

Queensland Natural Resource Management State-wide Indicators Framework (SWIF)

**Overview and Guide for the
Natural Resources Recovery Program (NRRP)**

December 2023

This publication has been compiled by Natural Resource Programs, Natural Resource Operations, Department of Resources. This has been adapted from the full State-wide Indicator Framework (SWIF) Overview and Guide document, published by NRM Regions Queensland – <https://www.nrmrq.org.au/statewide-indicators-framework/>.

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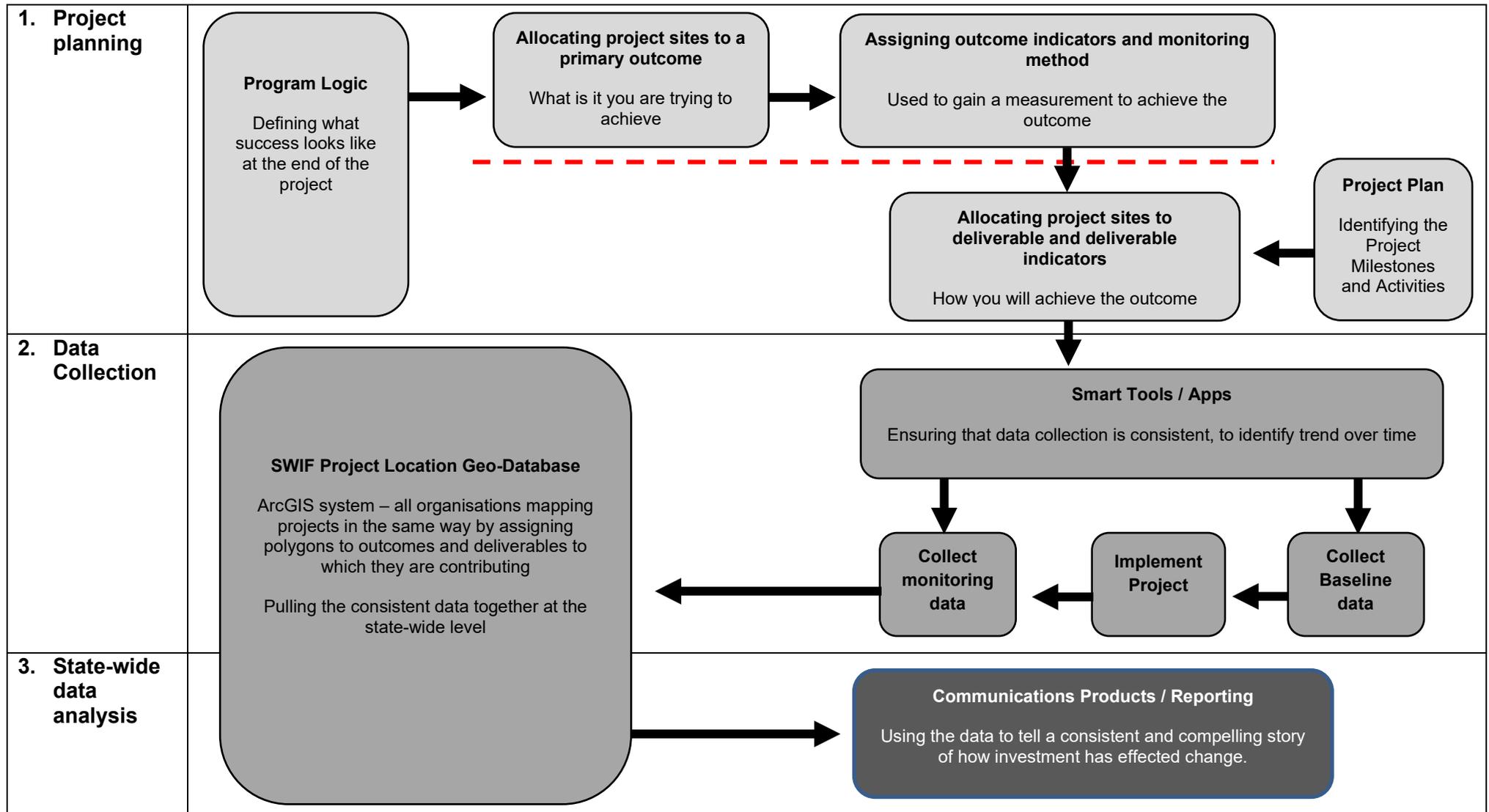


