NYAMBA BURU YAWURU

A MERI Plan for the Yawuru Indigenous Protected Area

Prepared for Nyamba Buru Yawuru

Version 0.5 June 2019

NYAMBA BURU YAWURU

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How to use the MERI plan

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Talks about: this is the main detail of the MERI – what to monitor, questions to answer, gaps to fill

Use this to: guide the work to be done for a MERI

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Talks about: how to work with a review committee to guide the use of the MERI

Use this to: set up and run a monitoring committee

SECTION 4: Backbone

Talks about: the back office systems and tools that might be needed to support this process

Use this to: guide setting up software, hardware and operational needs

SECTION 5: Implementation

Talks about: the steps needed to put this MERI plan into practice

Use this to: implement this MERI plan

SECTION 6: Appendices and Attachments

Talks about: detailed additional bits and pieces that are helpful but not essential

Use this to: enhance your understanding of the other sections

What needs to happen first

Management team to establish linked Strategies and Objectives (2017/18) – Section 2

For priority projects, establish clear objectives (based on threat management) and linked strategies with workplans. Begin reporting on implementation of workplans

Yawuru to establish advisory panel (2017/18) – Section 3

Approach and secure independent expert support for the MERI plan, including to review existing materials and establish MERI content, as well as peer review in future.

Complete initial list of monitoring and analysis methods(2017/18) – Section 2

Once the objectives are defined, and the questions to be answered by monitoring are then clear, work with the expert group to establish the monitoring methods required (capture and analysis) for the life of the plan / objectives.

Establish schedule of review and baselines (2018/19) – Section 2

Complete the process of identifying indicators to monitor the health of assets, and prioritise a program of work to establish baseline, including agreed methodology. Work with expert team to do this.

Build back-office systems (2018/19) – Section 4

As the above steps begin to take shape, start to work on establishing systems for regular: data collection and storage; data analysis; review and adaptation.

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1. Introduction

Talks about: the ideas ands language behind Monitoring, Evaluation, Reporting and Improvement (MERI)

Use this to: get a general understanding of MERI

Introduction

Monitoring, **E**valuation, **R**eporting and **I**mprovement (MERI) plans are guides for managers to use to decide if their actions are having an impact as they implement their management plans.

The MERI plan sets out:

- **Monitoring:** What will we monitor?
- **Evaluation:** Did we answer our questions?
- **Reporting:** Who will we tell?
- **Improvement:** What changes do we need to make?

*A **Management Plan** sets out what we think is going to happen – which things we will do, what impact we think we will have*

A 'good' MERI Plan will show how we think Actions (Outputs), Outcomes and Impact are related, and the indicators needed to prove there is a relationship. The MERI plan should have:

- **Indicators**: measurable, precise, consistent, sensitive
- **Strategies**: linked to objectives, focused, strategic, feasible, and appropriate
- **Goals / Objectives**: (SMART) specific, measurable, achievable, relevant, and time limited

*A **Monitoring, Evaluation, Reporting and Improvement** Plan sets out how we are going to check, and what we will do with the results*

Learning the language of MERI

Working with MERI plans can introduce a lot of new, and sometimes confusing, language. It is important to remember that the terms 'fit' together to tell a story, and by remembering the story it can help us remember the terms. There are two parts to the story – the Plan and the MERI.

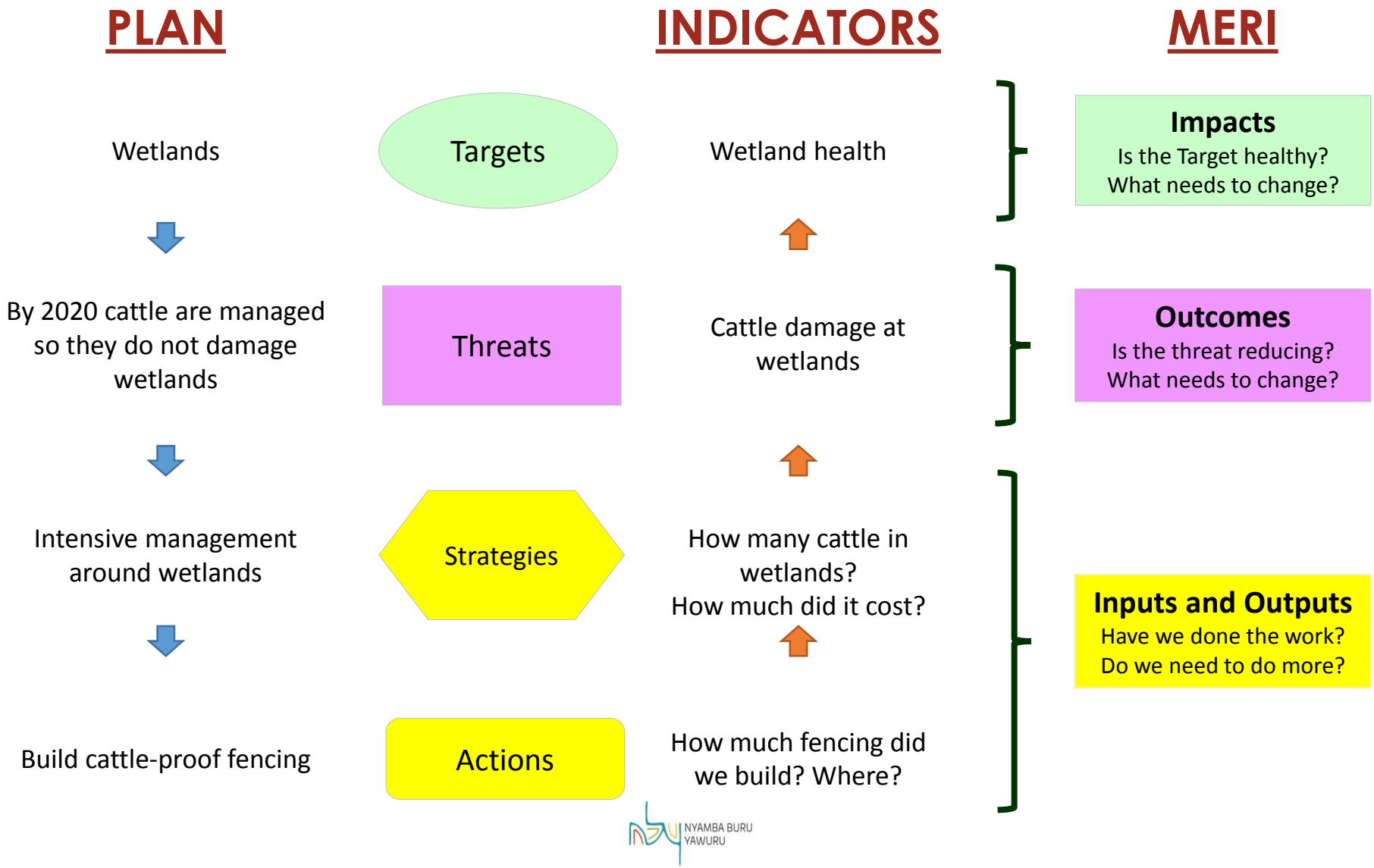
The Plan part, from the *Walyjalajala nagulagabu birrangun buru Plan of Management 2016 – 2026* is:

- The plan tells us where we are trying to go (**Vision**), what is important to us (**Targets**) and what problems are getting in our way (**Threats**);
- The plan also says what we want to achieve on the way to our Vision (**Goals / Objectives**) and the jobs we need to do to get there (**Strategies**);
- Because we know what the Strategies are, we can go out and do **Actions**

The MERI part starts from the Actions:

- To see if our plan is working we check (Measure) things that tell us what is happening (**Indicators**)
- We look at the Actions (**Inputs**) and what work we get done (**Outputs**)
- We then see if our Threats have changed (**Outcomes**)
- And then see if our Targets are any healthier (**Impacts**)

This diagram shows how the ideas on the previous page fit together



The more we measure, the more confident we can be

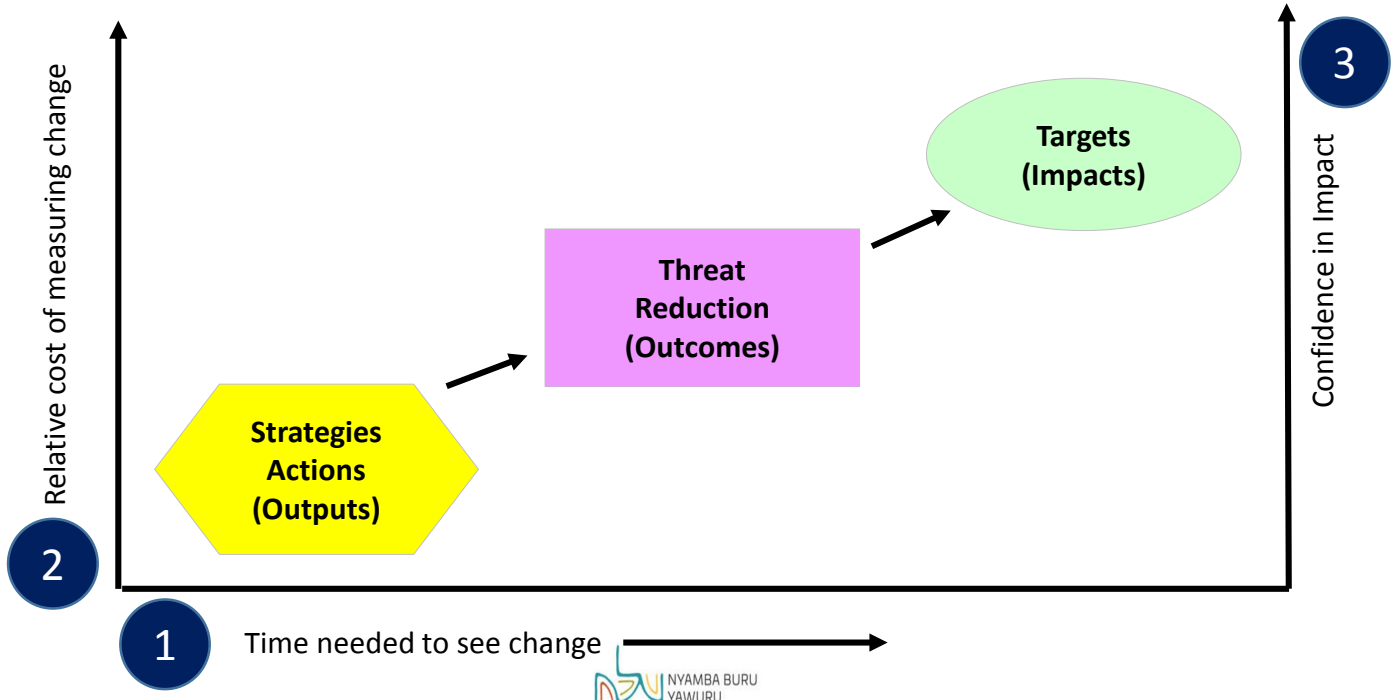
We want to be confident that our Inputs and Outputs are leading to an Impact.

