



Mackay Whitsunday Region Grazing management Practices

ABCD Management Frameworks

A 'path for improvement' for graziers and the
extension staff who support them

2010-2011

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The Mackay Whitsunday grazing management practices: ABCD management frameworks document has been designed to support the identification and validation of grazing management practices that can improve both freshwater and marine water quality and ecosystem health as identified in the Water Quality Improvement Plan (WQIP), (Drewry, J., Higham, W., Mitchell, C. 2008). A pivotal stage in the WQIP process was the development of the ABCD framework. The ABCD framework was designed to highlight and facilitate communication about the different levels or standards of management practice (as opposed to resource condition) within the grazing industry for different water quality parameters (i.e. sediment, nutrients and chemicals). The classification provides a definition and a scale of improvement from

dated to current best practice through to future aspirational or 'cutting edge' practices.

Over time, changes in knowledge, technology, costs and market conditions may validate cutting-edge Aspirational practices so they eventually become Best management practices. If these practices are widely adopted and become the new industry standard, they may become Conventional practices within an ABCD framework. Considerable effort was undertaken to consult with grazing industry partners when developing the ABCD framework. However it must be noted that producers have identified there may be a need to adopt practices across several classification levels to successfully manage and operate their farming enterprise on a year to year basis.

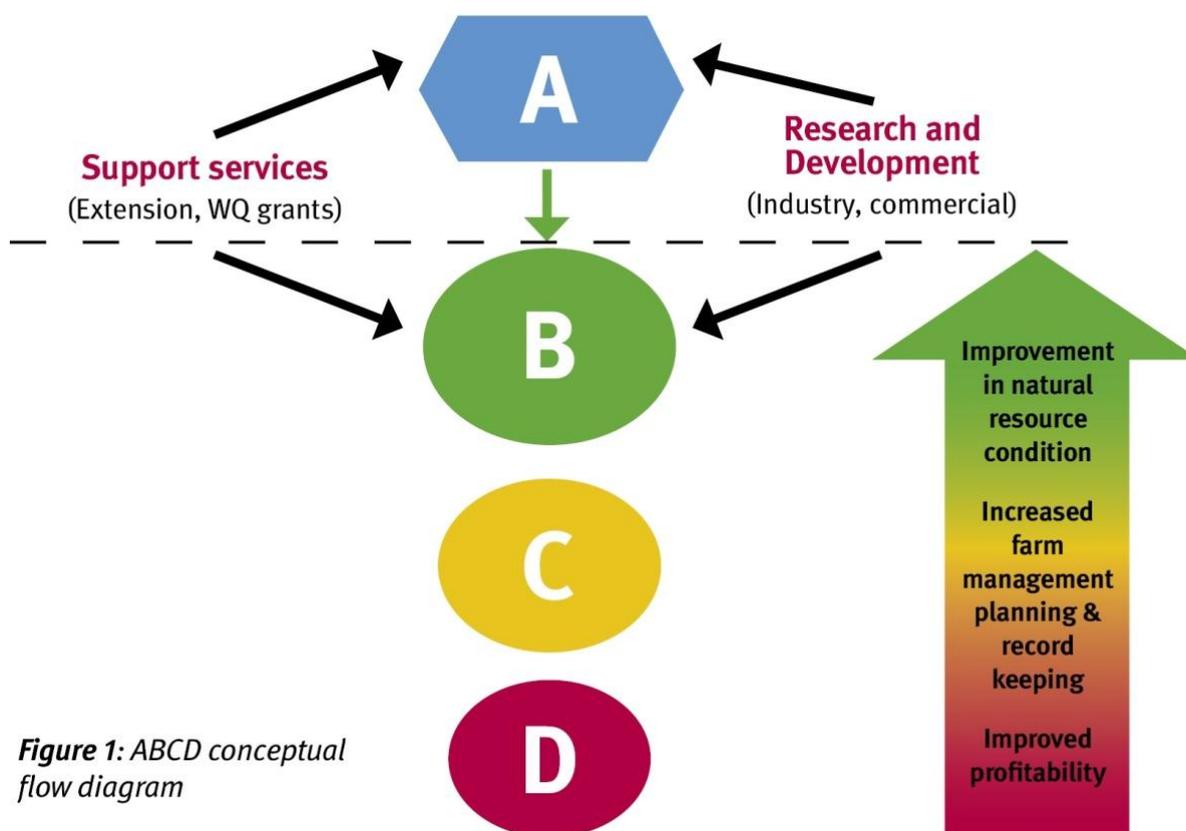


Figure 1: ABCD conceptual flow diagram

While the focus of the outcomes associated with practices outlined in this document is toward the enhancement of end of catchment water quality and marine ecosystem health. The practices identified must also be

quantified in terms of their economic and social benefits to the individual land managers and the broader community prior to being adopted as the most suitable practice solutions.

Table 1 Classes and definition of ABCD Framework for grazing management practices

Class	Description of practice	Effect on Resource condition
Aspirational	<ul style="list-style-type: none"> • New and innovative practices adopted by graziers that require further validation to determine industry wide environmental, social and economic costs/benefits. • Validation requires R&D and if appropriate, some validated practices will become recommended BMP. • Development of Farm Management Plans and utilisation of new and innovative technology. 	<ul style="list-style-type: none"> • Validated practices likely to achieve medium to long term target resource condition goals if widely adopted. • Some practices may have good environmental outcomes which may not be universally endorsed as feasible by industry and community.