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Queensland Natural Resource Management State-wide Indicators Framework – on a page



Overview of the State-wide Indicators Framework (SWIF)

The SWIF is a system that ensures consistent monitoring methodologies, data collection and analysis tools are used at a State-wide level. SWIF was initiated in 2019 by the Queensland Government in collaboration with Terrain Natural Resource Management and Natural Resource Management Regions Queensland (NRMQR), in response to the recognition of a necessity for a consistent approach to monitoring of Natural Resource assets across the State. There was also an acknowledgment that database functionality was needed to collate project results and achievements to demonstrate the value of program investment.

The following information is to provide applicants with a brief overview of SWIF to assist with preparing your project application and the monitoring requirements for budgeting purposes under the Natural Resources Recovery Program (NRRP).

All successful applicants will require an ArcGIS online account, see further details below.

A full version of the SWIF Overview and Guide is available on NRMQR's website (<https://www.nrmqr.org.au/statewide-indicators-framework/>), which is a generic document covering multiple programs and associated outcomes and tools. The tools relevant to NRRP outcomes are identified in this document.

System and skill requirements

Organisations will need to have the following skills and requirements within their organisation or acquire via contracting out to a third party.

- Registration with Esri with an ArcGIS Online (AGOL) organisational account
- ArcPRO software purchased and installed
- GIS operator with:
 - knowledge in managing AGOL including assigning users
 - skills in ArcPRO including creating and editing polygons within a geodatabase
 - ability to work with and update geodatabases
 - knowledge in modifying and publishing Survey123 apps.

Understanding how SWIF works

As outlined in the above diagram 'Queensland's Natural Resources Management State-wide indicator framework - on a page', SWIF is composed of three major components that all contribute to a consistent, credible, and compelling story about the outcomes of NRM investment. The three components are:

1. Project planning:
 - Program logic – defining what your projects success looks like
 - Allocating project sites to a primary outcome – what is it you are trying to achieve
 - Assigning outcome monitoring method – used to gain a measurement to achieving the outcome
 - Allocating deliverable and deliverable indicator – how will you achieve the outcome

2. Data collection (Smart tools/apps, mapping, Condition Monitoring Plan) – ensuring that data collection is consistent
3. State-wide data analysis – pulling the consistent data together at the state-wide level

1. Project planning

Program Logic – defining what success looks like

The NRRP program logic describes the change expected following the implementation of a program and provides a representation of why and how it is believed the program will work. It defines what success looks like (outcomes) and determines what will be measured to track success (indicators) – refer **Appendix 1**. The program logic is a ‘living document’ that is subject to change in response to the types of projects awarded and the introduction of further tools.

A key feature of the NRRP program logic is the concept of “Above and below the red line” The program logic makes a very clear distinction between what is completed on ground (deliverables) and the difference that it makes (outcomes).

Allocating project sites to the primary outcome – above the red line

Each project site of a project must be assigned to a primary outcome within the program logic. It is very important to distinguish between a project and a project site. In many cases, a project may have two equally important outcomes. For example, an integrated property management project may be aiming to improve the condition of grazing land through supporting improved practices over a section of the property. This integrated project may also be seeking to improve the condition of riparian vegetation by targeting infestations of transformer weeds (e.g., rubber vine). In this case, the project is indeed delivering on two SWIF outcomes (land condition improvement and native vegetation improvement), but in different locations. This will need to be reflected in the mapping, see example **Appendix 3**.

