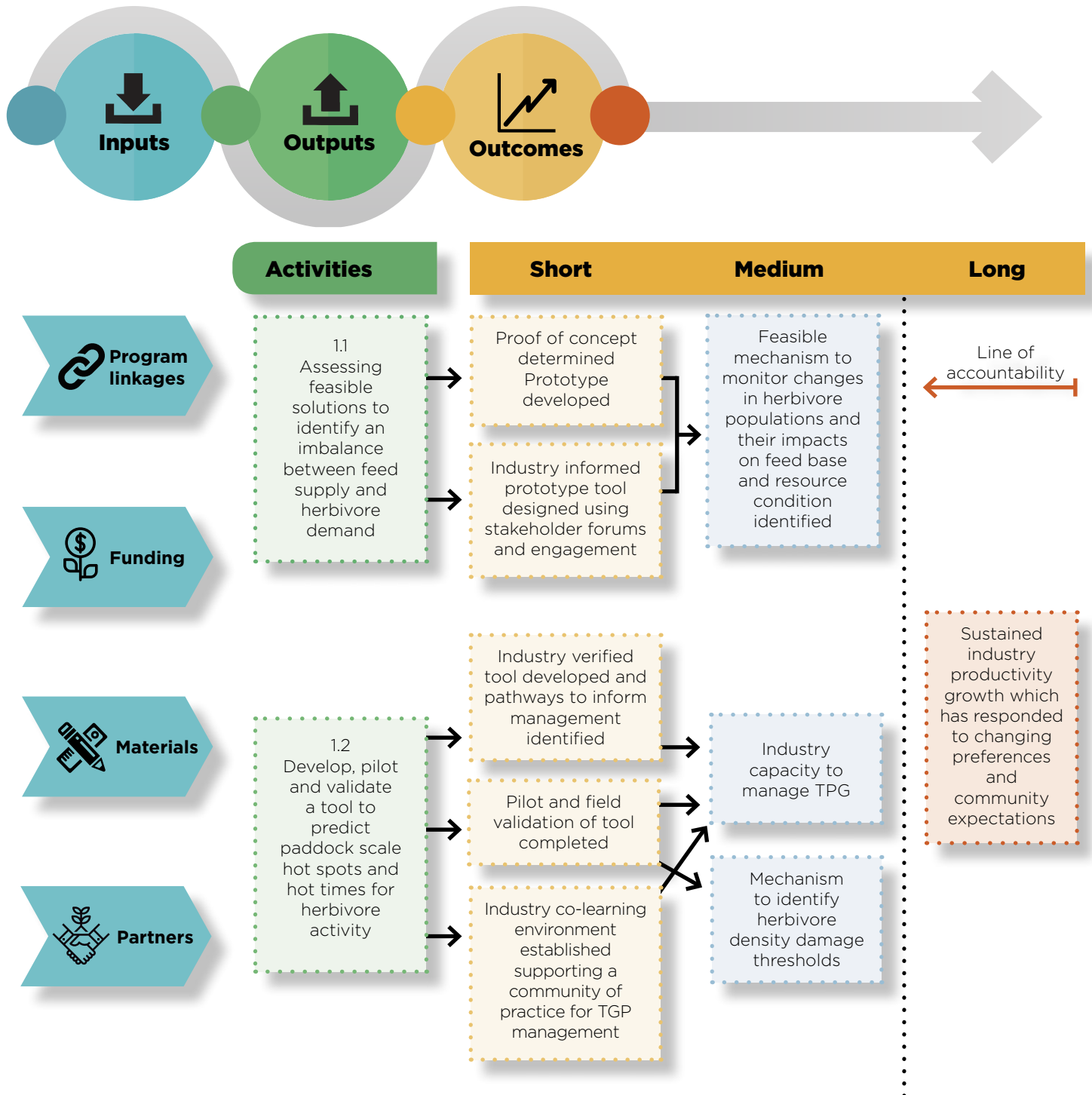
Sub-Program 3. Stakeholders roles

Industry Research and Development Corporations	Government	Universities and Commercial Providers	Agricultural Sector Stakeholders	Finance & Commercial Sectors	Industry Lobby Groups	Philanthropic Investors
MLA seek and secure funding including co-investment from AWI and GICA	State: NSW DPI, QDAF, PIRSA, management of research sites refinement and demonstration of TGP management options	USQ and UNE to undertake economic assessment (cost effective TGP management options) CSIRO to evaluate trade-offs (optimisation of land-use for pastoralism and TGP management	NRM bodies and The Rangeland Alliance to identify and facilitate locating research and demonstration (technology transfer) sites, support network of co-learning sites Land managers, adaptive management of research sites, refinement and demonstration of TGP management options in co-learning environment NRM bodies articulate the value proposition for TGP control methods	Banks and retailers to provide funding support to research TGP management options Fencing companies co-fund demonstration sites		PEW Foundation to champion program sponsorship

Sub-Program 4. Stakeholders roles

Industry Research and Development Corporations	Government	Universities and Commercial providers	Agricultural Sector Stakeholders	Finance & Commercial Sectors	Industry Lobby Groups	Philanthropic Investors
MLA seek and secure funding including co-investment from AWI, GICA and GRDC	State and Federal advice on legislative requirements		NRM bodies and the Australian Rangeland Alliance to co-convene national task force		Representation from all industry lobby groups	

Sub-program 1: Technical capacity for industry to manage all herbivores



1.1 Assessing feasible solutions to identify an imbalance between feed supply and herbivore demand

There are four stages to be undertaken sequentially

Stage 1: Proof of concept

Technical workshop to scope the development of an early warning technology product or tool to identify an imbalance between feed supply and herbivore demand; the tool to capture spatial and temporal trends for diagnostic and predictive responses; applied at a paddock scale with capacity to be integrated at whole property scale; identify key GIS data sources (e.g. Sentinel products for near real-time pasture biomass) and other remotely sensed products to provide real time changes in feed supply (biomass and quality); field method to detect the density and distribution of all herbivores. The following three steps will develop the “Proof of concept”

- i. Development of a Primer document:** This will be informed by the review document B.TGP.1702 and detail the project scope, technical experts, industry networks, existing GIS data sources, State government kangaroo and goat regional monitoring, current research programs and management options to build a “straw man” diagnostic and predictive tool to identify an approaching imbalance between feed supply and demand. This Primer document will inform industry Stakeholder Forums.