Best practices	<ul style="list-style-type: none"> • Currently promoted practices referred to as 'Best Management Practices'. • Widely promoted by industry to achieve current and future industry expectations and community standards. • Development of Farm Management Plans and utilisation of common technology. 	<ul style="list-style-type: none"> • Practice likely to achieve short to medium target resource condition goals if widely adopted.
Conventional	<ul style="list-style-type: none"> • Common practices widely adopted by industry but meet only basic current industry expectations and community standards. 	<ul style="list-style-type: none"> • Practice unlikely to achieve short term target resource condition goals if widely adopted.
Dated	<ul style="list-style-type: none"> • Practices superseded or unacceptable by current industry expectations and community standards 	<ul style="list-style-type: none"> • Practice likely to degrade resource condition if widely adopted

For the ABCD framework it is important to specify the current resource condition, resource condition targets, and timeframes, as well as the year of reference for the level of classification. This provides a common reference point and allows the framework to be used to communicate to water quality researchers, social scientists, economists, industry research and extension organisations, and land managers information on:

- The level of water quality improvement that can be achieved through improved management practices;
- The social and economic costs and benefits of adopting improved management practices;
- The level of adoption of management practices required to achieve the Water Quality Targets;
- The emphasis on the importance of detailed farm management planning and record keeping to achieving improved

resource management, rather than a single technology or individual practice;

- The type and scope of action such as Market Based Incentives (MBIs) required to achieve Water Quality Targets.

The ABCD framework classification descriptions for grazing are reviewed and updated to ensure:

- the wording of the classification descriptions match current industry terminology;
- resource condition indicators have been defined;
- the link between the resource condition indicators and the level of practice validated;
- actions required to move from one level of management to another level of management further defined.