Outcome monitoring method

The decision about which data collection method to use is fully dependent on which outcome you have assigned your project site to. There may be overlap or confusion between which outcomes/tools should be used for a project site, particularly when it comes to land condition (Land Condition Assessment Tool (LCAT)) and vegetation condition (Vegetation Condition Assessment Tool (VegCAT)).

In deciding which of these outcomes to assign to your project site, consider whether you are focusing primarily on what is at ground level - with the aim of preventing erosion and improving the condition of the soil in general – or whether you are looking to the condition of other layers such as shrubs and trees. If your primary interest is the quality of the ground cover vegetation, you would assign your project site to “land condition” and use LCAT to monitor improvement. If you are aiming to improve the vegetation more generally, for habitat outcomes for example, then you would assign your project to “Vegetation condition” and use VegCAT for monitoring progress.

It is important to note that you can only choose one outcome/tool for a project site where the unit of measure is the same (i.e., hectares), to ensure data collection is accurate, and not being double counted.

Allocating project sites to a deliverable – below the red line

Deliverables are what the project will complete on ground to reach the outcome. As with the allocation of outcomes, it is important that each project site be allocated to one of the deliverables. There are some cases where multiple interventions are being undertaken on the same piece of land e.g., improved practices involving reducing stock access to an area, in combination with direct treatment of a threatening weed. In this case, it is necessary to select the most critical, primary intervention for monitoring – not both.

2. Data collection methods – smart tools/apps, mapping, condition monitoring plan

To support organisations in both the collection and analysis of data relevant to SWIF, several smart tools/apps have been developed using current GIS technologies.

Specific data collection and/or analysis methods (smart tools/apps) have been specified (e.g., LCAT, VegCAT, Survey 123 apps) for each of the outcomes and deliverables. The SWIF data collection method/tools overview included with Appendix 2, provides more detailed guidance on these smart tools/apps.

Project Location Geo-database

A key foundation of the SWIF is the standardised Project Location Geo-database, which has been built by NRMQR within the ArcGIS system to be used by all organisations. This ensures organisations are mapping their projects in the same way by allocating each project polygon to outcomes and deliverables to which they are contributing. This mapping resides and remains with the organisation. **Therefore, organisations will require their own ArcGIS online account.**

It is this standardised system that enables State-wide roll up and analysis of the data collected using the Survey 123 apps. Providing full transparency about a project's spatial coverage without compromising privacy agreements that may have been put in place with participants.

The SWIF Spatial Data Capture Guidelines provides more detail on what spatial data is required for mapping and are available on the NRMQR's website (<https://www.nrmqr.org.au/statewide-indicators-framework/>).

Data collection in relating to the outcomes – above the red line

As specified in the **Appendix 2**, some outcomes require monitoring, which involves repeated surveys in the field to capture changes that occur in the condition of the land or vegetation. It is important to ensure that baseline plots are established, and quality baseline data is collected, using the right tool in a sufficient number of locations, and at an appropriate time. These decisions should be explained and justified in a Condition Monitoring Plan (refer below).

Importantly, it is essential to undertake the baseline assessment and follow up monitoring at a time of year according to the project context. For example, LCAT monitoring should be undertaken at the end of a dry season to negate wet season pasture growth skewing results. For accurate results, follow-up assessments should be undertaken at approximately the same time each year.

For some outcomes, demonstrable change in condition may take time, and are influenced by many factors. Land condition for example, may respond more obviously to weather conditions than changes in grazing practice in the short term. If a very dry year is followed by a wet one, the data may show a great improvement, which may be largely driven by rainfall. Similarly, in times of drought, there may be no improvement registered through monitoring between one year and another, and condition may have even declined. This is despite improved land management practices which will over time result in improved condition and a more resilient landscape.

Preparing a condition monitoring plan

SWIF requires the development of a Condition Monitoring Plan, for projects delivering on land condition or vegetation condition outcomes.

The purpose of a Condition Monitoring Plan is to record the reasoning for your monitoring approach. The plan sets out your decisions, but also your rationale behind those decisions. The plan also specifies what you are hoping to see change against each of the condition attributes, whether in relation to land condition, vegetation condition.

