

## Grazing Water Quality Risk Framework 2017-2022

Hillslope (pasture) management	Relative water quality risk			
	Lowest risk (A)	Moderate – Low risk (B)	Moderate risk (C)	High risk (D)
<p><b>Expectations of long term carrying capacities (LTCC<sup>i</sup>) (&gt;10 years) for the whole property are strategic and realistic. (10%)</b></p>	<p>LTCC estimates are equivalent to or less than district benchmarks. LTCC is developed using:</p> <ul style="list-style-type: none"> <li>land condition monitoring data</li> <li>district benchmarks</li> <li>historical data</li> <li>paddock records.</li> </ul> <p>GLM<sup>ii</sup> and Stocktake equivalent processes are considered and where available and appropriate, remote sensing data is also incorporated. LTCC is reviewed each year and if changes in land condition occur.</p>	<p>LTCC estimates are equivalent to district benchmarks. LTCC is developed using a combination of the following:</p> <ul style="list-style-type: none"> <li>land condition monitoring data</li> <li>district benchmarks</li> <li>historical data</li> <li>paddock records.</li> </ul> <p>GLM and Stocktake equivalent processes are considered. LTCC is not reviewed on an annual basis.</p>	<p>LTCC estimates are greater than district benchmarks. LTCC is developed using at least one of the following:</p> <ul style="list-style-type: none"> <li>land condition monitoring data</li> <li>district benchmarks</li> <li>historical data</li> <li>paddock records.</li> </ul> <p>LTCC is not reviewed on an annual basis.</p>	<p>LTCC not estimated or estimates are greater than district benchmarks. LTCC is developed based on personal experience and limited additional data sources. Never reviewed.</p>
<p><b>Expectations of seasonal and/or annual stocking rates (SR), that each paddock will carry, are realistic and tactical. (35%)</b></p>	<p>Stocking rates are estimated for all paddocks based on seasonal forage budgeting using Adult Equivalents (AE) or Livestock Units (LSU) standards. <b>Stocking rates do not exceed 10-30% pasture utilisation and/or &gt;2000kg/ha pasture biomass<sup>iii</sup>.</b> Stocking rates are proactively adjusted to meet pasture utilisation and biomass targets and the required level of ground cover.</p>	<p>Stocking rates are estimated for the entire property and sometimes use Adult Equivalents (AE) or Livestock Units (LSU) standards. Annual forage budgeting is sometimes taken into consideration. <b>Stocking rates do not exceed at least 30% pasture utilisation at least 2000kg/ha pasture biomass.</b> Stocking rates are occasionally adjusted to meet pasture utilisation and biomass targets and the required level of ground cover.</p>	<p>Stocking rates are rarely estimated for the entire property and do not use Adult Equivalents (AE) or Livestock Units (LSU) standards. <b>Stocking rates achieve pasture utilisation levels of 30-50% and at 1000-1500kg/ha pasture biomass.</b> Stocking rates are rarely and reactively adjusted to meet pasture utilisation and biomass targets and the required level of ground cover.</p>	<p>Stocking rates are not estimated for the entire property. <b>Stocking rates achieve pasture utilisation levels of &lt;50% and at 1000kg/ha pasture biomass.</b></p>