Pasture management practices for grazing are summarised below. Current practice is likely to be a mix of all practices in the table

Dated Grazing Pasture Management Practices that are superseded or unacceptable	Conventional Grazing Pasture Management Farming practices that meet minimum expectations
<p>Stocking rate exceeds pasture availability</p> <p>Description:</p> <ol style="list-style-type: none"> 1. No pasture monitoring. 2. Ground cover targets exceeded for most grazing land types in most years. 3. No spelling. 4. Regular survival supplementary feeding. 5. No weed control. 6. Lack of infrastructure to deal with stocking rate. 7. No stock management / husbandry. 	<p>Property specific – no differentiation between grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> 1. Pasture management strategy based on the major grazing land type. 2. Pasture monitoring conducted for the major grazing land type. 3. Carrying capacity based on seasonal visual assessment or set stocking rate (not recorded). 4. Occasional survival feeding.
<p>Resource Condition (one or more indicators):</p> <ol style="list-style-type: none"> 1. Badly degraded. 2. Absence of 3P grasses. 3. Increasing areas of erodible bare ground. 4. Increasing proportion of weeds. 	<p>Resource condition (one or more indicators):</p> <ol style="list-style-type: none"> 1. General decline in perennial, palatable and productive (3P) grasses. 2. Increase in less desirable pasture species. 3. Susceptible to erosion. 4. Some increase in areas of bare ground. 5. Increased weed presence.
Best Practice Grazing Pasture Management Currently promoted Best Management Practices	Aspirational Grazing Pasture Management Innovative practices that require further validation
<p>Property specific – independent management of less resilient grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> 1. Multiple pasture monitoring at critical times and stocking rates adjusted accordingly and appropriate nutrition action strategies implemented to maintain a minimal level of ground cover. 2. Soil testing of land types and following recommended analysis / fertiliser regimes where appropriate. 3. Fencing to land types. 4. New watering points where cattle are excluded from existing watering sources by fencing to land type. 5. Seasonal spelling. 6. Monitoring grass : legume ratios. 	<p>Property specific – independent management all grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> 1. Pasture management strategy based on all grazing land types. 2. Carrying capacity based on consideration of longer term climatic data for all grazing land types. 3. Stocking rates adjusted for all grazing land type to achieve ground cover targets. 4. Geo-referenced soil testing and monitoring sites for each land type and deficiencies remedied. 5. All grazing land types fenced where practical and appropriate. 6. Pasture utilisation seldom exceeds sustainable thresholds.
<p>Resource Condition (one or more indicators):</p> <ol style="list-style-type: none"> 1. Stability and improvement in 3P grasses. 2. Managed weed presence (woody or otherwise). 3. Maintain or improve soil condition. 	<p>Resource condition (all indicators at this level):</p> <ol style="list-style-type: none"> 1. Good cover of 3P grasses. 2. Identified weed control program. 3. Minimal erosion, with management strategy in place. 4. Minimal woodland thickening, with management strategy in place.

Pasture spelling practices for grazing are summarised below. Current practice is likely to be a mix of all practices in the table.

Dated Grazing Pasture Spelling Management Practices that are superseded or unacceptable	Conventional Grazing Pasture Spelling Management Farming practices that meet minimum expectations
<p style="text-align: center;">No pasture spelling</p> <p>Description:</p> <ol style="list-style-type: none"> Pasture spelling not used in the management of any grazing land types. Lack of internal fencing. <p>Resource Condition:</p> <ol style="list-style-type: none"> Badly degraded. Absence of 3P grasses. Increasing areas of erodible bare ground. Increasing proportion of weeds. 	<p style="text-align: center;">Pasture spelling for some grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> One-off spell (wet season) – opportunity, not planned. Inadequate fencing and infrastructure. De-stocking as a consequence of above. <p>Resource condition (one or more indicators):</p> <ol style="list-style-type: none"> General decline in perennial, palatable and productive (3P) grasses. Increase in less desirable pasture species. Susceptible to erosion. Some increase in areas of bare ground. Increased weed presence.
Best Practice Grazing Pasture Spelling Management Currently promoted Best Management Practices	Aspirational Grazing Pasture Spelling Management Innovative practices that require further validation
<p style="text-align: center;">Pasture spelling for less resilient grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> Pasture monitoring used to determine spelling (such as wet season spelling) used periodically in the management of less resilient grazing land types. Planned annual regime so as to better utilise country. Rotation based on seasonal conditions and pasture monitoring results. Land types assessed and vulnerable types given more consideration. 	<p style="text-align: center;">Pasture spelling for all grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> Pasture spelling (such as wet season spelling) used periodically in the management of all grazing land types to maximise soil seed bank and to provide sufficient rest for the pasture. All land types taken into consideration and planning appropriately for each land type. Pasture allowed to re-seed at appropriate intervals. Grazing strategies implemented during the growing season.
<p>Resource Condition (one or more indicators):</p> <ol style="list-style-type: none"> Stability and improvement in 3P grasses. Managed weed presence (woody or otherwise). Maintain or improve soil condition. 	<p>Resource Condition (all indicators at this level):</p> <ol style="list-style-type: none"> Good cover of 3P grasses. Identified weed control program. Minimal erosion, with management strategy in place. Minimal woodland thickening, with management strategy in place, according to regional ecosystem zone requirements.