Data collection in relation to deliverables – below the red line

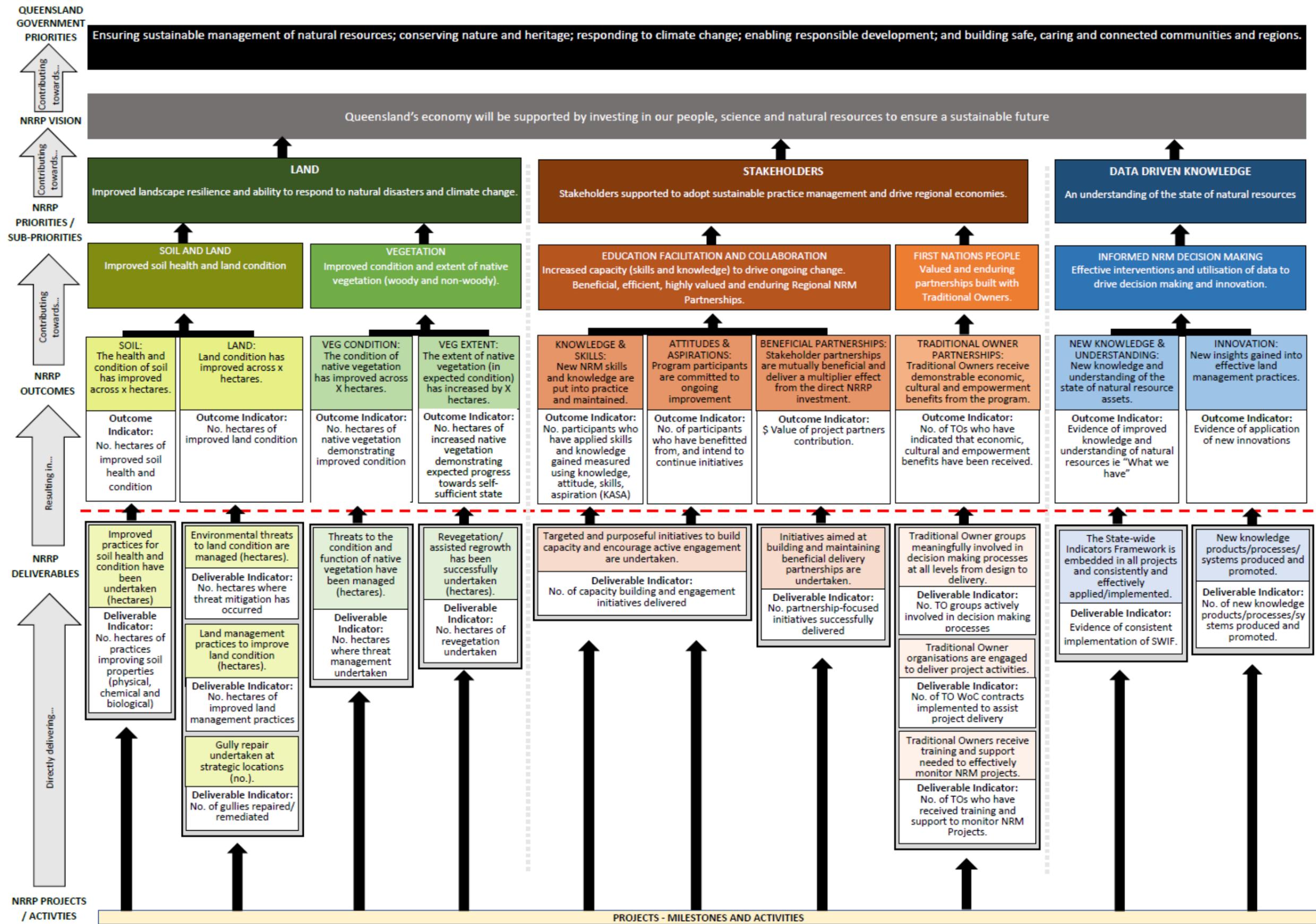
It is important to have a consistent story to tell about achievements against the deliverables “below the red line”. With the short timeframes of many programs, it is the combination of the story of direct project achievements combined with data on trends in relation to the impact of these direct project achievements that will be most powerful.