Hillslope (pasture) management	Relative water quality risk			
	Lowest risk (A)	Moderate – Low risk (B)	Moderate risk (C)	High risk (D)
<p>Groundcover<sup>iv</sup> thresholds are monitored and objectively managed to inform paddock management and used to inform SR and pasture management decisions. (30%)</p>	<p>Annual ground cover thresholds are maintained at &gt;75% across the whole property<sup>v</sup>. Forage budgets as per the GLM, Stocktake, grazing charts or equivalent process are undertaken on a seasonal basis in each paddock to monitor ground cover changes and the density of 3P pasture species. Ground cover trends and changes are monitored using FORAGE or VegMachine. Any changes are used to inform stocking rate.</p>	<p>Annual ground cover thresholds are maintained at 70-60% across the whole property. Forage budgets as per the GLM, Stocktake, grazing charts or equivalent process are undertaken on a seasonal basis across the property to monitor ground cover changes and the density of 3P pasture species. Any changes are used to inform stocking rate.</p>	<p>Annual ground cover thresholds are maintained at &lt;60% across the whole property. Forage budgets as per the GLM, Stocktake, grazing charts or equivalent process are undertaken on an annual basis in most paddocks to monitor ground cover changes and the density of 3P pasture species. Changes are rarely used to inform stocking rate.</p>	<p>Annual ground cover thresholds are maintained at &lt;50% across the whole property. No form of forage budgeting is undertaken.</p>
<p>Land condition assessments for all land types are based on:  1) Soil condition (amount of ground cover, infiltration rate, level of erosion)  2) Pasture condition (density and vigour of 3P grasses, amount of weed species)  3) Woodland condition (balance of woody weeds vs. pasture in different land types, amount of thickening). (10%)</p>	<p>Land condition assessments of soil, pasture and woodland condition are undertaken using photo monitoring sites and historical data (or equivalent techniques). This assessment is documented for all land types, undertaken on a seasonal basis and is considered in grazing and livestock management. Where available and appropriate, remote sensing technology is used to monitor long term trends in ground cover (FORAGE, VegMachine).</p>	<p>Land condition assessments of soil, pasture and woodland condition are undertaken and use photo monitoring sites or historical data (or equivalent techniques). This assessment is documented for all land types, is undertaken on an annual basis and is considered in grazing and livestock management.</p>	<p>Land condition assessments of soil, pasture and woodland condition are rarely undertaken. This assessment is not documented for all land types, is rarely undertaken on an annual basis and is sometimes considered in grazing and livestock management.</p>	<p>No assessments of land condition are undertaken.</p>

Hillslope (pasture) management	Relative water quality risk			
	Lowest risk (A)	Moderate – Low risk (B)	Moderate risk (C)	High risk (D)
<p><b>Vegetation management for woody regrowth is managed to avoid land degradation and its secondary impacts which include<sup>vi</sup>:</b></p> <ul style="list-style-type: none"> <li>• <b>Soil erosion and instability</b></li> <li>• <b>Salinity</b></li> <li>• <b>Acid sulfate soils</b></li> </ul> <p>[Not included in calculations]</p>	<p>When undertaking vegetation management for woody regrowth the following are considered to limit soil erosion and instability:</p> <ul style="list-style-type: none"> <li>• slope of cleared land, location of access tracks and linear features (fence lines) and use of contouring</li> <li>• maintenance of ground cover</li> <li>• stock access, grazing pressure and stocking rates</li> <li>• off-stream watering points</li> </ul> <p>All efforts are made to minimise the exposure of highly erodible and dispersive subsoils. For acid sulfate soils some codes prohibit mechanical disturbance to a depth greater than 30 centimetres in land zone 3 at elevations less than 5 metres. Acid sulfate soils may also occur in other land zones, but these zones are not covered by the codes. When clearing vegetation, the activity does not further contribute to any dryland salinity in the area. The codes prevent or limit the extent of clearing within 100 metres of a salinity expression area</p>		<p>When undertaking vegetation management for woody regrowth the following are not considered:</p> <ul style="list-style-type: none"> <li>• slope of cleared land, location of access tracks and linear features (fence lines) and use of contouring</li> <li>• maintenance of ground cover</li> <li>• stock access, grazing pressure and stocking rates</li> <li>• off-stream watering points</li> </ul> <p>No effort is made to minimise the exposure of highly erodible and dispersive subsoils. When clearing vegetation, the activity may negatively impact on any dryland salinity in the area.</p>	
<p><b>Management is tailored to encourage recovery of vulnerable areas, particularly those in declining (C) or poor condition (D). (10%)</b></p>	<p>Selectively grazed or vulnerable areas in C and/or D condition are identified and appropriate actions are taken to remediate these areas. The grazing management of affected area/s has been reviewed and stock have been permanently excluded for D condition areas and where appropriate for C condition areas. Additional actions include establishing diversion banks, break surface of scalded areas and sow grass seed, review placement of existing infrastructure such as watering points and incorporation of a spelling regime.</p>	<p>Selectively grazed or vulnerable areas in C and/or D condition are identified and appropriate actions are taken to remediate these areas. The grazing management of affected area/s has been reviewed and where possible stock have been excluded. Additional actions include establishing diversion banks, break surface of scalded areas and sow grass seed, review placement of existing infrastructure such as watering points and incorporation of a spelling regime.</p>	<p>Selectively grazed or vulnerable areas in C and/or D condition have mostly been identified and some actions have been taken to remediate these areas.</p>	<p>Selectively grazed or vulnerable areas in C and/or D condition have not been identified. No actions to remediate these areas.</p>