- ii. Industry Stakeholder Forums:** Industry consultation using three (QLD, NSW and SA) regional forums to determine the needs and requirements from industry for data sharing and integration with pastoral management decisions. This will inform and refine tool design (e.g. visualisation of output/reporting and dashboard design) and also scope the inclusion of property scale collection of data (citizen science approach) and App development to support real-time, locally specific data sources for tool development.
- iii. Technical workshop:** A two-day workshop will be conducted bringing together technical expertise in data analytics, monitoring wildlife populations and livestock grazing management/behaviour, feed base and resource condition and to scope resourcing requirements for tool development and validation. Examples of scope of these expert groups include:
 - a. Data analytics: uploading and analysing data (cloud based, on-line, App); requirement for additional derived data sources; real-time analytics using a mix of historical and local real-time data sources (qualitative and quantitative approaches).
 - b. Wildlife populations and livestock grazing management/behaviour: Application of sensors/themography to remotely monitor paddock-scale herbivore location and behaviour; predictive modelling of population changes; remote weighing to measure livestock production (weight and growth).

Estimated timeframe for completion: 6-9 months

Estimated budget: \$60,000

Stage 2: Prototype development:

Predictive analytics undertaken by independent software developer with multiple iterations validated with industry user groups across the network of sites; modification of existing platform such as FarmMap4D or MLA website used to house the tool.

Estimated timeframe for completion: 12 months

Estimated budget: \$450,000



1.2 Pilot and validate a tool to predict paddock scale hot spots and hot times for herbivore activity

Stage 3: Pilot for tool prototype:

Field validation of prototype tool to be undertaken at multiple “Core” field sites (Figure 1) in a co-learning environment with land managers and researchers. A co-learning environment established with land managers and pastoralists to inform further tool design and refinement, delivery of an outreach program as well as supporting adaptive grazing management. Software developers finalise tool design, involving iterative modification using land manager groups. The ability for the tool to predict locally specific TGP ‘imbalance’ thresholds/trends will be assessed. The utility value of the tool to allow for a bespoke approach that accounts for local conditions (site condition, vegetation/soil and management) will also be assessed.