Effort has been invested in developing a suite of Smart Apps/tools to consistently measure and report on deliverables (refer to NRMQR’s website for further detail <https://www.nrmqr.org.au/statewide-indicators-framework/>). These provide evidence of project progress, in the absence of having longer-term monitoring data to demonstrate outcomes “above the red line”.

3. State-wide data analysis

Data generated by each organisation’s project polygons (project sites) through the smart tools/apps are combined to create the Queensland Project Location Geo-database. This data can be analysed and presented on a whole-of-state level and allow communications products to be generated from high level summary statistics e.g., results on a page, to more detailed reports specific to a particular outcome. Being able to communicate the difference an investment has made assists investors and key decision makers to understand and appreciate the impact and value of their investment.

Appendix 1 – NRRP Logic and Indicators Framework



Appendix 2 – SWIF data collection methods/tools overview (Outcomes)

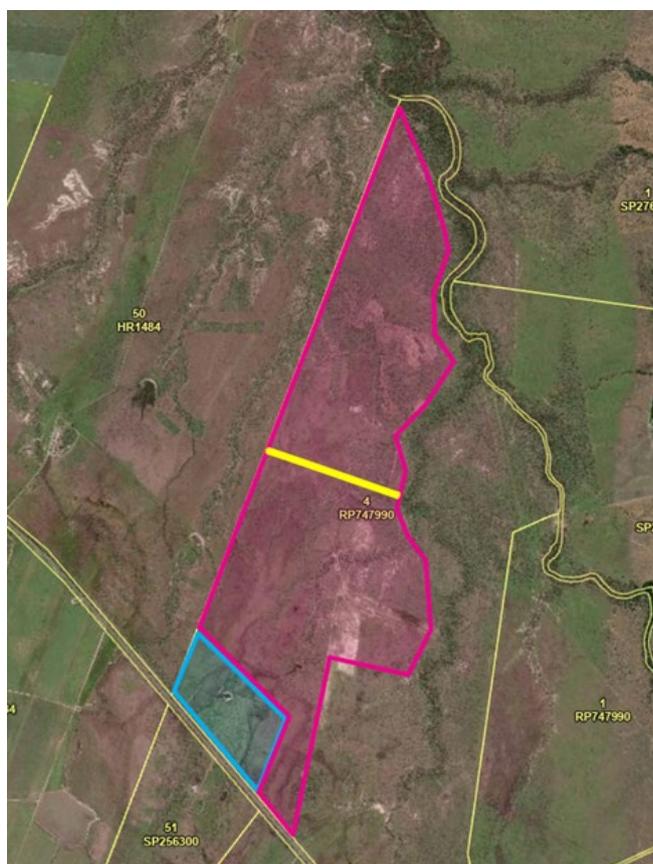
Outcome	Outcome Indicator/unit	State-wide Data collection tool/s (Outcome)	Overview of Tool	Clarifications	Where to go for further information
SOIL: The health and condition of soil has improved across x hectares.	No. hectares of improved soil stability, health and condition.	Land Condition Assessment Tool (LCAT) <i>Supported by Condition Monitoring Plan.</i>	<p>This method has been developed by the Queensland Government and is used by a range of entities to track land condition across the State.</p> <p>The LCAT tool is a fit-for-purpose science-based assessment, simple and intuitive in design and presented using contemporary technology (123 Survey App). It is used to consistently assess and collect a standard land condition dataset for research, analysis and communication at site, land type, project, property or regional scale.</p> <p>The assessor selects pictograms that represent values associated with a minimum set of long-term land condition indicators. On the completion of an assessment, an immediate in-survey scorecard displays results relating to grazing land management principle and ecological processes including;</p> <p>An 'ABCD' site rating aligned to the well-established Grazing land management ABCD land condition framework</p> <p>A numeric site scores</p> <p>Indicative pasture biomass (kg/hd)</p> <p>A range of potential site 'hazards' associated with water quality and ecological impacts.</p> <p>Each delivery organisation has their own 'feature' service which enables them to access the App, enter data, view and edit the data and then – importantly – export it to their own GIS system. Delivery organisations can only see their own data. While NRMQR's GIS administrator can technically view all data that is entered via this system, a data access agreement between NRMQR and each delivery partner provides assurance that NRMQR will not view, edit or share any LCAT data, unless on the request of the delivery partner themselves (e.g. for the purposes of providing technical support).</p>	Improvement in the stability of soil.	NRMQR Website https://www.nrmqr.org.au/statewide-indicators-framework/ .