Riparian management practices for grazing are summarised below. Current practice is likely to be a mix of all practices in the table.

Dated Grazing Riparian Management Practices that are superseded or unacceptable	Conventional Grazing Riparian Management Farming practices that meet minimum expectations
<p>No independent management of riparian / frontage grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> Riparian grazing land types are not managed independently of other grazing land types. Unrestricted access all year. Extended periods of excessive stocking rates. 	<p>Partial independent management of riparian / frontage grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> Riparian grazing land types are not managed independently of other grazing land types. Riparian zone not fenced or partly fenced. Off stream watering points used to encourage stock away from riparian area.
<p>Resource Condition:</p> <ol style="list-style-type: none"> Bank erosion and slumping, eroding cattle tracks, minimal grass or vegetation cover, high weed component. 	<p>Resource Condition (one or more indicators):</p> <ol style="list-style-type: none"> Bank erosion and slumping, eroding cattle tracks, acceptable grass or vegetation cover, high weed component.
Best Practice Grazing Riparian Management Currently promoted Best Management Practices	Aspirational Grazing Riparian Management Innovative practices that require further validation
<p>Independent management of riparian / frontage grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> Riparian grazing land types are managed independently of other grazing land types where practical. Where practical riparian areas fenced using permanent robust fencing that is a minimum of 20m from the top of the bank, where appropriate on defined watercourses to create a riparian paddock. Carrying capacity based on pasture monitoring at critical times conducted for riparian grazing land types. Stocking rates adjusted independently of other grazing land types in response to pasture monitoring to maintain higher ground cover for riparian grazing land types. Preference for dry season grazing – regular, short interval grazing period/s with wet season spelling to maintain ground cover and minimise stock loss Off-stream watering points provided. 	<p>Regeneration or revegetation of native vegetation within riparian / frontage grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> Independent grazing management is applied to encourage natural regeneration (weed control) or revegetation of a native riparian vegetation buffer (at least 10m wide) from the top of the bank. Riparian areas fenced using permanent robust fencing that is located above the seasonal flood zone (if practical) a minimum of 20+m from the top of the bank. Exclusion of stock is conducted while native riparian vegetation buffer is established up to 5m tall. The native riparian vegetation buffer consists of local native trees & shrubs constant with the original regional ecosystem. Selective grazing consistent with 'B' class practice can be implemented to manage pasture grass adjacent to the native riparian vegetation buffer, once the native riparian vegetation buffer is established. Preference for dry season grazing – regular, short interval grazing period/s with wet season spelling to maintain ground cover and minimise stock loss.
<p>Resource Condition (one or more indicators):</p> <ol style="list-style-type: none"> Reduced riparian bank slumpage with adequate grass and vegetation cover. 	<p>Resource Condition (all indicators at this level):</p> <ol style="list-style-type: none"> Stable riparian banks with well established or regenerating native riparian vegetation buffer at least 10m wide from the top of the bank.