Hillslope (pasture) management	Relative water quality risk		
	Lowest risk (A)	Moderate – Low risk (B)	Moderate risk (C) High risk (D)
<b>Property mapping and inventory of natural resources enables objective assessment of long-term carrying capacity and stocking rate. (5%)</b>	Property map (GIS/GPS, sat image, aerial photo, farm map software etc.) including: <ul style="list-style-type: none"> <li>• actual fence line location</li> <li>• actual water point location</li> <li>• land types based on grazing land types for region (or equivalent)</li> <li>• measured paddock areas</li> <li>• measured land type areas</li> <li>• grazing circles around water points</li> <li>• vulnerable/sensitive land types (including frontages and wetlands).</li> </ul>	Property map (hard copy, aerial photo, topographic map and/or farm map software etc.) including: <ul style="list-style-type: none"> <li>• estimated fence line location</li> <li>• estimated water point location</li> <li>• land types based on grazing land types for region</li> <li>• measured paddock areas</li> <li>• estimated land type areas.</li> </ul>	Limited fence line and infrastructure mapping, rough estimates of paddock areas, little or no information on paddock land types or their areas.

Streambank management	Relative water quality risk			
	Lowest risk (A)	Moderate – Low risk (B)	Moderate risk (C)	High risk (D)
<b>Grazing pressure on frontage country and wetlands is effectively managed. (50%)</b>	Fencing as much as is practical and cost-effective, off-stream water points throughout, seeking assistance with areas which cannot be justified by benefit:cost alone.	Fencing as much as is practical and cost-effective, off-stream water points or other measures (supplementary feed/shade for camps) installed to attract cattle away from riparian and wetland areas.	Limited fencing, limited off-stream water points.	Generally no fencing or off-stream water points.
<b>Grazing pressure on frontage country and wetlands is managed carefully to maintain or improve the condition of these vulnerable land types. (50%)</b>	Full stock exclusion or low stocking pressure, regular wet season spelling, weed control through fire or other means, feral pig control program.	Moderate stocking pressure, occasional wet season spelling and weed/pest control.	Some spelling but unplanned and largely incidental.	No specific management applied.