When we first start using the MERI we are not usually confident about the Impact we are having. As we begin to measure our work, we start to measure Strategies, and their **Outputs**.

As we progress, and use more time and funds, we become more confident as we can start to see changes in the Threat, or **Outcomes**. Then as more time passes we can then begin to see the **Impact** we are having on the Targets.

So, as we do more work and monitoring:

- The time (1) and cost (2) of measuring change increases, but
- Our confidence (3) in the impact also increases



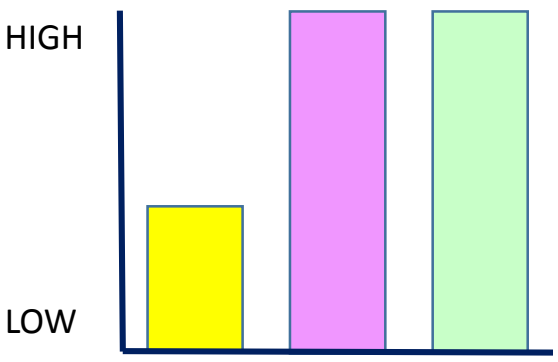
What results are we looking for?

Ideally what we are looking for is a positive relationship between our Inputs / Outputs, and the Outcomes and Impact. Bush Heritage Australia have made a guide to illustrated this relationship, modified below.

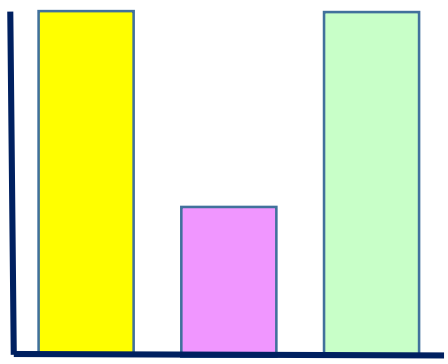
Inputs and Outputs
Have we done the work?
Do we need to do more?

Outcomes
Is the threat reducing?
What needs to change?

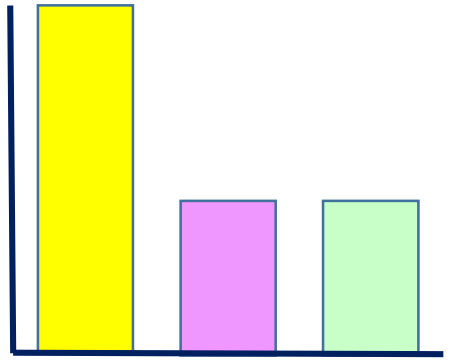
Impacts
Is the Target healthy?
What needs to change?



Ideal
- Little effort or more
- High Outcome and Impact



Not Understanding
- High effort
- Low Outcome and High Impact
- Could also be High outcome and Low impact



Not Ideal
- High effort
- Low Outcome and Impact

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2. Structure and Content

Talks about: this is the main detail of the MERI – what to monitor, questions to answer, gaps to fill

Use this to: guide the work to be done for a MERI

This Section is broken up into 5 parts:

PART 1: Fitting it together

A short section to show how the parts of the plan and MERI fit together to tell the story of achievement

PART 2: Targets (Impacts)

Sets out the work required for completion of an understanding of the impact of the work

PART 3: Objectives (Threats and Outcomes)

Looks at the next level of monitoring, largely, although not entirely, revolving around the resolution of threats. Discusses setting objectives and indicators to measure them.

PART 4: Strategies (Inputs and Outputs)

Sets out the main strategies and the work to be done to complete the development of an implementable strategic plan and work plan

PART 5: Audience

Who will be reported to and what will they be told.

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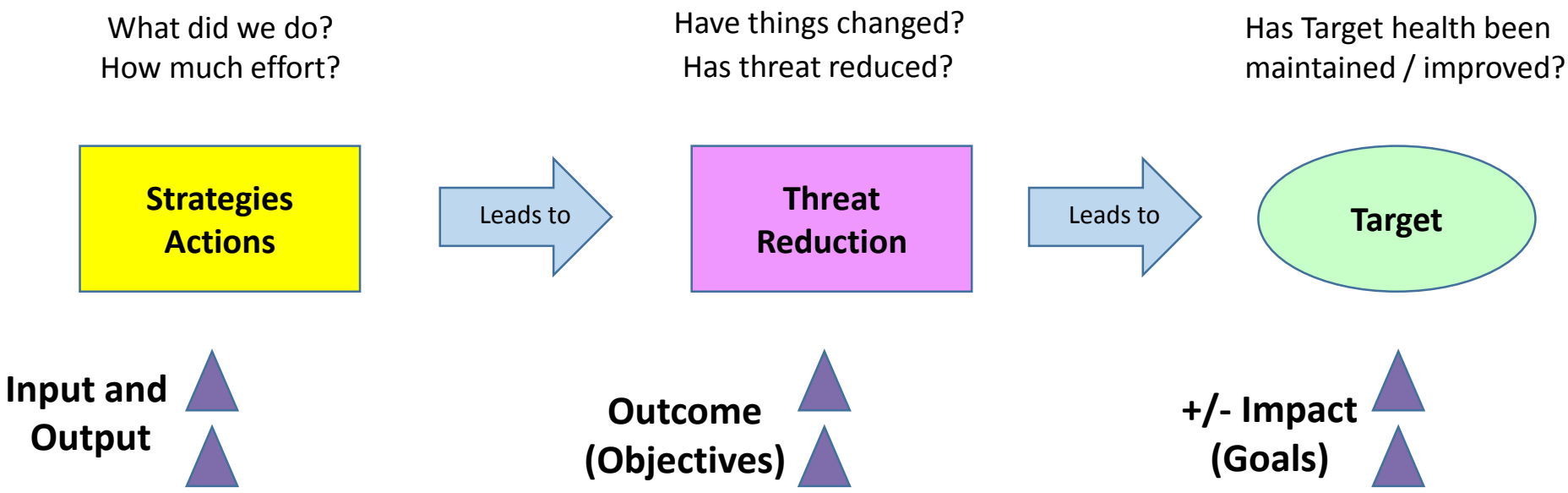
2.1 Fitting it together

What is in our MERI?

The MERI fits together in a simple 'logic'.

"The "logic" comes in when you can say that this strategy will take these **inputs** (resources) to produce these **outputs** (workshops, flyers, educational curricula, maps, and so on), which will lead to these **outcomes** (objectives), which will eventually lead to the intended **impacts** (goals of the project). Your logic is tested as you explain how your project proceeds from the strategies and activities to achieving the ultimate goals. " (Audubon 2011)

This is shown in the simple diagram below.



Establishing a ‘starting point’ or baseline

Getting the MERI to work, that is to tell the story of the impacts of our activities, we need to make sure each part of the logic is present, and the story between them is also clear.

For each we need:

Strategies / Actions

Strategies that are clear, linked to our Goals and Objectives, and feasible. Strategies should be written so that it is clear exactly what is expected and the activities required to achieve it can be seen. This should be then translated into a workplan with responsibilities and resources clearly assigned.