Gully management practices for grazing are summarised below. Current practice is likely to be a mix of all practices in the table

<p>Dated Gully Management Practices that are superseded or unacceptable</p>	<p>Conventional Gully Management Farming practices that meet minimum expectations</p>
<p style="text-align: center;">No gully management</p> <p>Description:</p> <ol style="list-style-type: none"> 1. Gully management not used for any grazing land types. 	<p style="text-align: center;">Gully management for identified risk areas</p> <p>Description:</p> <ol style="list-style-type: none"> 1. Identification of risk areas with appropriate action taken. 2. No rehabilitation of identified eroding gullies.
<p>Resource Condition:</p> <ol style="list-style-type: none"> 1. Actively eroding gullies, with moving sediment. 	<p>Resource Condition (one or more indicators):</p> <ol style="list-style-type: none"> 1. Actively eroding gullies, with moving sediment.
<p>Best Practice Gully Management Currently promoted Best Management Practices</p>	<p>Aspirational Gully Management Innovative practices that require further validation</p>
<p style="text-align: center;">Gully management for vulnerable grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> 1. Prevent establishment of new gullies and contain expansion of established gullies in susceptible or vulnerable grazing land types. 2. Fencing (temporary or permanent) of rehabilitated area and manage independently during rehabilitation period. 3. Planning for infrastructure takes into account minimisation of risk to gully erosion. 4. Monitoring susceptible areas and implementation of restoration activities – appropriate and site specific, including mechanical intervention. 5. Stocking rates adjusted independently of other grazing land types in response to pasture monitoring to maintain higher ground cover within the active gully catchment. 6. Carrying capacity based on pasture monitoring at critical times conducted for vulnerable grazing land types. 	<p style="text-align: center;">Gully management for all grazing land types</p> <p>Description:</p> <ol style="list-style-type: none"> 1. - 3. Same as 'B' class. 4. All grazing land types in the active gully catchment are managed independently of other grazing land types where appropriate. 5. Carrying capacity based on consideration of longer term inter-annual variability and monitoring in critical periods conducted for grazing land types in the active gully catchment. 6. Active stabilisation of gullies using restoration or mechanical intervention. 7. Stocking rates adjusted independently of other grazing land types in response to pasture monitoring to maintain higher ground cover within the active gully catchment. 8. Annual or biannual wet season spelling or complete exclusion is conducted for grazing land types within the active gully catchment during the rehabilitation period.
<p>Resource Condition (one or more indicators):</p> <ol style="list-style-type: none"> 1. Reduction in the expansion of gully erosion or movement of sediment out of gully areas. 	<p>Resource Condition (all indicators at this level):</p> <ol style="list-style-type: none"> 1. Stable gullies, no expanding gully erosion or movement of sediment out of gully areas. Increasing vegetation cover in erosion prone gullies.

Nutrient management practices are summarised below. As grazing nutrient management progresses to B and A class there is increasing precision in management of nutrient inputs to optimise the supply of nutrients to the pasture. The use of equipment as defined in this table can be owned individually, share-owned, or contracted.