LAND: Land condition has improved over x hectares	No. hectares of improved land condition.			Condition of ground cover implies quality (composition) as well as extent (level/% cover). Focus on determining land condition is within specific "project area", not across an entire property (unless this equates to the project area).	
VEGETATION CONDITION: The condition of native vegetation has improved across X hectares.	No. hectares of native vegetation demonstrating improved condition.	Vegetation Condition Assessment Tool (VegCAT) <i>Supported by Condition Monitoring Plan.</i>	<p>The Vegetation Assessment Tool (VegCAT) has been designed as a rapid approach to measuring the change in vegetation condition for projects funded under the Queensland Government's natural resource management programs. It has as its foundation the Queensland Herbarium's BioCondition methodology, maximising alignment where possible, and collecting data against seven of the 10 BioCondition attributes. However, compared to the full BioCondition methodology, VegCAT is:</p> <p>more <i>rapid and cost-effective</i>, assessing a smaller area and not requiring high levels of botanical expertise (six VegCAT plots can be done in the time needed, and</p> <p>more <i>sensitive to the shorter-term changes in vegetation condition</i> that would be expected a result of project interventions.</p> <p>The Regional Ecosystem Benchmark data, where available, has been imported into the Survey 123 file and is automatically used to generate a result for the relevant attributes. In cases where RE Benchmarks are not available, organisations will need to determine the 'best-on-offer' values for each attribute, drawing on existing literature and expert advice. Once a benchmark becomes available for that RE, the scores can be regenerated if necessary.</p> <p>Each organisation has its <i>own</i> copy of the VegCAT Survey 123 App. GIS staff will be provided with instructions for its implementation, and ongoing support is provided through NRMQR for its use. The result generated by the App for each VegCAT plot is linked to the regionally based Project Location Geo-database for the purposes of State-wide rollout.</p>	Projects can be undertaken in different vegetation types but with the same scale representing change (1-100), using a consistent tool which determines condition against a benchmark. State-wide totals can be analysed according to vegetation type (e.g. rangelands versus rainforest).	NRMQR website - https://www.nrmqr.org.au/statewide-indicators-framework/ .
VEGETATION EXTENT: The extent of native vegetation (<i>in expected condition</i>) has increased by X hectares.	No. hectares of increased native vegetation demonstrating expected progress towards self-sufficient state.			Extent is replacing areas which are largely free of native-vegetation (e.g. farming land, weed-infested riparian zones) with native vegetation and will usually involve some level of revegetation or assisted regrowth.	