Estimated timeframe for completion: 3-4 years

Estimated budget: \$360,000

Stage 4: Implementation:

A development program to demonstrate tool and link to adaptive grazing management across 24 co-learning sites (Figure 1). Demonstrate pathways for management options to respond to early warning signals of a feed supply/demand imbalance developed in an adaptive management framework.

Estimated timeframe for completion: 2 years

Estimated budget: \$300,000

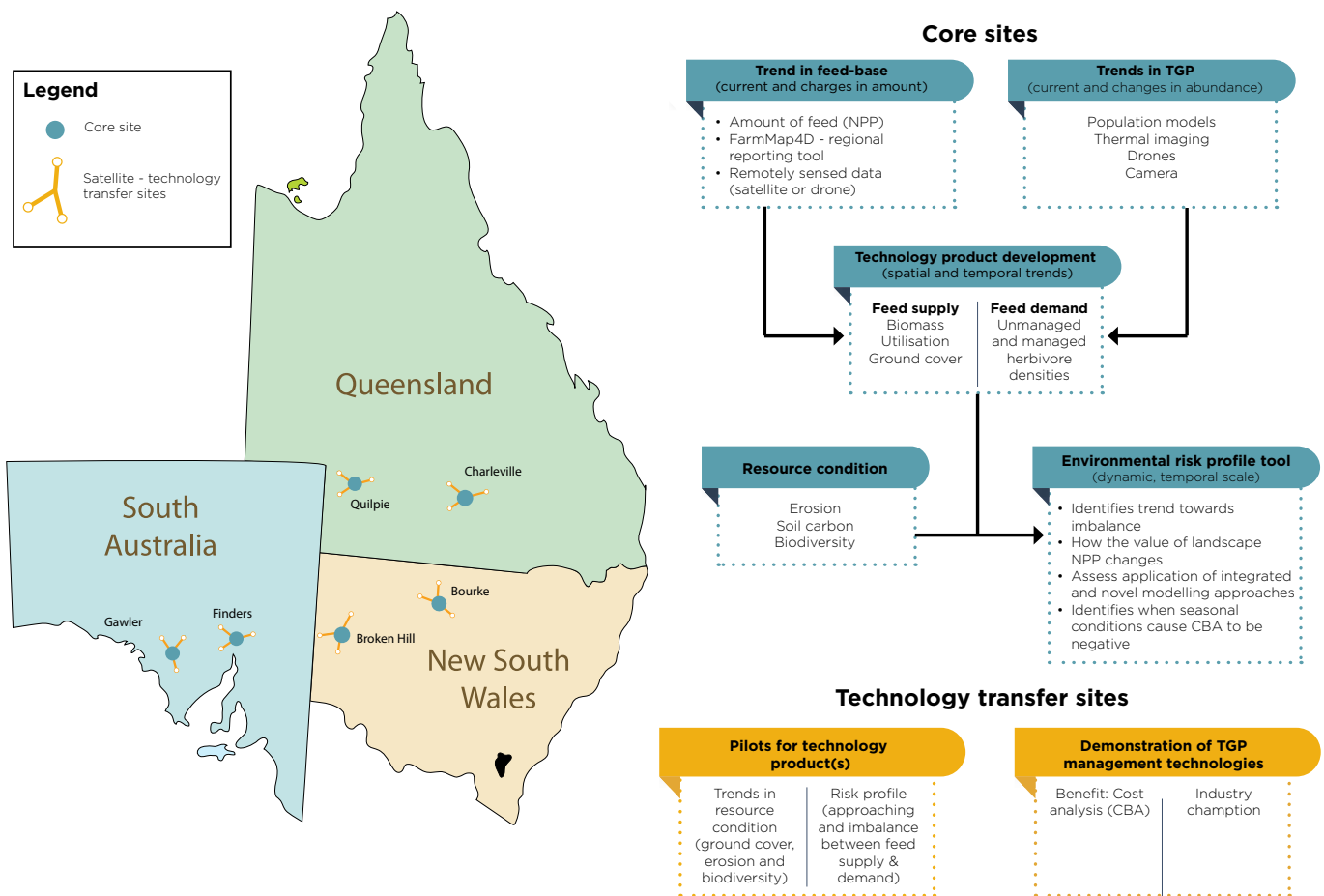
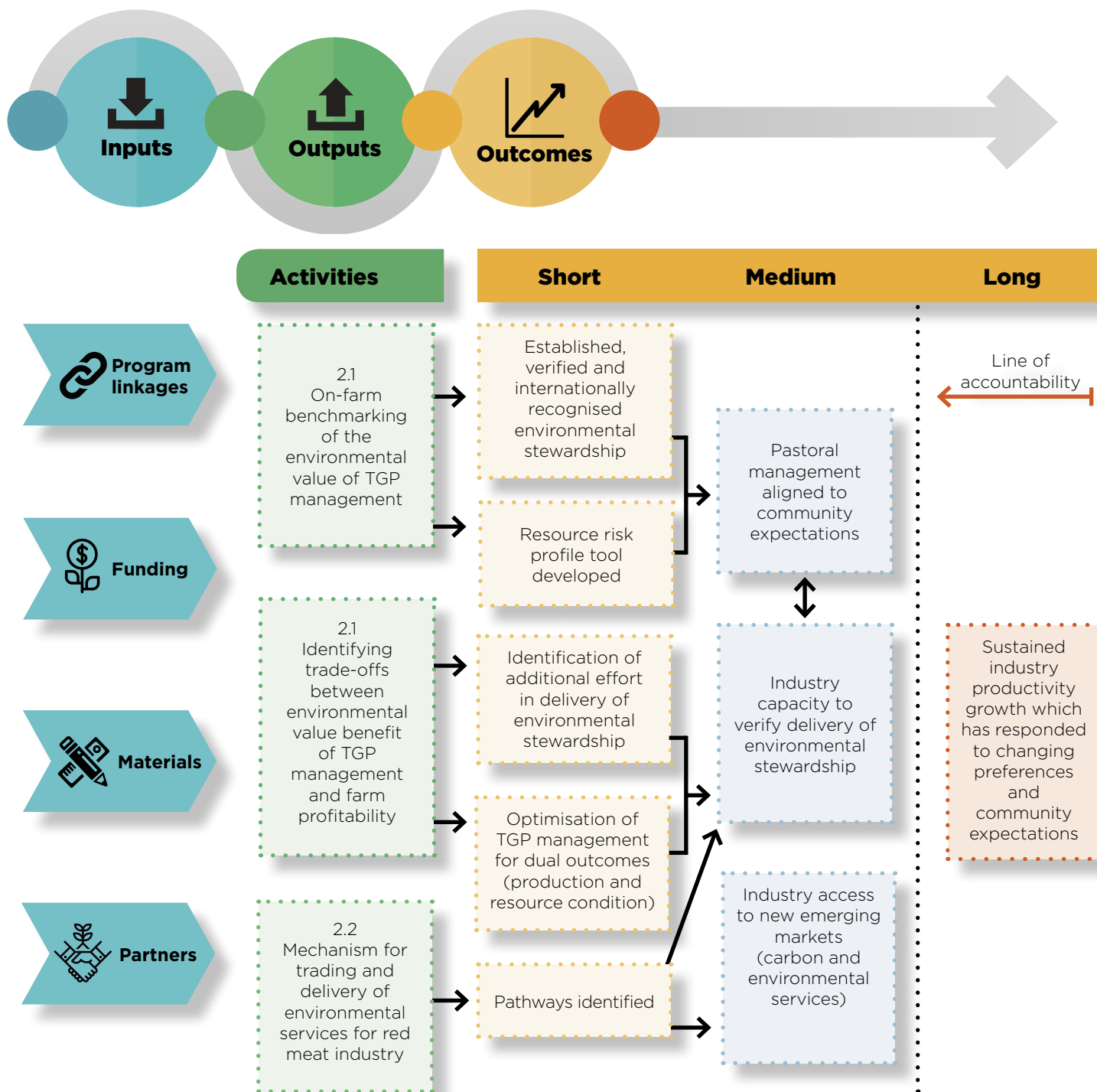


Figure 1. Location of core and satellite sites (technology transfer sites). Core sites are required to pilot, validate and demonstrate technology products (spatial and temporal trends tool and environmental risk profile tool). Satellite sites are required to demonstrate TGP management options in a co-learning environment which also allows adaptive grazing management to be supported through the integration of tools under regionally relevant conditions. Outreach programs will be supported through site networks. Location of sites chosen because they represent high total grazing pressure regions and/or adoption of TGP/exclusion fencing. These sites provide a network to support industry co-learning and a community of practice for TGP management.