Dated Grazing Nutrient Management Practices that are superseded or unacceptable	Conventional Grazing Nutrient Management Farming practices that meet minimum expectations
<p style="text-align: center;">No Nutrient Management</p> <p>Description:</p> <ol style="list-style-type: none"> 1. No nutrient program or opportunistic (price-based) unregulated application. 	<p style="text-align: center;">All land types managed the same for nutrient applications</p> <p>Description:</p> <ol style="list-style-type: none"> 1. Applying fertiliser based on visual assessment, and historic application. 2. Limited soil testing. 3. Uneven application of fertiliser with limited calibration of application equipment. 4. One rate application to all land types/property.
<p>Machinery:</p> <ol style="list-style-type: none"> 1. Broadcast applicator. 	<p>Machinery:</p> <ol style="list-style-type: none"> 1. Broadcast applicator.
Best Practice Grazing Nutrient Management Currently promoted Best Management Practices	Aspirational Grazing Nutrient Management Innovative practices that require further validation
<p style="text-align: center;">Land types managed independently for nutrient application</p> <p>Description:</p> <ol style="list-style-type: none"> 1. Conduct soil tests per representative soil type/land type and appropriate fertilizer application related to soil test results/pasture composition/land type. 2. Legumes introduced for increased pasture protein and nitrogen soil levels. 3. Timing nutrient applications with respect to seasonal conditions, rainfall probabilities and appropriate ground cover density (nitrogen-end of wet season / phosphorous-pre wet season where practical). 4. Seasonally timed strategic pasture renovation to reduce compaction issues. 5. Even application of fertiliser and regular calibration. 6. Strategic high nitrogen paddocks (grazing or fodder). 7. GPS guidance (light bar or auto steer) in fertiliser application. 8. 	<p style="text-align: center;">Variable rate nutrient application within land types</p> <p>Description:</p> <ol style="list-style-type: none"> 1. Geo-referenced soil sampling in identified, specific zones in paddocks each year, which includes more comprehensive sampling. 2. Apply variable fertiliser rates between paddocks based on representative soil type. 3. As for 'B' class management. 4. Soil ameliorants to achieve desirable pH. 5. Planned pasture renovation based on analysis of soil compaction measurements and appropriately timed and even application of fertiliser through regular calibration. 6. Strategic high nitrogen paddocks (grazing or fodder). 7. NIRS sampling.
<p>Machinery:</p> <ol style="list-style-type: none"> 1. Application of granular or liquid fertiliser with GPS guidance. 	<p>Machinery:</p> <ol style="list-style-type: none"> 1. Ability to adjust rate for granular or liquid applicators with GPS guidance.

Chemical management practices are summarised below. The term chemical is used in this section is a general classification including herbicides, fungicides, rodenticides and insecticides for which similar management principals apply. The equipment as defined in this table does not have to be owned individually (e.g. can be share-owned, contracted or other).

Dated Grazing Chemical Management	Conventional Grazing Chemical Management
Practices that are superseded or unacceptable Unplanned chemical management	Farming practices that meet minimum expectations Basic chemical management
<p>Description:</p> <ol style="list-style-type: none"> 1. Inappropriate and reactive application and use of chemicals. 2. One herbicide strategy for the whole farm based on historic application rates or rules of thumb. 3. Often the maximum lable rate of residual and knockdown products used irrespective of weed pressure. 4. No drift control. 5. No calibration knowledge. 6. Poorly maintained machinery. 7. Inappropriate nozzles used. 	<p>Description:</p> <ol style="list-style-type: none"> 1. Basic weed strategy based on chemicals. 2. Reactive preventative weed control. 3. Alternate strategies not considered. 4. Infrequent calibration of spray equipment conducted and limited nozzle maintenance. 5. Limited chemical selection based on one or two strategies 6. Limited knowledge of appropriate chemicals and application rates. 7. Minimal Personal Protection Equipment (PPE). 8. Meet legislative requirements for chemical storage, application and disposal. 9. Drift control measures in place.
<p>Machinery:</p> <ol style="list-style-type: none"> 1. Standard spray rig, with conventional nozzles. 	<p>Machinery:</p> <ol style="list-style-type: none"> 1. Standard spray rig, with a suitable range of nozzles for various application tasks.
Best Practice Grazing Chemical Management	Aspirational Grazing Chemical Management
Currently promoted Best Management Practices Strategic chemical management	Innovative practices that require further validation Strategic, spatial and innovative chemical management
<p>Description:</p> <ol style="list-style-type: none"> 1. Implementation of new application technology for, improved placement, timing and drift reduction. 2. Choice of herbicides and application rates based on weed spectrum and growth stage. 3. Knockdown herbicides replace residual herbicides where practical (residual herbicides only used where weed species and pressure demands it). 4. Timing chemical applications with respect to weed stage, irrigation and rainfall probabilities. 5. Integrated weed control approach to weed management including chemical, mechanical biological and nutrition. 6. The impact of chemicals on beneficial legumes considered. 7. Completed accreditation and competency requirements for chemical usage. 8. Frequent calibration of spray equipment including appropriate nozzle maintenance. 9. Methods in place to prevent weed seed spread and property hygiene. 	<p>Description:</p> <ol style="list-style-type: none"> 2. - 9. Same as 'B' class. 10. Targeted herbicide strategies within paddocks. 11. Spatial recording of the control of major weed species with GPS. 12. GPS guidance (light bar or auto steer) in chemical application. 13. NIR detection and control of weeds. 14. Low rates of nitrogen used to strategically outcompete low level weed infestations.
<p>Machinery:</p> <ol style="list-style-type: none"> 1. Boom/less jets, low drift nozzles (matched to job), splatter guns, wick wipers with manual rate control. 2. Pressure sprayers, knapsack sprayers, stem injection/cut stump and slashers. 3. GPS. 	<p>Machinery:</p> <ol style="list-style-type: none"> 1. Boom jets, low drift nozzles (matched to job), splatter guns, wick wipers with manual rate control. 2. NIR detectors. 3. GPS guidance. 4. Low impact machinery.