Threat Reduction

- Objectives are about improvement – from what level of threat to what by when?
  - Set current Threat rank – Low, Medium, High, Very High
  - Indicator measurements for moving from one rating to another

Targets Impact

- Set current Target condition – Poor, Fair, Good, Very Good
- Indicator measurements for moving from one rating to another

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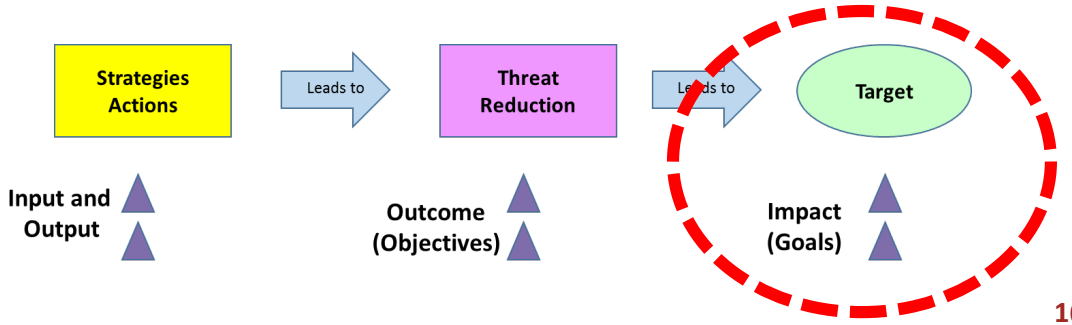
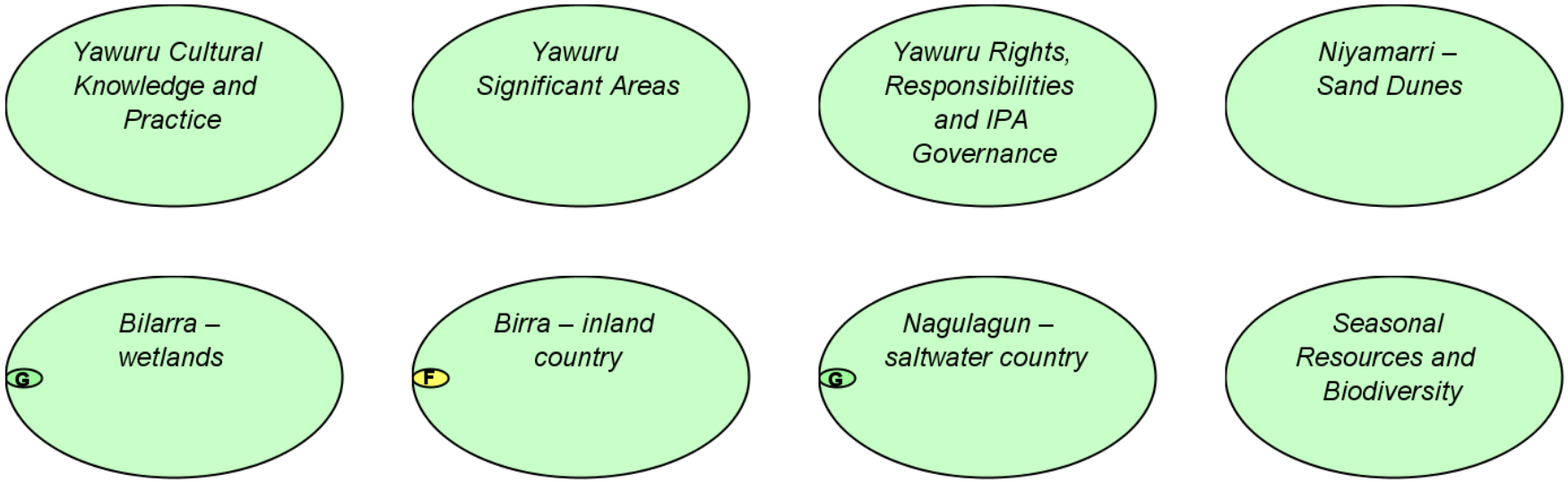
2.2 Target (Impact)



Targets

Targets are the cultural, environmental or human welfare assets in the IPA, and are the 'building blocks' of the work the IPA will do. Typically a plan will be aiming to make the Targets as healthy as possible, and will be working to protect those that are already healthy, or improve the healthy of those that are not.

In the *Walyjalajala nagulagabu birrangun buru Plan of Management 2016 – 2026* there are eight Targets – see below.



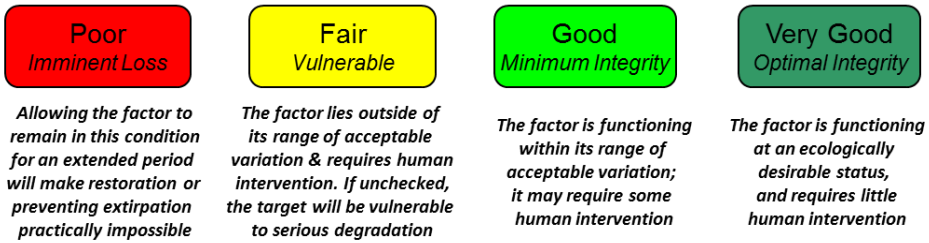
MERI for the Targets

For the purposes of the **MERI plan** the Targets need to have:

1. A clearly established understanding of the **baseline** (starting) status
2. Clear **indicators** and agreed '**levels**' that those indicators need to reach
3. A SMART **goal**, using the indicators

With these things in place we can:

1. Know what we need to monitor, and determine the methods for monitoring and analysis
2. When we analyse the results of our monitoring we can say if we are seeing a changed 'level'
3. And therefore we can say if the status has moved from the baseline



So, for each Target we need to:

1. Define key characteristics
2. Identify indicator(s) for each characteristic
3. Develop a rating scale for each indicator, using the categories of Very Good, Good, Fair, or Poor.
4. Define the current status and desired future status for your target
5. Develop a goal / goals that move us toward a 'Good' rating
6. Select the monitoring and analysis methods needed to determine if things have changed (see Implementation)

We have completed this in draft for two of the Targets, and this work needs to be completed for the remaining targets

Birra – inland country (Fair)

Attribute	Indicator	Level				Current Status	Source
		Poor	Fair	Good	Very Good		
Fauna	Bush meat abundance	None	Less than historical average	Stable compared to historical average	More than historical average	Good	Rough Guess
	Indicator species (bilby, beetles, culturally important)	Gone	Decreasing	Present	Increasing	Fair	Rough Guess
Flora	% native species	None	Less than reference sites	Same as reference sites	More than reference sites	Fair	Expert Knowledge
	Food plants / medicinal plants	None	Less than historical availability	Stable compared to historical availability	More than historical availability	Good	Rough Guess
Fire regime	Right-way fire (frequency, timing, size)	Catastrophic or none > 20% (40k ha)	Catastrophic or none > 5% (10k ha)	5 years early season (90% <= 10k ha?)	4 years early season <10k ha	Fair	Expert Knowledge
Flora	Indicator (decreaser) species (ribbon grass?)	None	Less than reference sites	Same as reference sites	More than reference sites	Fair	Expert Knowledge
People on Country	TBD					Not Specified	Not Specified
Soil (Ground cover)	% bare ground (in relation to reference sites)	TBD	TBD	TBD	TBD	Not Specified	Not Specified
	Area (ha) and severity (%) of erosion	TBD	TBD	TBD	TBD	Not Specified	Not Specified

Goals:

1. Yawuru pindan country has key indicator species (bilby, beetles, culturally important) and a good* fire regime and good** vegetation cover.
   * note - good is defined in health table
   ** note - good is defined in health table and linked to reference sites

Nagulagun – saltwater country (Good)

Attribute	Indicator	Level				Current Status	Source
		Poor	Fair	Good	Very Good		
Fishing	**Trend in cultural catch (fish, shellfish, turtle, dugong, other)**	**TBD**	**TBD**	**TBD**	**TBD**	**Very Good**	**Rough Guess**
Seagrass State	**Seagrass cover (median % cover)**	**0**	**>0 <20th percentile**	**>= 20th percentile, <50th percentile**	**>= 50th percentile**	**Very Good**	**Intensive Assessment**
	Seagrass seed bank	**0**	**>-95%CI from long-term mean and >0**	**<-95%CI from long-term mean**	**>= long-term mean**	**Good**	**Intensive Assessment**
Water quality in Nagulagun	**Nutrient load in Nagulagun**	**TBD**	**TBD**	**TBD**	**TBD**	**Fair**	**Not Specified**
Access to Nagulagan / rights	TBD	TBD				Not Specified	Not Specified
Intertidal mudflat condition	Seagrass cover (%)	20-40%	40-60%	60-80%	>80%	Good	Rough Guess
Presence of Marine megafauna	Abundance (Number of Snubfin)	<50	50-100	100-140	>140	Good	Rough Guess
	Diversity of Marine Megafauna over time	<5 spp	5-8 spp	8-10 spp	>10 spp	Very Good	Rough Guess

Goals:

1. By 2025 ecological function and condition of Nagulagun is maintained as 'good'* (water quality is ANZECC TBD, and Seagrass > 60% cover) in order to protect the cultural values and biodiversity of Roebuck Bay
2. When Goal set for Yawuru Cultural Knowledge and Practice copy across

Bilarra – wetlands (Good)

Indicator	Level				Current Status	Source
	Poor	Fair	Good	Very Good		
Birds					**Good**	**Not Specified**
Reeds / vegetation in 'riparian' zone (Condition of lake margins)	**No mature reeds / grass, no recovery**		**'Healthy' shrubs and tussocks**	**Mature reeds / growing vegetation**	**Good**	**Rough Guess**
Water level / water duration	**Dry in the times when should be wet / really fast dropping / filling**			**High water level when expected / 'normal' dropping / filling**	**Good**	**Rough Guess**
Wetland Water Quality	**TBD**	**TBD**	**TBD**	**TBD**	**Not Specified**	**Not Specified**
*Insects - grasshoppers and others as a source of food for other animals	Not many			Plenty (abundant)	Good	Rough Guess

Goals:

1. Wetland vegetation is intact to support the biodiversity of habitats, including those for migratory birds
2. Improved health of springs and natural water points

Niyamarri – Sand Dunes (Fair)

Indicator	Level				Current Status	Source
	Poor	Fair	Good	Very Good		
% of areas of bare ground on dunes	**Not Specified**	**Increasing**		**Stable**	**Fair**	**Rough Guess**
Availability of gubbinge / bush fruits when they want in season – satisfaction	**Not Specified**	**None available**		**Some available**	**Fair**	**Rough Guess**
Monsoonal vine thickets — mayingan manja balu - at the southern end	**Not Specified**	**Reduced / reducing extent**	**Extent at 2017 with some reduction**	**Stable at 2017 extent**	**Fair**	**Rough Guess**
*Presence of wallabies / fauna	Not Specified	Decreasing populations	Stable		Fair	Rough Guess

Goals:

1. By 2027 sand dunes and monsoon vine thickets are at least at 2017 extent with good bush tucker and healthy native plant and animal populations

Availability of bush gubbinge/bush fruits – could mark a number of trees and quantify fruit abundance at key time of year or could establish permanent transects in key sits

Monsoon vine thickets – extent should be assumed to stay relatively stable from year to year unless catastrophic events occur such as fire or clearing so surveying extent from year to year is probably an inefficient measure. Could simply document any destruction events or restoration efforts (planting/weeding) from year to year.