Sub-program 2:

Realising the production and environmental benefits of TGP management



2.1 On-farm benchmarking of environmental value of TGP management

Evaluate through meta-data analysis and industry consultation, industry relevant indicators for resource condition (ground cover, perennial pasture composition, biodiversity, soil carbon). Initially, this will be underpinned by a literature review to assess practical rangeland environmental indicators. Develop a method to capture resource dynamics using integrated modelling which captures current landscape condition and changes over time. This may include a consideration of machine learning modelling rather than traditional statistical approaches. Here, opportunities to use locally specific information may be captured by land managers through e.g. purpose built App's to provide ongoing assessment of on-farm trends. This will be developed into an environmental "risk profile" tool which accounts for temporal and spatial impacts of land management to allow changes in management decisions to be considered in the context of farm economics. The "risk profile" benchmarking will be undertaken at 6 "Core" sites and efficiencies in delivering this project can be made by linkages with projects 1.2.

Estimated timeframe for completion: 4 years

Estimated budget: \$440,000

2.2 Establishing a mechanism for trading and delivery of environmental services for the red meat industry

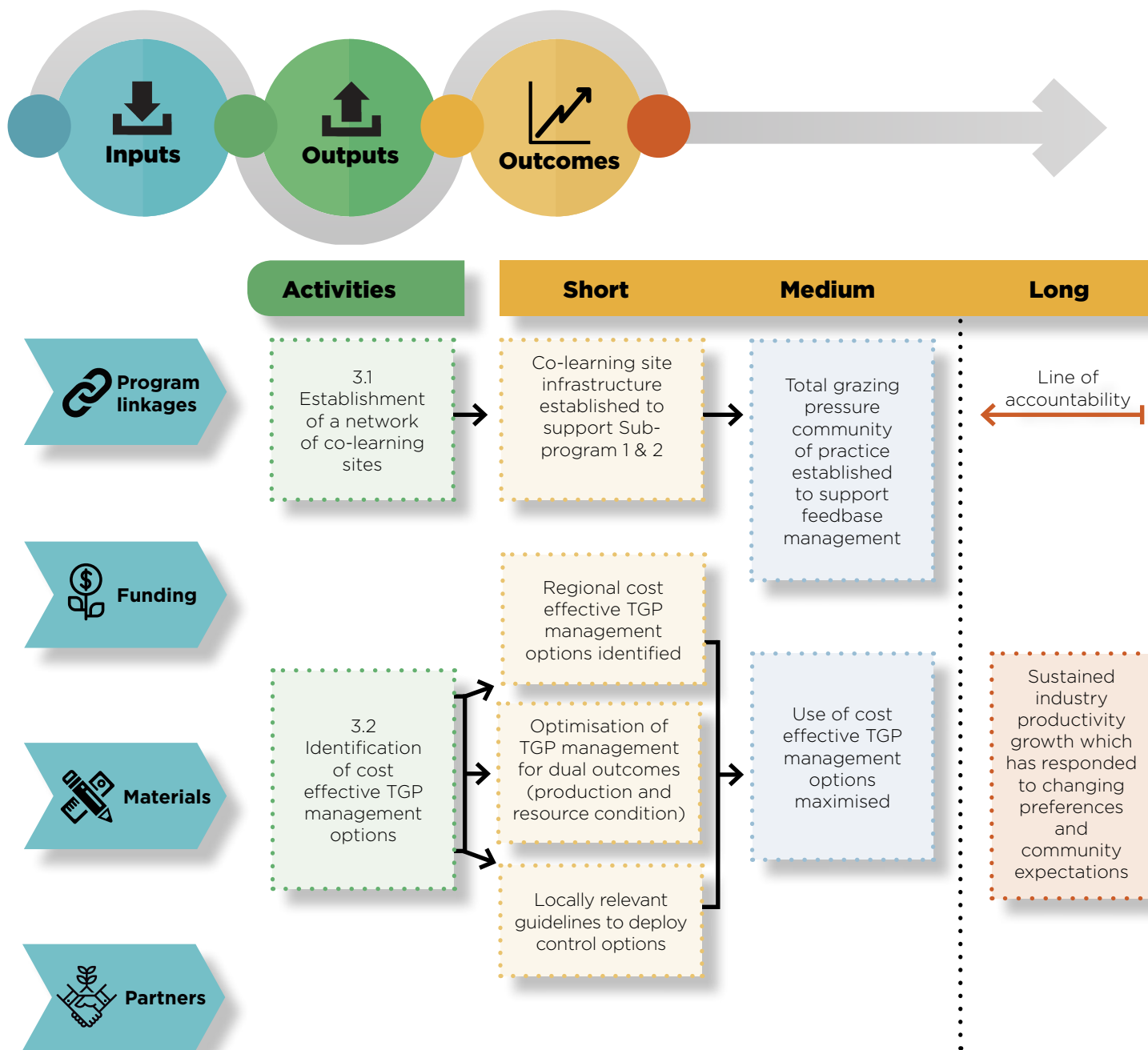
This is largely a desktop study to establish the rights and rules for TGP management that deliver environmental services and understand social and political constraints. Pathways to identify and label sustainable products demonstrating good stewardship will be identified. Economic analysis to determine the marginal benefits and costs to landholders to deliver environmental benefits will be costed and valued using a number of industry case studies. Established relationships and delivery pathways/channels for rangeland land managers to access environmental services markets will be identified. There are strong linkages to programs within the CRC High performing soils and The Sustainability framework for the red meat industry.