Gully management	Relative water quality risk			
	Lowest risk (A)	Moderate – Low risk (B)	Moderate risk (C)	High risk (D)
<b>Remedial actions are undertaken to facilitate recovery of entire gullied area/s. (40%)</b>	Remediation of the entire gullied area is undertaken using professional advice to inform the required remediation actions. Actions include revegetation of gullied area and stock exclusion, temporary structures such as stick traps, porous check dams, contour banks, engineered check dams and mechanical gully reshaping and earth works.	Remediation of sections of the gullied area is undertaken using a mix of actions. These include managing existing infrastructure (watering points, fences) to reduce erosion, redistributing the grazing pressure away from gullied areas, fencing to exclude stock and/or adjusting stocking rates to encourage pasture growth.	Management of gullied areas is addressed through grazing management practices such as: those aimed at increasing pasture biomass and decreasing pasture utilisation rates to 25-30%, increasing ground cover levels, redistribution of grazing pressure, using fire and weed management, and reducing the clearing of woody vegetation.	Little or no change in management for gullied areas.
<b>Managing risk of erosion associated with linear features. (30%)</b>	<p>Linear features (roads, tracks and fences) planned and built with due attention to erosion risk. Where there are significant risks, an appropriate mix of actions has already been undertaken. Actions will include:</p> <ul style="list-style-type: none"> <li>• locating tracks on contour where possible; <b>avoiding disturbance of sodic soils</b>,</li> <li>• whoa boys or similar means to allow run-off to cross the road;</li> <li>• table drains where required;</li> <li>• outfalls for low usage,</li> <li>• cross-slope roads on steep country;</li> <li>• using invert, floodway, causeway, culvert or bridge when track crosses drainage line or creeks,</li> <li>• fences follow contour lines where possible, or ridge lines in steep country.</li> </ul> <p>Where fence line is not on the contour, and slope is steep, whoa-boys are used as required.</p>	Linear features planned and built with due attention to erosion risk. Areas with known sodic soils are avoided where possible. Creek crossings built at bed level to avoid changes to hydrology. Where there are significant risks, an appropriate mix of actions is in process of being completed.	Linear features not routinely planned or built with due attention to erosion risk. Whoa boys or equivalent sometimes used, some stream crossings have appropriate works in place.	Little or nothing in terms of planning or precautions for erosion risk.
<b>Hillslope erosion assessment (30%)</b>				

The risk frameworks relating to Managing the breeder herd and Weaner management are not used for Reef 2050 Water Quality Improvement Plan reporting.

Managing the breeder herd	Relative water quality risk			
	Lowest risk (A)	Moderate – Low risk (B)	Moderate risk (C)	High risk (D)
<p><b>Appropriate nutritional management of heifers from the time of weaning ensures heifers reach puberty and are joined at the appropriate critical mating weight (CMW) of 60-65% of their mature body weight to encourage maximum fertility.</b> (10%)</p>	<p>Replacement heifers are managed to achieve target CMW weight. Heifers are weighed strategically to monitor their growth and guide decisions about grazing management and supplementation.</p>	<p>Replacement heifers are managed to achieve CMW by mating date.</p>	<p>There has been some attempt to manage heifers to join at the right weight and joining age.</p>	<p>Target weight or age at first mating is not considered.</p>
<p><b>Segregation of heifers from the main breeder herd allows for targeted management to ensure only highly fertile females are retained. Management of the joining period based on green date<sup>vii</sup> ensures heifers calve at the optimal time of year.</b> (10%)</p>	<p>Heifers are joined to calve at the optimal time of year, based on the property's green date. Heifers are segregated until second mating to manage body condition i.e. supplementation and weaning management. Replacement heifers are joined for a shorter period than the main breeder herd to identify and retain fertile females.</p>	<p>Heifers are generally joined to calve based on normal joining period of the region. Heifers are segregated until second mating so targeted management of body condition can be implemented i.e. supplementation and weaning management. Heifers are joined for the same period as the main breeder herd.</p>	<p>Heifers are generally joined to calve based on normal joining period of the region. Heifers are not segregated and are joined for the same period as the main breeder herd.</p>	<p>Heifers are not joined to calve at the optimal time for the region. Heifers are not segregated and are joined for the same period as the main breeder herd.</p>