Yawuru Cultural Knowledge and Practice

Indicator	Level				Current Status	Source
	Poor	Fair	Good	Very Good		
Satisfaction with Cultural Knowledge and Practice	TBD	TBD	TBD	TBD	To be determined	
Using Yawuru language	TBD	TBD	TBD	TBD	To be determined	
Yawuru access to country	TBD	TBD	TBD	TBD	To be determined	

LANG_YKP. Use of Yawuru Language on country	The use of Yawuru language helps create meaning for Yawuru and others. Measures of:- interpretive materials- signage- naming- Yawuru people going through the language course
SATIS_YKP_YAW. Satisfaction survey of Yawuru people	Combining qualitative and quantitative approaches. A narrative (qualitative) approach, linked to factually-based survey. Do the survey seasonally, but integrate with all of Yawuru
VISIT_YKP_YAW. Yawuru visits to country	Looking at the number and type of trips to country that are organised by the Corporation, including school visits, holiday camps, cultural visits. Look at measures such as:- Elder participation- number of visits / trips- Gender / age- activity mix

Yawuru Rights, Responsibilities and IPA Governance

Indicator	Level				Current Status	Source
	Poor	Fair	Good	Very Good		
Participation in number and types of decision-making opportunities	TBD	TBD	TBD	TBD	To be determined	
Satisfaction with Yawuru Rights, Responsibilities and IPA Governance	TBD	TBD	TBD	TBD	To be determined	
Yawuru access to country	TBD	TBD	TBD	TBD	To be determined	

SATIS_YRR_YAW. Satisfaction survey of Yawuru people	Combining qualitative and quantitative approaches. A narrative (qualitative) approach, linked to factually-based survey. Do the survey seasonally, but integrate with all of Yawuru
VISIT_YRR_YAW. Yawuru visits to country	Looking at the number and type of trips to country that are organised by the Corporation, including school visits, holiday camps, cultural visits. Look at measures such as:- Elder participation- number of visits / trips- Gender / age- activity mix

Goals:

Yawuru Rights

1. Country Managers skilled and self managing- leading the management program in the IPA
2. Improved health and well-being of community and culture: mabu liyan, mabu ngarrungu
3. Yawuru people are managing the Yawuru IPA capably and effectively, with good governance and sound evaluation processes

Yawuru Significant Areas

Indicator	Level				Current Status	Source
	Poor	Fair	Good	Very Good		
ALL indicators for Significant Areas to be discussed by Law Bosses and advice provided					To be determined	

Yawuru Significant Areas

1. Further disturbance of Yawuru significant areas in the IPA is minimised from 2017 amount and reversed where possible

Seasonal Resources and Biodiversity

Indicator	Level				Current Status	Source
	Poor	Fair	Good	Very Good		
Bush meat abundance	None	Less than historical average	Stable compared to historical average	More than historical average	Good	Rough Guess

	DIARY_SRB_TAKE. Fish diary / hunting diary	Linked to seasonal calendar
	INT_SRB_YAW. Knowledge-holder interviews	Knowledge-holder interviews – bush foods (meats / plants). Survey work by Yawuru Country Managers (coordinated with NBY social survey work). Ask / report through newsletters Consider need for ethics / approvals for use of data particularly with partners to allow publication. Ensure ethics needs incorporated into process even if not formalised. Need advice on appropriate interviews / approaches.

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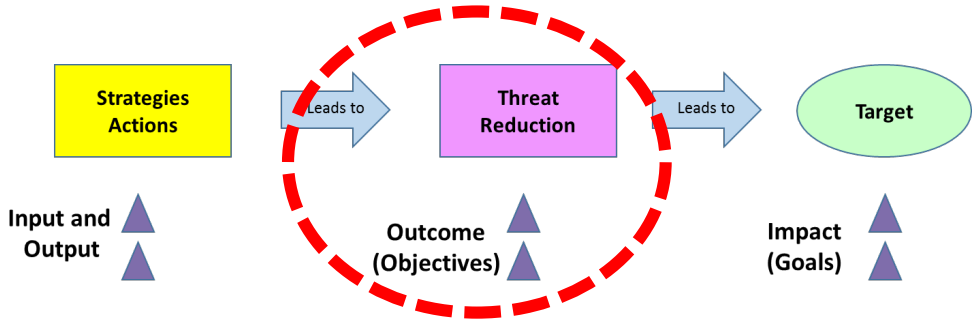
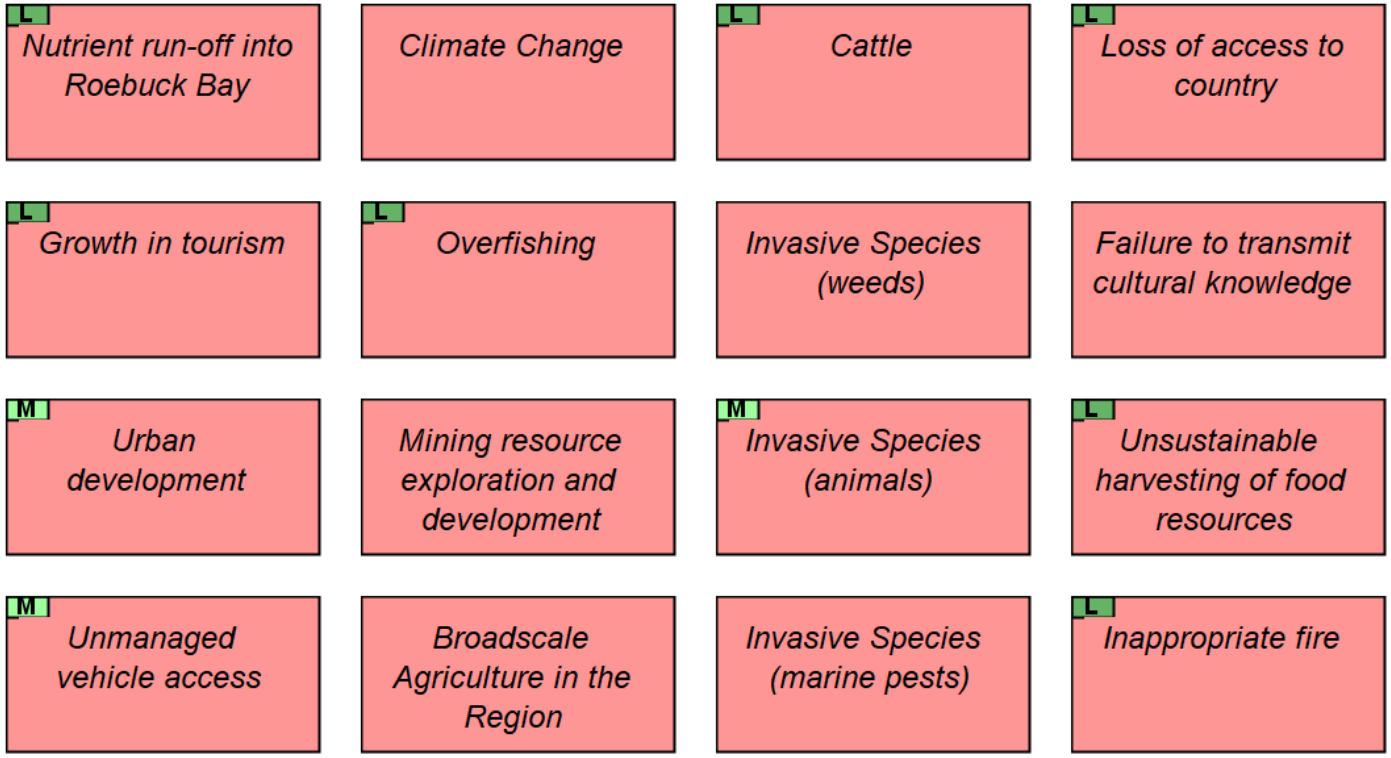
2.3 Threats (Outcomes)



Threats

Threats are a human activity that directly or indirectly degrade a target. A project typically identifies stakeholders that are responsible for specific threats. It is also helpful to decide between direct threats (the thing that directly causes problems) and indirect threats (something that makes the threat happen). For example, a direct threat would be ‘wild fire’ and an indirect threat ‘lack of capacity to fight fires’.

The threats that have been identified to date are listed below.



Threat ranking

Ideally Threats are prioritised, and there are many approaches to threat prioritisation. A simple one that provides sufficient information to allow a simple ranking and prioritisation considers three things: Scope (how widespread the threat is in relation to an asset); Severity (the extent of damage within that scope) and Permanence (the extent to which the damage from the threat can be undone). Threats are linked to assets, and then ranked.

This prioritisation, and assessment of scope, severity and permanence, can then used to establish meaningful objectives. We have partially shown how to do this for two assets, and this should be completed for all.