<p align="center">Dated Grazing Planning & Record Keeping Practices that are superseded or unacceptable</p>	<p align="center">Conventional Grazing Planning & Record Keeping Farming practices that meet minimum expectations</p>
<p>Description:</p> <ol style="list-style-type: none"> 1. No current practice review completed. 2. No formal records kept. 3. Records kept in head. 4. No forward planning for property improvement or increased sustainability. 5. No farm map. 6. No financial planning. 	<p>Description:</p> <ol style="list-style-type: none"> 1. No current practice review completed. 2. Basic record keeping. 3. Basic records kept in pocket notebook or similar highlighting major events. 4. Some forward planning into business. 5. No or outdated farm map. 6. Financial planning for current year.
<p align="center">Best Practice Grazing Planning & Record Keeping Currently promoted Best Management Practices</p>	<p align="center">Aspirational Grazing Planning & Record Keeping Innovative practices that require further validation</p>
<p>Planning and record keeping:</p> <ol style="list-style-type: none"> 1. Current practice review completed. 2. Formal record keeping process established. 3. Records kept in a paddock journal or diary. 4. Develop and implement a grazing land management plan, including a plan for water infrastructure. 5. Identify grazing land types and pasture types for each paddock using farm maps. 6. Record pasture condition and stocking rates. 7. Farm map in electronic or paper format. 8. Paper or electronic records kept (photos). 9. Basic financial planning for current and following years. 	<p>Planning and record keeping:</p> <ol style="list-style-type: none"> 1. Current practice review completed. 2. High quality formal electronic records kept. 3. Develop and implement a grazing land management plan which is updated regularly, including a plan for water infrastructure. 4. Identify grazing land types, pasture types, weed pressure and variability within each paddock using GPS and mapping technology. 5. Pasture assessments conducted on a regular basis to formulate accurate pasture budgeting using tools such as 'Stocktake'. 6. Electronic farm map. 7. Records kept in computer database. 8. Business regularly benchmarked using tools such as 'Profit Probe'.

Appendix One

Group Members:

Grazing Industry Working Group (past & present)

- Rod McFadzen (Land Manager) - Chair
- David George (Land Manager)
- Graham Townsend (Industry/Land Manager)
- Ron Earle (AgForce/Land Manager)
- Neil Cliffe (DEEDI)
- Harry Bishop (Local Regional Expert)
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- Miriam East (DEEDI)
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ABCD Framework Technical Working Group

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- Ross Dodt (DEEDI)
- John Hughes (DEEDI)
- Miriam East (DEEDI)
- Bill Camm (Land Manager)

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