Managing the breeder herd	Relative water quality risk			
	Lowest risk (A)	Moderate – Low risk (B)	Moderate risk (C)	High risk (D)
<p><b>Managing breeder body condition pre and post gestation using appropriate nutritional management to maintain high conception rates. (35%)</b></p>	<p>Early weaning and supplementation (where cost-effective) are used to achieve body condition targets for optimum reproductive performance. Breeder body condition is assessed, recorded and managed on a frequent basis. <b>The average breeder body condition for the entire herd before calving is &gt;3.0<sup>viii</sup>.</b></p>	<p>At least one management strategy (early weaning or supplementation strategies) is used to achieve body condition targets. Breeder body condition is assessed regularly. <b>The average breeder body condition for the entire herd before calving is &lt;3.0.</b></p>	<p>Breeder body condition is not assessed or considered in management. <b>The average breeder body condition for the entire herd before calving is &lt;3.0.</b></p>	
<p><b>The number (and weight) of calves branded/weaned (branding %<sup>ix</sup>) for the number of females joined to produce those calves monitored and used as a key indicator of herd performance and productivity. (15%)</b></p>	<p>Breeder performance is assessed annually using calving rates and weaning (branding) percentages. <b>Branding rates are &gt;80%.</b> Foetal and calf losses are recorded annually using pregnancy testing data and weaner numbers. Individual animal performance data coupled with stock records is used to guide management decisions.</p>	<p>Breeder performance is assessed annually using calving rates and weaning (branding) percentages. <b>Branding rates range from 80-70%.</b> This information is used to guide management decisions.</p>	<p>Breeder performance is assessed annually using calving rates and weaning (branding) percentages. <b>Branding rates range from 70-50%.</b> Foetal and calf loss information is rarely measured and rarely considered in management decisions.</p>	<p>Breeder herd performance, and foetal and calf losses are not measured or considered in management decisions. <b>Branding rates are &lt;50%.</b></p>
<p><b>Specific criteria are used when culling breeder and bulls and again when selecting replacement heifers and bulls. (5%)</b></p>	<p>Rigorous culling is undertaken annually based on specific, established criteria regarding temperament, reproductive performance, age and soundness. Only heifers which conceive and produce a calf in their first joining period are retained in the breeding herd. Bull Breeding Soundness Evaluations (BBSE) are used</p>	<p>Culling is undertaken annually using broad criteria and poorly performing heifers are often retained due to a lack of records and poor management. Bull Breeding Soundness Evaluations (BBSE) are rarely undertaken when purchasing replacement sires. Bulls are rarely monitored and are often kept longer than 7 years.</p>	<p>Culling is not done systematically using specific, established criteria. Bull Breeding Soundness Evaluations (BBSE), age and body condition are not considered when purchasing and managing sires. Bulls are kept for &gt;7 years.</p>	



Managing the breeder herd	Relative water quality risk			
	Lowest risk (A)	Moderate – Low risk (B)	Moderate risk (C)	High risk (D)
	when purchasing replacement sires. Bulls are monitored and those which develop structural, reproductive or temperament problems are culled promptly. Bulls are culled for age at 7 years. Individual animal performance data is used to guide culling and replacement decisions.			
<b>There are a range of fertility diseases that can infect breeding cattle and reduce weaning rates. Being able to recognise, prevent and manage these diseases is vital in maintaining herd health and productivity. (15%)</b>	Fertility disease risks are considered and breeding stock, including bulls, are vaccinated annually for 7in1 or Leptospirosis, Vibriosis and Pestivirus where appropriate. The disease status of the herd has been determined and if pregnancy test results or foetal and calf losses indicate possible disease problems further investigations have been or are being undertaken.	Fertility disease risks are considered and breeding stock, including bulls, are vaccinated annually for 7in1 or Leptospirosis, Vibriosis and Pestivirus where appropriate. The disease status of the herd is unknown. The disease status of the herd is unknown.	Fertility disease risks are rarely considered and breeding stock, including bulls are rarely vaccinated. There are no specific management strategies implemented for control and prevention. Investigations are rarely undertaken if calf losses indicate possible disease problems.	
<b>Nutritional deficiencies can affect animal performance and in some situations contribute to health problems. (10%)</b>	Testing is undertaken where appropriate to identify nutritional deficiencies on the property including NIRS, phosphorus maps and blood testing. This is used to guide supplementation and other management strategies are implemented where appropriate.	Potential nutritional deficiencies are identified from local experience and land type information. Supplementation and other strategies are implemented where appropriate.	There has been an attempt to identify and manage nutritional deficiencies on the property.	Nutritional deficiencies on the property are not recognised or managed.