Scope + Severity = Threat **Magnitude**

		Scope			
		Very High	High	Medium	Low
Severity	Very High	Very High	High	Medium	Low
	High	High	High	Medium	Low
	Medium	Medium	Medium	Medium	Low
	Low	Low	Low	Low	Low

Threat **Magnitude** + **Permanence** = **Threat** Rating

		Permanence			
		Very High	High	Medium	Low
Magnitude	Very High	Very High	Very High	Very High	High
	High	Very High	High	High	Medium
	Medium	High	Medium	Medium	Low
	Low	Medium	Low	Low	Low

Detail of Birra and Nagulagan

Birra – inland country

Threat	Scope	Severity	Irreversibility	Summary Threat Rating
Unmanaged vehicle access	Very High	Low	Low	Low
Cattle	High	Low	Low	Low
Mining resource exploration and development	Very High	Not Specified	Not Specified	Not Specified
Unsustainable harvesting of food resources	High	Medium	High	Medium
Invasive Species (animals)	Very High	High	High	High
Broad scale Agriculture in the Region	Not Specified	Not Specified	Not Specified	Not Specified
Loss of access to country	Very High	High	Low	Medium
Inappropriate fire	Very High	Medium	Medium	Medium

Nagulagun – saltwater country

Threat	Scope	Severity	Irreversibility	Summary Threat Rating
Urban development	High	High	High	High
Nutrient run-off into Roebuck Bay	Medium	Medium	High	Medium
Unmanaged vehicle access	Medium	Medium	Very High	High
Growth in tourism	Medium	Medium	Medium	Medium
Overfishing	Medium	Medium	Medium	Medium
Failure to transmit cultural knowledge	Not Specified	Not Specified	Not Specified	Not Specified
Unsustainable harvesting of food resources	Not Specified	Not Specified	Not Specified	Not Specified
Climate Change	Not Specified	Not Specified	Not Specified	Not Specified
Invasive Species (marine pests)	Not Specified	Not Specified	Not Specified	Not Specified
Invasive Species (animals)	Not Specified	Not Specified	Not Specified	Not Specified
Loss of access to country	Not Specified	Not Specified	Not Specified	Not Specified

Threat rating to be completed

Threats \ Targets	Birra – inland country	Nagulagun – saltwater country	Yawuru Significant Areas	Yawuru Cultural Knowledge and Practice	Bilarra – wetlands	Yawuru Rights, Responsibilities and IPA Governance	Niyamarri – Sand Dunes	Seasonal Resources and Biodiversity	Summary Threat Rating
Invasive Species (animals)	High	Not Specified			Not Specified			Not Specified	Medium
Erosion	Low	High							Medium
Urban development		High							Medium
Unmanaged vehicle access	Low	High					Not Specified		Medium
Cattle	Low				Not Specified		Not Specified		Low
Nutrient run-off into Roebuck Bay		Medium							Low
Unsustainable harvesting of food resources	Medium	Not Specified						Not Specified	Low
Loss of access to country	Medium	Not Specified		Not Specified		Not Specified			Low
Inappropriate fire	Medium		Not Specified				Not Specified		Low
Growth in tourism		Medium							Low
Overfishing		Medium						Not Specified	Low
Failure to transmit cultural knowledge		Not Specified		Not Specified					Not Specified
Broad scale Agriculture in the Region	Not Specified				Not Specified				Not Specified
Invasive Species (weeds)					Not Specified				Not Specified
Invasive Species (marine pests)		Not Specified							Not Specified
Mining resource exploration and development	Not Specified		Not Specified						Not Specified
Climate Change		Not Specified			Not Specified			Not Specified	Not Specified
	Medium	High	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	High

MERI for the Threats

For the purposes of the **MERI plan,** highly ranked **Threats** need to have:

1. A clearly established understanding of the **baseline** (starting) threat level
2. Clear **indicators** and agreed '**levels**' that those indicators need to reach
3. A SMART **objective**, using the indicators

With these things in place we can:

1. Know what we need to monitor, and determine the methods for monitoring and analysis
2. When we analyse the results of our monitoring we can say if we are seeing a changed 'level'
3. And therefore we can say if the threat has improved

So, for each Threat we need to:

1. Rank the threat against the Targets it impacts
2. Set an objective for how we want the Threat to change
3. Identify the indicator we will measure to see if the threat has changed (the indicator should ideally measure something to do with size, severity or permanence)
4. Select the monitoring and analysis methods needed to determine if things have changed

Threat / Objective Monitoring

Project / Objective	Threat	Indicators	Priority / Selected	Methods	People	Timeframe
O - 04. Niyamarri – Sand Dunes (Access)					YNTES	
Obj_NSD_1. Motorised vehicles do not access sand dunes other than approved access tracks by 2022		- Vehicle tracks in restricted areas - wheel prints or new tracks				
Obj_NSD_2. Existing coastal monsoonal vine thickets and access tracks are mapped and assessed for extent of fragmentation and invasive species by 2019						

Project / Objective	Threat	Indicators	Priority / Selected	Methods	People	Timeframe
O - 05. Bilarra - wetlands						
Obj_BIL_4. Yawuru rights in groundwater management are promoted and secured						
Obl_BIL_1. All wetland suites are assessed and monitored, providing baseline data on groundwater, salinity levels and water quality						

Project / Objective	Threat	Indicators	Priority / Selected	Methods	People	Timeframe
O - 06. Nagulagun – saltwater country						
Obj_NSC_1. Sustainable fishing is being practised in Roebuck Bay by all users						
Obj_NSC_2. Nutrient and stormwater run-off into Roebuck Bay is reduced significantly						
Obj_SRB_4. Yawuru seasonal resource harvest calendar is used as a guide to sustainable recreational and commercial fishing						

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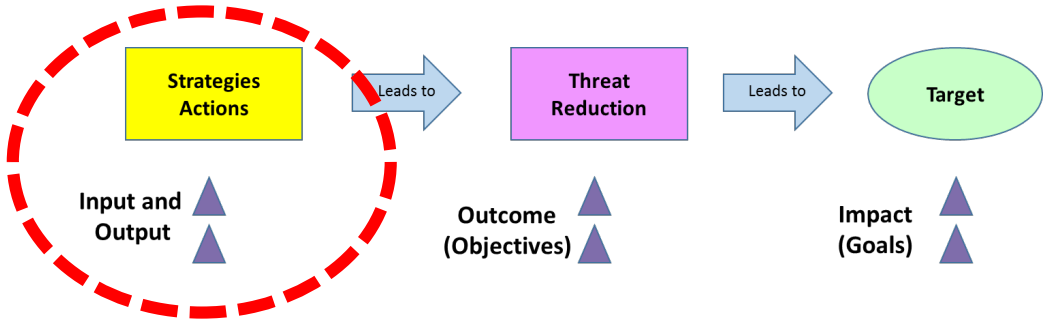
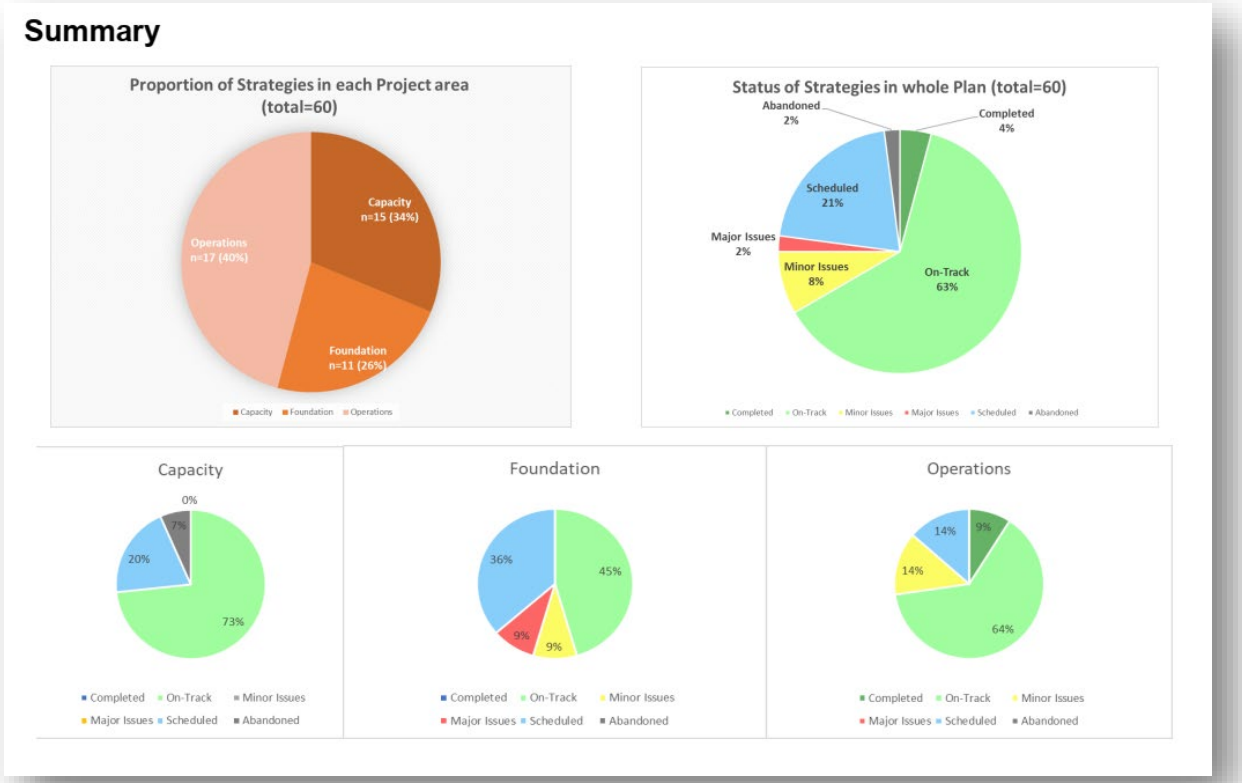
2.4 Strategies (Inputs and Outputs)



Are we doing the projects?