Estimated timeframe for completion: 6-12 months

Estimated budget: \$50,000

Sub-program 3:

Realising the production and environmental benefits of TGP management



3.1. Establishment of a network of co-learning sites

Identify collaborative land managers and establish multiple co-learning sites (TGP fencing; cluster fencing/ collaborative area management and paired contrasts outside fenced areas). This funding will provide a dedicated coordinator, support field day/updates and establish infrastructure as required. The expectation is that local NRM bodies through the Rangeland Alliance will undertake the role of managing the network, once established. Infrastructure of 24 monitoring and evaluation sites established. Identify local interest in livestock grazing management and TGP management alternatives for producer groups at each of the 24 sites. Adaptive livestock management decisions within each of the paired contrast sites to be made collectively by producer groups at each site. Implications of management decisions to be evaluated in a co-learning environment. A network for communication and sharing of co-learning supported nationally through established links with NRM bodies by The Rangeland Alliance.

Estimated timeframe for completion: 6 months

Estimated budget: \$170,000

3.2 Identification of cost effective TGP management options

At each of the satellite “technology transfer” sites a comprehensive (whole farm) economic assessment of TGP management options to be undertaken. Input data for these analyses to be developed using locally relevant on-farm values, identified through producer groups. The herbivore density thresholds which support economic management options identified. Locally relevant, TGP management guidelines to be developed and shared across the network of producers. Opportunities for co-investment in outreach programs and training in e.g. grazing management, animal health and welfare also need to be developed, adding value to the co-learning sites.

Estimated timeframe for completion: 12 months

Estimated budget: \$280,000

Sub-Program 4:

Legal capacity for industry to manage all herbivores

4.1 National task force to co-ordinate and develop TGP management policy

This sub-program recognises the requirement for TGP management to be formed within the context of a social licence to operate and aims to influence policy settings by

- i. Obtaining recognition that Macropods are comparable to “livestock” and require management under certain seasonal conditions. This will require negotiation with animal welfare and state government environment reporting to modify or influence policy and legislation.
- ii. An examination of animal welfare issues associated with TGP management options. This would include scoping and developing an ‘industry code of practice’ for animal welfare best practice.
- iii. National coordination of TGP policy which is informed by a reliable, national TGP monitoring program (including the contribution of livestock, feral and native herbivores). This will require negotiation with state government agencies to report regional changes kangaroo and goat populations in an industry relevant, timely format. This material should be reported on the MLA website.

Estimated timeframe for completion: 12-18 months

Estimated budget: \$150,000



Department of Primary Industries



Local Land Services



Government of South Australia
South Australian Arid Lands Natural Resources Management Board