Weaner management	Relative water quality risk			
	Lowest risk (A)	Moderate – Low risk (B)	Moderate risk (C)	High risk (D)
<p><b>Appropriate management and preparations for weaning ensures weaners are segregated using specific criteria that enables targeted nutritional management to ensure maximum future production. (30%)</b></p>	<p>Numbers, ages and estimated weight ranges of weaners are assessed before weaning. Weaners are drafted, fed and managed according to weight, age and health. Individual animal identification is used to monitor and record performance. The nutritional requirements for weaners is understood.</p>	<p>Numbers, ages and estimated weight range of weaners are mostly assessed prior to weaning. Most of the time weaners are drafted, fed and managed according to weight, age and health. The nutritional requirements for weaners is sometimes understood.</p>	<p>Numbers, ages and estimated weight ranges of weaners are rarely assessed. Weaners are not drafted, fed and managed accordingly to weight, age or health. The nutritional requirements for weaners is not understood.</p>	
<p><b>Adequate health management strategies are implemented during weaning to minimise the health risks associated with weaning and the susceptibility of weaners to these health risks. (30%)</b></p>	<p>Appropriate vaccinations to manage identified disease risks are administered. Treatment for internal parasites is based on visual assessments and faecal egg count testing. Treatment for external parasites is undertaken as appropriate. Health issues and treatments are routinely documented as part of a health management program.</p>	<p>Appropriate vaccinations to manage identified disease risks are administered. Treatment for internal and external parasites is based on visual assessment and undertaken when appropriate. Health issues and treatments are routinely documented as part of a health management program.</p>	<p>Appropriate vaccinations are rarely used to manage and prevent disease. Treatments for both internal and external parasites is not undertaken on a regular basis. Health issues and treatments are rarely documented.</p>	<p>Weaner health is not systematically planned and/or managed.</p>
<p><b>Managing the breeder herd assessment (40%)</b></p>				

Erosion process	Management tactic	Paddock to Reef weighting
<b>Hillslope management</b>	Expectations of long term carrying capacities (LTCC) (>10 years) for the whole property are strategic and realistic.	10%
	Expectations of seasonal and/or annual stocking rates (SR), that each paddock will carry, are realistic and tactical.	35%
	Groundcover thresholds are monitored and objectively managed to inform paddock management and used to inform SR and pasture management decisions.	30%
	Land condition assessments for all land types are based on: 1) Soil condition (amount of ground cover, infiltration rate, and level of erosion) 2) Pasture condition (density and vigour of 3P grasses, amount of weed species) 3) Woodland condition (balance of woody weeds vs. pasture in different land types, amount of thickening).	10%
	<b>Vegetation management for woody regrowth is managed to avoid land degradation and its secondary impacts which include*: Soil erosion and instability, Salinity and Acid sulfate soils.</b>	
	Management is tailored to encourage recovery of vulnerable areas, particularly those in declining (C) or poor condition (D).	10%
	Property mapping and inventory of natural resources enables objective assessment of long-term carrying capacity and stocking rate.	5%
	<b>Hillslope erosion assessment</b>	<b>100%</b>
<b>Streambank management</b>	Grazing pressure on frontage country and wetlands is effectively managed.	50%
	Grazing pressure on frontage country and wetlands is managed carefully to maintain or improve the condition of these vulnerable land types.	50%
	<b>Streambank erosion assessment</b>	<b>100%</b>
<b>Gully management</b>	Remedial actions are undertaken to facilitate recovery of entire gullied area/s.	40%
	Managing risk of erosion associated with linear features.	30%
	Hillslope erosion assessment.	30%
	<b>Gully erosion assessment</b>	<b>100%</b>