At the end of every quarter, the project team should meet and review progress with the Strategies / Activities set out in the plan, and rate their progress according to the scale on the right. This will produce a progress report for each project / strategy and overall (example below).

- Completed
- In-progress / ok
- Minor Issues
- Major Issues
- Abandoned
- Scheduled



Example Progress Report

Project / Strategy	Progress Details / evidence	Progress
F - 01. Yawuru knowledge and practice		Not Specified
Develop Yawuru country knowledge database within a Yawuru seasonal framework that is accessible to the Yawuru community and tool for assessing and monitoring climate change.	Incidental activities only, not yet targeted work	Scheduled
Implement communication and education strategies to promote the Yawuru seasonal framework.		Scheduled
Integrate art and language programs with country management to interpret and present cultural knowledge.	Mangara projectsNurlu project	On-Track
Use Yawuru IPA program budget to resource Yawuru customary practices in IPA areas	Three on-country trips held with senior Yawuru people in 2017	On-Track
F - 02. Yawuru significant areas		Not Specified
Develop site–specific management plans, particularly for restricted areas	Consultation with Law Bosses has started and on-country trips required	Major Issues
Investigate archaeological sites.	Been delayed but has commenced	Minor Issues
Seek funding for Yawuru cultural and ecological mapping by Yawuru country managers.	Seeking funding for education and interp, and getting ffs funds for ecological mapping	On-Track
Use Yawuru GIS capability to digitize Yawuru cultural mapping data for storage, communication, education, site management and site protection.	GIS in place, data being captured and stored	On-Track

Completed
In-progress / ok
Minor Issues
Major Issues
Abandoned
Scheduled

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2.5 Audiences and their information needs

Who do we need to tell? What do we tell them?

The key reason we use MERI is to tell people (ourselves and others) how we are progressing. The people we want to talk to are our Audiences, and they are a mix of stakeholders, partners and community members. The table here is a guide to the different types of information we want to provide to the different audiences, and what we want them to do with the information we provide.

AUDIENCE	HOW OFTEN	MAIN INFORMATION NEED	OUTPUT	OUTCOME	IMPACT	MEDIA TYPE	DESIRED ACTION
PBC Board	Quarterly	Return on investment What is working and why Healthy country status	X	X	X	Board meetings / papers General information and demonstrate links to cultural plan	Project support
Land and Sea Subcommittee	Quarterly	Milestones (outcomes) Report on Targets (impact)	-	X	X	Meetings with reports Newsletters / Facebook	
NBY	Quarterly	What is working and why (outcomes)	-	X	-	Technical progress report Maps / Pictures	Project support
Land and Sea Unit Station Manager	Weekly	What is working and why (Strategies / actions) (outputs)	X	-	-	Team meetings Database Maps / pictures	Strategies adjusted
Yawuru community	Quarterly	Bushtucker plentiful (impact) Country is being looked after / Yawuru actively engaged and employed (output / outcome)	X	X	-	Meetings with reports Newsletters / Facebook / Radio Community field trips	
	Annually	Info pack @ AGM	X	X	-	Report format that people can use / read	Support for program
NIPE (ILC)	Quarterly	Feedback on monitoring Milestones on target Completion of activities	X	X	-	Quarterly meetings Technical progress report Maps / Pictures	Adjust pastoral management
Australian Government / PM&C	Bi-Annual	How management is in balance Evidence of MERI plan Progress report (outputs, outcomes, impacts)	X	X	X	Full MERI report Online and / or report Maps / pictures / Stories	Increased / continued funding and support

(cont)

AUDIENCE	HOW OFTEN	MAIN INFORMATION NEED	OUTPUT	OUTCOME	IMPACT	MEDIA TYPE	DESIRED ACTION
DPAW (Joint management) and Shire	Ongoing	How MERI aligns with Joint Management plans (x4)	X	X	X	Meetings Joint projects	
NGOs (EK, WWF, RBWG, NRM)	Ongoing	Awareness of MERI plan Priorities (Quarterly? / Yearly?) Regional monitoring opportunities	-	X	X	Meetings Joint projects	
Core partners	Quarterly or less	What is working and why (Outcomes) How to improve How to work together	-	X	-	Technical reports Presentations Meetings Maps / pictures / Stories	Funding and support Feedback
Researchers and institutions	Ad hoc	Healthy country programs exist Protocols for research	-	X	X	Protocols Websit Meetings / information sharing	
Development proponents (oil & gas; sands; tourism; agriculture)	Ad hoc	MERI Plan priorities Key objectives	X	X	X	Negotiations	
General Public	Ad hoc	Awareness of activities and programs People on country Outcomes (success)	X	X	X	Facebook Newsletters Press releases / TV / Radio	
Other Ranger Groups	Ad hoc	Awareness of MERI plan Priorities (Quarterly? / Yearly?) Regional monitoring opportunities	X	X	X	Research partners to provide information / resources	
Education (schools)	Ad hoc	TBD	X	X	X	Build module to get work being done into curriculum	Yawuru learning built into schools

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3. Technical Advisory Group

Talks about: how to work with a review committee to guide the use of the MERI

Use this to: set up and run a Technical Advisory Group

Rationale for a Technical Advisory Group

The IPA plan is structured around an adaptive management framework where the results of regular monitoring of specified indicators inform a continuing planning cycle. Plans are amended and updated as required so that work stays on track to achieving the Yawuru vision.

Indicators for monitoring are being selected by traditional owners and other experts and include both natural and cultural elements of the IPA. They include indicators for checking on cultural responsibilities, habitats and species, and availability and taste of bush foods. They are (or will be) listed in the MERI Plan.

Indicators are measurable entities used to assess progress with the plan. Some indicators are objective and some are subjective – particularly those that relate to cultural responsibilities.

There is limited data available on some of the key indicators for Yawuru country and the ratings for the indicators, and in some instances the indicators themselves, may need refining as data from research and monitoring becomes available.

Data, once collected, is stored and can then can be manipulated to produce a range of reports. It is also a goal to link monitoring for the plan with the Yawuru GIS, both of which are in the early stages of development.

Within a Technical Advisory Committee (TAG), data/information can be interpreted by TAG members based on their unique experiences and expertise. Local Indigenous knowledge holders, Traditional Owners, Indigenous rangers, ecologists, anthropologists, funders and planners all bring unique worldviews and techniques for interpreting MERI data.

TAG workshops function to facilitate 'two-way' integrated MERI work that produces not only an enriched picture of Country, but potentially also innovative solutions to remedy capacity gaps that might exist between the different cultural perspectives.

A TAG can support the IPA management team to become disciplined in its undertaking of monitoring and evaluation, and where annual TAG meetings become institutionalised that can ensures progress.

A diverse expertise is required to support the Yawuru management team in using and reporting on the indicators for the plan. Further, the use of external experts can bring both fresh perspectives and additional credibility and validity to the results reported by Yawuru.

Role of a Technical Advisory Group

- A TAG would be a panel of cultural and natural heritage experts that can review monitoring reports and provide expert opinion and recommendations to the Yawuru Land and Sea sub-Committee to say if:
  - the IPA Plan is being used for management of the IPA;
  - the IPA Plan is achieving it's objectives and vision; and
  - the best Yawuru and western knowledge and practice is being used to implement and monitor the Plan.

- The committee might meet biannually initially to develop and refine a shared understanding of its' purpose and role. Once established, the TAG would then meet annually to review monitoring reports from country managers, scientists and others implementing the IPA plan.

- Committee members might also provide advice and support to the IPA team between meetings from time to time.

- A TAG meeting might involve:
  - presentations from operational staff on progress;
  - detailed review of indicators / monitoring for specific projects / Targets; and,
  - some field visits to allow discussion of issues.

- The meetings need to occur at a 'pace' that supports effective cross-cultural communication, and may happen by phone link

Structure

A Technical Advisory Group would likely have a mix of skills required to provide expert opinion on the use, progress and impact of the IPA Plan. Possible areas of expertise for a Technical Advisory Group might be as shown in the table below.

Participant / expertise	Reason
Senior Yawuru representatives (Board to nominate 2 members) (enough such that the Committee is always a majority of Yawuru people)	Cultural authority, knowledge and expertise
Senior Yawuru Country Manager (Pius)	IPA management knowledge / NRM management issues
Pastoral Manager (1)	Key connection to Pastoral Operations
Social Science (1)	
Pastoral (1)	Pastoral systems / integration with IPA
Wetlands (1)	Key focus of values and IPA / Pastoral interaction
Marine (1)	Key focus of values and IPA / community interaction
Threatened Species / Fire management (1)	Key focus of values and IPA

The Chair of the Technical Advisory Group should ideally always be a Yawuru person. Non-Yawuru members might be drawn from locally available experts or more widely. This will depend on availability and budget.

Characteristics for 'external' (non-Yawuru) experts might be:

- Good general 'technical' knowledge with specialty in an area of specific need for the IPA
- Well-regarded amongst peers
- Able to give 6 days / year for meetings and review of materials
- Well-connected

Possible Operation

Program of Work

- The TAG would work with the IPA management team to review the IPA plan over a period of 5 years such that:
  - Inputs / Outputs
    - Each year they would review and prepare an Inputs / Outputs report
  - Objective (Outcome)
    - For the first 2-3 meetings help to review and develop Objective (Outcome) indicators in key project areas (2-3 per meeting)
    - For subsequent years continue to review and report on Objective (Outcome) indicators where data was available
  - Target (Impact)
    - For the first 2-3 meetings help to review and develop Goal (Impact) indicators and ratings for Targets (2-3 per meeting)
    - Aim to produce an Impact report at the end of 5 years

Executive and Secretariat support

- The IPA Manager would support the TAG meetings and manage the Technical Advisory Group's work needs.
- The IPA Manager would provide minutes of meetings to the Technical Advisory Group.