<p>KNOWLEDGE AND SKILLS: New NRM skills and knowledge are put into practice and maintained.</p>	<p>No of participants who have applied skills and knowledge gained, measured using KASA.</p>	<p>Standard end-of-project questions/evaluation survey – Participants (e.g., Landholder) focus</p>	<p>Commonly referred to as the “I know, I can” component, this outcome focuses primarily on the extent to which project participants (in many cases landholders) have applied any new skills and/or knowledge gained through the project to the management of their natural resources.</p> <p>Standard end-of-project survey questions: Without being prescriptive about how the surveys should be conducted, a short set of standard questions (or areas of questioning) have been agreed, along with a consistent scoring scale.</p>	<p>This relates to improving the understanding and capability of project participants, in particular landholders. This could be referred to as “I know” and “I can”. Of importance is whether the new skills and/or knowledge were put into practice.</p>	<p>NRMQR website https://www.nrmqr.org.au/statewide-indicators-framework/ - SWIF Overview and Guide – Appendix 4.</p>
<p>ATTITUDES AND ASPIRATIONS: Project participants value NRRP results and are committed to ongoing improvement.</p>	<p>No. participants who benefited from and intend to continue initiatives.</p>		<p>This is referred to as the “I care, I will” component of the program, focusing on the extent to which NRRP projects have had an influence on the hearts and minds of participants, and the likelihood that the project will leave a legacy of ongoing improvement. The extent to which participants ‘value’ NRRP funded projects and results and intend to either put them into practice or sustain any changes they have already made, provides a strong and measurable proxy for ‘stewardship’.</p> <p>Standard end-of-project survey questions: Without being prescriptive about how the surveys should be conducted, a short set of standard questions (or areas of questioning) have been agreed, along with a consistent scoring scale</p>	<p>This relates to what is in the hearts and minds of people and could be referred to as “I care” and “I will”. The extent to which participants ‘value’ NRRP results can be determined by a combination of these indicators.</p> <p>It will be important to collect a combination of quantitative and qualitative information (how much have you benefitted, and in what ways).</p>	
<p>BENEFICIAL PARTNERSHIPS: Partnerships are mutually beneficial and deliver a multiplier effect from the direct NRRP investment</p>	<p>Dollar value of project partners contribution.</p>	<p>Leverage Tracker and/or Standard end-of-project questions/evaluation survey – Participants.</p>	<p>Commonly, a large component of the value of a project is in the partnerships that result, and the co-contribution that is made by these partners. Strong partnerships generally deliver a greater return on investment, as well as a more coordinated and often strategic natural resource outcome. Partnerships that are mutually beneficial are likely to be sustained beyond the timeframe of the project, leaving a legacy of on-going collaboration.</p> <p>Standard end-of-project survey questions: Without being prescriptive about how the surveys should be conducted, a short set of standard questions (or areas of questioning) have been agreed, along with a consistent scoring scale</p>	<p>This refers to both support of existing, and new partnerships. Distinguishing between these may be informative (particularly if there are new partnerships that come about because of this funding program). The key focus is on demonstrating the beneficial nature of the partnerships.</p>	
<p>TRADITIONAL OWNER PARTNERSHIPS: Traditional Owners receive demonstrable economic, cultural and empowerment benefits from the program.</p>	<p>No. of Traditional Owners who have indicated that economic, cultural and empowerment benefits have been received.</p>	<p>Standard end-of-project survey questions/evaluation survey – Partner (e.g., Traditional Owners)</p>	<p>The outcome focuses on the extent to which the Traditional Owners themselves feel they have benefitted from the funding program in a range of ways. It goes beyond the minimum requirement for involvement in planning, to ongoing involvement in project delivery, both in terms of decision making (empowerment benefits) but also works delivery (economic benefits).</p>		<p>NRMQR website - https://www.nrmqr.org.au/statewide-indicators-framework/</p>
<p>NEW KNOWLEDGE & UNDERSTANDING: New knowledge and understanding of the state of natural resource assets.</p>	<p>Evidence of improved knowledge and understanding of natural resources i.e. “What we have”.</p>	<p>The standard end-of-project questions/evaluation survey for this outcome is under development.</p>	<p>Commonly referred to as the “I know, I can” component, this outcome focuses primarily on the evidence of new natural resource management knowledge which could lead to new alternatives in measuring of natural assets.</p>	<p>This refers to innovative ‘out of the box’ ideas into practice.</p>	<p>Email to NRRP@resources.qld.gov.au</p>
<p>INNOVATION: New insights gained into effective land management practices.</p>	<p>Evidence of application of new innovations.</p>	<p>The standard end-of-project questions/evaluation survey for this outcome is under development.</p>	<p>Commonly referred to as the “I know, I can” component, this outcome focuses primarily on application of new knowledge.</p>	<p>This refers to innovative ‘out of the box’ ideas into practice.</p>	<p>Email to NRRP@resources.qld.gov.au</p>