<b>Managing the breeder herd</b>	Appropriate nutritional management of heifers from the time of weaning ensures heifers reach puberty and are joined at the appropriate critical mating weight (CMW) of 60-65% of their mature body weight to encourage maximum fertility.	10%
	Segregation of heifers from the main breeder herd allows for targeted management to ensure only highly fertile females are retained. Management of the joining period based on green date ensures heifers calve at the optimal time of year.	10%
	Managing breeder body condition pre and post gestation using appropriate nutritional management to maintain high conception rates.	35%
	The number (and weight) of calves weaned (weaning rate %) for the number of females joined to produce those calves monitored and used as a key indicator of herd performance and productivity.	15%
	Specific criteria are used when culling breeder and bulls and again when selecting replacement heifers and bulls.	5%
	There are a range of fertility diseases that can infect breeding cattle and reduce weaning rates. Being able to recognise, prevent and manage these diseases is vital in maintaining herd health and productivity.	15%
	Nutritional deficiencies can affect animal performance and in some situations contribute to health problems.	10%
	<b>Breeder herd assessment</b>	100%
<b>Weaner management</b>	Appropriate management and preparations for weaning ensures weaners are segregated using specific criteria that enables targeted nutritional management to ensure maximum future production.	30%
	Adequate health management strategies are implemented during weaning to minimise the health risks associated with weaning and the susceptibility of weaners to these health risks.	30%
	Managing the breeder herd assessment.	40%
	<b>Weaner management assessment</b>	100%

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<sup>i</sup> Long Term Carrying Capacity (LTCC) or 'safe' grazing capacity is defined as the number of animals (adult equivalents) that can be carried on a land type, paddock or property in the long term without any decrease in pasture condition and without accelerated soil erosion (Johnston et al. 1996, Mckeon et al. 2009, Scanlan et al. 1994).

<sup>ii</sup> GLM steps for LTCC of a paddock account for area, land types, condition of land, climate, safe utilisation rates and distance to water.

<sup>iii</sup> Pasture utilisation and biomass targets as per Scientific Consensus Statement Chapter 4 (Eberhard et al. 2017).

<sup>iv</sup> Groundcover thresholds are usually associated with the amount of cover below which the rate and amount of erosion starts to increase greatly; the thresholds (eg, 40% cover) operate primarily by reducing the direct erosive impact of rainfall. However, there are benefits for the overall hydrological condition of the soil from levels of organic cover above the threshold value for reducing erosion - the more organic matter from herbaceous plants that is protecting and feeding the soil, the better its hydrological condition. The threshold values of cover for soil condition and erosion reduction will obviously vary from land type to land type depending on soil, slope, fertility, and pasture type. Regional land type information sheets usually have the erosion thresholds values appropriate for each major land type.

<sup>v</sup> Ground cover targets as per Scientific Consensus Statement Chapter 4 (Eberhard et al. 2017).

<sup>vi</sup> Vegetation management for woody weed growth definitions and guidelines as per

<sup>vii</sup> Green date is defined as a three day period where greater than 50mm of rain has fallen. This information is recorded annually or can be obtained from RainMan. The information obtained from Rainman is not updated regularly and reflects district green dates and cannot be property specific.

<sup>viii</sup> Body condition score targets as per McGowan et al. 2014 Cash Cow Report.

<sup>ix</sup> Branding rates were compiled from a number of sources: Burrow, H (2014) and Holroyd and Fordyce (2001)

<sup>x</sup> Vegetation management for woody weed growth definitions and guidelines as per "General Guide to the Vegetation Clearing Codes – Accepted development vegetation clearing codes", June 2018. Queensland Department of Natural Resources, Mines & Energy.