Logistical support

- The IPA team would provide logistic support with booking accommodation, travel, venue and catering

Remuneration

- Remuneration of Technical Advisory Group members would be on an as-needs basis. It is possible some participants may be able to do so within their existing roles, others may be willing to provide pro-bono support. This would need to be discussed on a case by case basis, and may influence participation.
- Yawuru members would be subject to the policies of the corporation.

Term and condition of appointment

- A formal Terms of Reference should be developed to govern the operation of the Technical Advisory Group, including its formal role and responsibilities.
- The terms of reference would include an appointment term, as well as confidentiality, intellectual property and other provisions.
- Members of the TAG will be appointed for up to 3 years
- Membership renewal will be 'offset' to allowed staggered renewal

Reporting

- The TAG would reports directly to the Yawuru Land and Sea Management sub-committee, PBC.

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4. Backbone

Talks about: the back office systems and tools that might be needed to support this process

Use this to: guide setting up software, hardware and operational needs

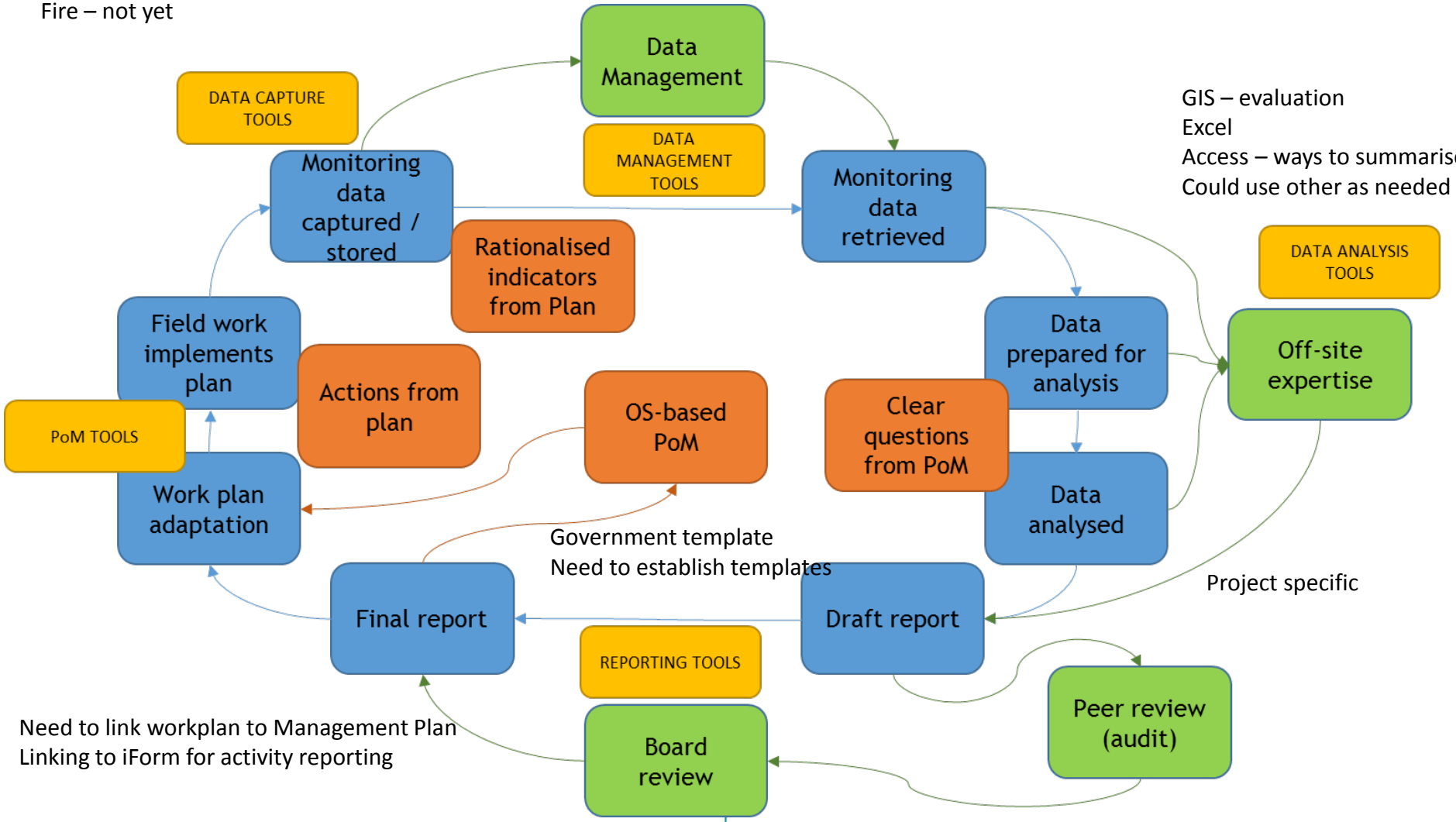
NOTE: Requires further discussion.

Developing the back office systems to support the MERI plan

All the previous elements require a 'back office' system or 'backbone' in order to function effectively. A generalised view of the cycle of taking indicators from the Plan of Management around to adaptation is shown below. Each of the four main elements is explained in the following section

iForm on Galaxy imports to MSAccess – includes status
Links to ArcGIS / Stored on Drive
Remote camera traps
SLR
iForm for activity data also (what, when, who)
Fire – not yet

GIS Data on Yawuru local drive / geo database
iForm Photo data on Dropbox / Local photo drive
Links to Access / GIS
Camera trap – public cloud – eMammal (virtual expeditions)



GIS – evaluation
Excel
Access – ways to summarise / pivots
Could use other as needed

Need to link workplan to Management Plan
Linking to iForm for activity reporting

Backbone: Use of the Plan

OS-based PoM	The Plan of Management is the basis of the MERI approach. The Plan of Management should contain sufficient detail and be structured to allow effective definition of a workplan, indicators and objectives / goals. All elements should tie back to the Plan of Management (not the printed document).
Actions from plan	Actions to be carried out should be linked to the strategic direction established by the Plan of Management. A workplan provides this link.
Rationalised indicators from Plan	The Plan of Management will initially likely have a wide range of candidate indicators (see previous sections). These should be rationalised to a short list of essential indicators to be monitored in the field, and for subsequent analysis.
Clear questions from PoM	Analysis of data captured during monitoring should be directed by specific questions posed by the management plan relating to mitigation / reduction of threats (objectives) or improvement in the health of targets (goals). The answers to these questions then drive adaptation.

Backbone: Tools to adopt

PoM TOOLS	Tools in this context refers to either electronic or paper / process tools. Tools for the Plan fo Management should enable maintenance of and easy access to all aspects of the plan to service the various MERI needs: extracting goals, objectives, indicators, workplans, and recording results (not necessarily data).
DATA CAPTURE TOOLS	Tools for use in the field that are both simple to use and able to capture the data required by the monitoring approach. These can be electronic or otherwise, but should allow for rapid feedback and use across multiple platforms and ease of data retrieval.
DATA MANAGEMENT TOOLS	Data needs to be stored, maintained over a number of years, and retrieved in order to support the MERI. Tools here include data bases and / or cloud-based storage. They should be widely accessible for data capture, secure for maintenance and robust for retrieval.
DATA ANALYSIS TOOLS	These will be specific to the type of data and analysis.
REPORTING TOOLS	It can take a long time to transform data into information and present it in a digestible way that can be used by stakeholders. Making this 'real time' or systematic can help this significantly.

Backbone: Steps to follow

Field work implements plan	This is simply taking the workplan and doing the work
Monitoring data captured / stored	Either as the work is done (ie during weed control) or specifically (ie baseline assessment). Data is captured in the field and transferred into storage.
Monitoring data retrieved	When it is time to report on the Plan (at one or all of the above times) the data is retrieved from storage by whoever needs to do the analysis. This should be able to be done by the person who needs it as they need it, rather than relying on a third party.
Data prepared for analysis	
Data analysed	The data is analysed against the question being asked.
Draft report	The initial analysis is compiled into a draft report and reviewed.
Final report	The final report is accepted.
Work plan adaptation	The work plan is amended according to the results of the analysis and final decisions made.

Backbone: Involving others

Data Management	Data management can happen locally, but may be able to be supported by off-site solutions (eg cloud-based systems)
Off-site expertise	In many cases the expertise (or simply time capacity) for the analysis will not be available locally and so may be needed from external sources. These may be linked to the expert panel, although ideally not for conflict of interest purposes.
Peer review (audit)	Ideally any significant analysis (mostly around outcomes and impact, rather than outputs) would be peer-reviewed. This would be the role of the expert panel..
Board review	It is critical that final direction and decisions made on the basis of the analysis (MERI) rest with the Board / governing body. They may choose to accept or reject findings, but must be allowed to do so to maintain ownership and control.

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5. Implementation

Talks about: the steps needed to put this MERI plan into practice

Use this to: implement this MERI plan

What needs to happen first

Management team to establish linked Strategies and Objectives (2017/18) – Section 2

For priority projects, establish clear objectives (based on threat management) and linked strategies with workplans. Begin reporting on implementation of workplans

Yawuru to establish advisory panel (2017/18) – Section 3

Approach and secure independent expert support for the MERI plan, including to review existing materials and establish MERI content, as well as peer review in future.

Complete initial list of monitoring and analysis methods(2017/18) – Section 2

Once the objectives are defined, and the questions to be answered by monitoring are then clear, work with the expert group to establish the monitoring methods required (capture and analysis) for the life of the plan / objectives.