Appendix 3 – Example of mapping and coding for NRRP SWIF

PROJECT CODING:

Polygon	Primary Outcome	Deliverable
Pink	Land Condition	Improved land management practices
Blue	Land Condition	Improved land management practices
Not mapped – but along the riparian area between the pink polygon and the yellow boundary of the neighbouring property	Vegetation condition	Threats to the condition and function of native vegetation have been managed (hectares)



YEAR 1

Actions: Fenced off hilly country (blue); weed control to improve the pasture (blue); rotational grazing to remove pressure from rest of paddock (pink).

Monitoring and Reporting Land Condition Outcomes:

For the purposes of monitoring land condition outcomes, the combination of the blue and the pink would be the mapped areas. They would remain as separate polygons as the landscape is different, the actions are different and the nature of the land condition response to the interventions is expected to be different (reduced grazing in the pink versus weed management in the blue). LCAT would be undertaken across the whole site, with plots within the fenced hilly country being extrapolated to the blue area, and plots in the remainder of the paddock being extrapolated to the pink area.

Reporting on Improved Land Management Practices deliverable:

Because there are *different* practices happening in the blue versus the pink polygons, the answers to the questions would be different, and therefore although both polygons would be coded the same, two sets of questions may need to be asked. For the pink area, the change that is being targeted is reducing grazing pressure. For the blue polygon it is improving the condition of the pasture itself. The project team *may* choose to code the blue polygon as “direct threat mitigation” in which case the

answers to the questions are not necessary in this area. The key point is to think carefully about what you are hoping to achieve, and code accordingly.

YEAR 2

Actions: Further fencing is undertaken (represented as yellow line) for improving rotational grazing and allowing for greater spelling of the pink paddock. Two new units are created, one either side of the yellow line.

Reporting land condition outcomes:

You would continue to report land condition across the whole area, doing follow-up monitoring of the same LCAT sites.

RIPARIAN VEGETATION CONDITION – ANOTHER OUTCOME ON THE SAME PROPERTY

On this same property, the pink polygon also represents a fence that has been installed to manage the cattle's utilisation of the riparian area to the right of the paddock. Keeping stock out of the area between this fence and the neighbouring property (indicated in yellow) is expected to relieve pressure on important riparian vegetation and allow for greater natural recruitment and regeneration. This will deliver an improved **vegetation condition outcome**. The area of riparian vegetation that the project aims to improve may not coincide fully with the new fencing but may be a subset of this area. For example, the area of interest for vegetation condition may not include the full area to the bottom right of the pink polygon, even though this is where the fence has been located (there could be practical property management reasons for this). In this case, a new polygon would be mapped which more accurately reflects the riparian vegetation of interest. It does not have to correspond with where the fence is located (although often they do align). This polygon would be coded to "Improved Vegetation Condition" outcome and "Threats to the condition and function of native vegetation have been managed" deliverable.

Reporting 'Condition of Native vegetation has improved across X no. hectares' outcomes:

For reporting improvement in riparian vegetation condition in the mapped polygon, VegCAT sites would be established in representative locations and in sufficient numbers, to track the improvement resulting from the reduced grazing pressure. The average of the VegCAT results is then extrapolated to the polygon that is coded vegetation condition.

Reporting on 'Threats to the condition and function of native vegetation have been managed' deliverable:

As the 'practice change' that is occurring in this polygon is different to that of the pink polygon, a separate set of questions needs to be asked. The questions that will trigger a change in this area will be in relation to the reduced number of days grazed here, but also the way the streambank is being managed. This will generate improvements in both the hillslope and streambank component of the tool. The results of this exercise will be reported against the area of this riparian polygon, while the results for the grazing management detailed above will be reported against the area of the pink polygon. The spatial system will automatically manage this process.