Establish schedule of review and baselines (2018/19) – Section 2

Complete the process of identifying indicators to monitor the health of assets, and prioritise a program of work to establish baseline, including agreed methodology. Work with expert team to do this.

Build back-office systems (2018/19) – Section 4

As the above steps begin to take shape, start to work on establishing systems for regular: data collection and storage; data analysis; review and adaptation.

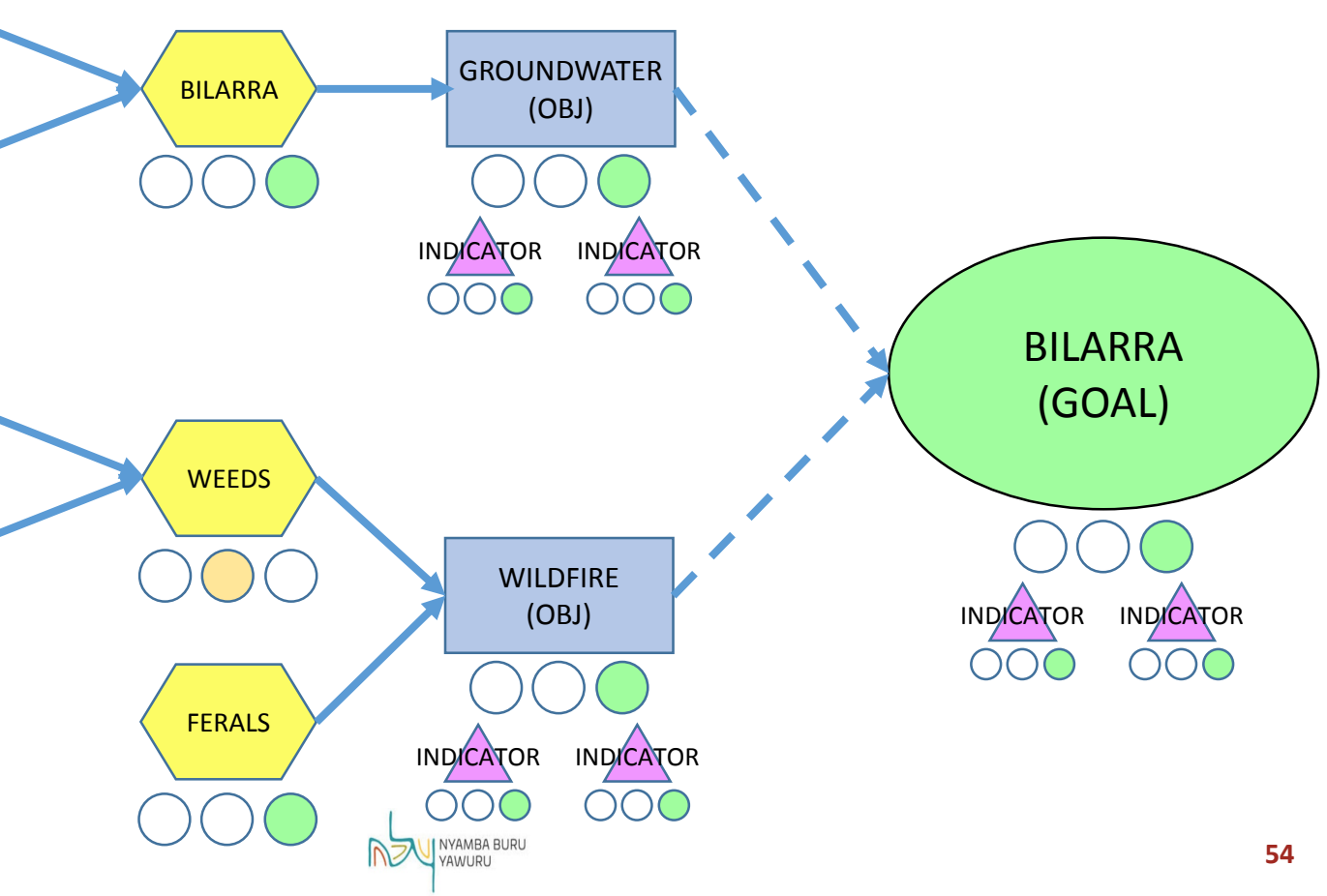
Reporting – using traffic lights

RATINGS

- Good / On-track / Complete
- Fair / Minor issues / Ongoing
- Poor / Major issues / Stalled

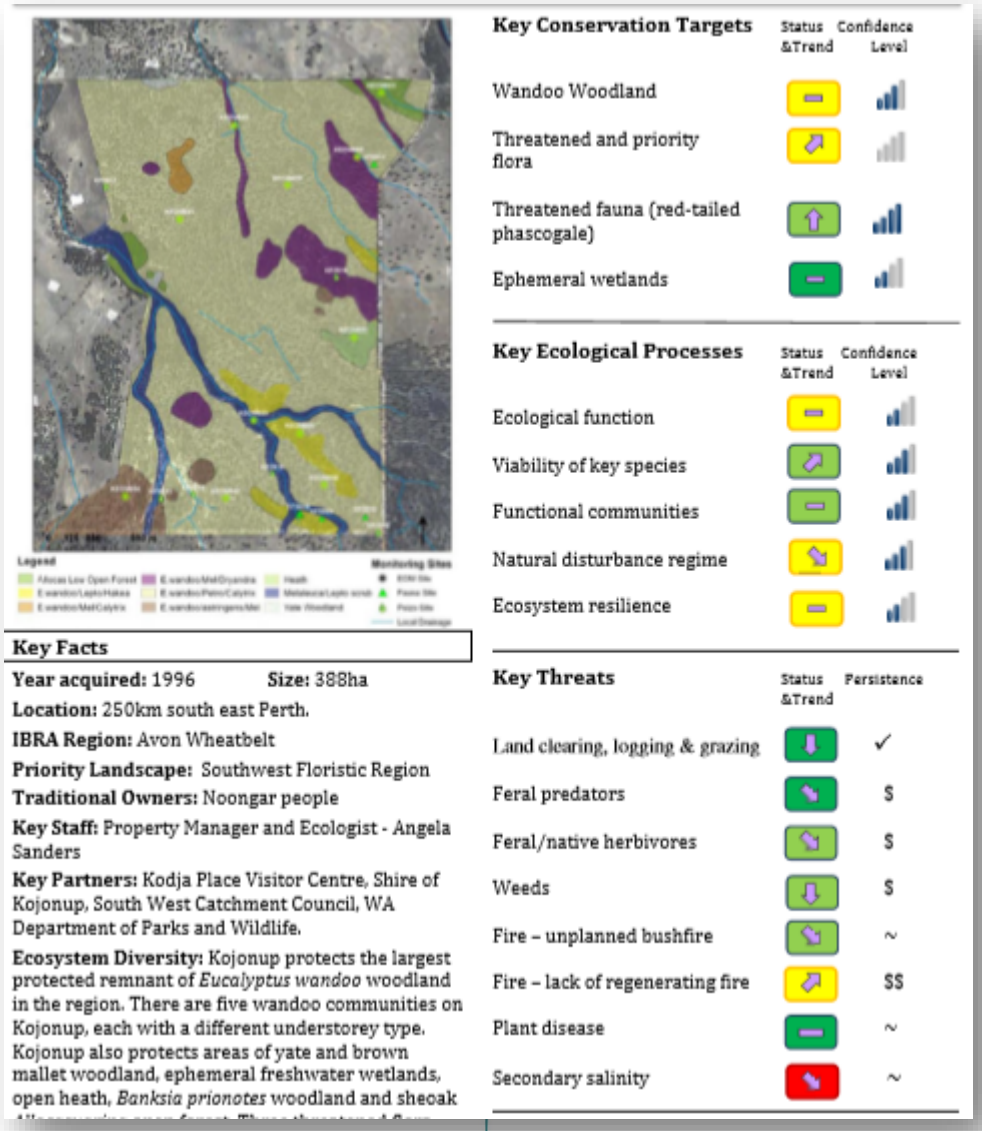
CONFIDENCE

TREND



Etc …

Example Output report



Key Conservation Targets — Status &Trend / Confidence Level

- Wandoo Woodland
- Threatened and priority flora
- Threatened fauna (red-tailed phascogale)
- Ephemeral wetlands

Key Ecological Processes — Status &Trend / Confidence Level

- Ecological function
- Viability of key species
- Functional communities
- Natural disturbance regime
- Ecosystem resilience

Key Threats — Status &Trend / Persistence

- Land clearing, logging & grazing — ✓
- Feral predators — $
- Feral/native herbivores — $
- Weeds — $
- Fire – unplanned bushfire — ~
- Fire – lack of regenerating fire — $$
- Plant disease — ~
- Secondary salinity — ~

Key Facts

Year acquired: 1996 **Size:** 388ha

Location: 250km south east Perth.

IBRA Region: Avon Wheatbelt

Priority Landscape: Southwest Floristic Region

Traditional Owners: Noongar people

Key Staff: Property Manager and Ecologist - Angela Sanders

Key Partners: Kodja Place Visitor Centre, Shire of Kojonup, South West Catchment Council, WA Department of Parks and Wildlife.

Ecosystem Diversity: Kojonup protects the largest protected remnant of *Eucalyptus wandoo* woodland in the region. There are five wandoo communities on Kojonup, each with a different understorey type. Kojonup also protects areas of yate and brown mallet woodland, ephemeral freshwater wetlands, open heath, *Banksia prionotes* woodland and sheoak

Assets

Themes

Projects

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6. Reporting

Talks about: the steps needed to report progress

Use this to: set out when to report what parts of the plan

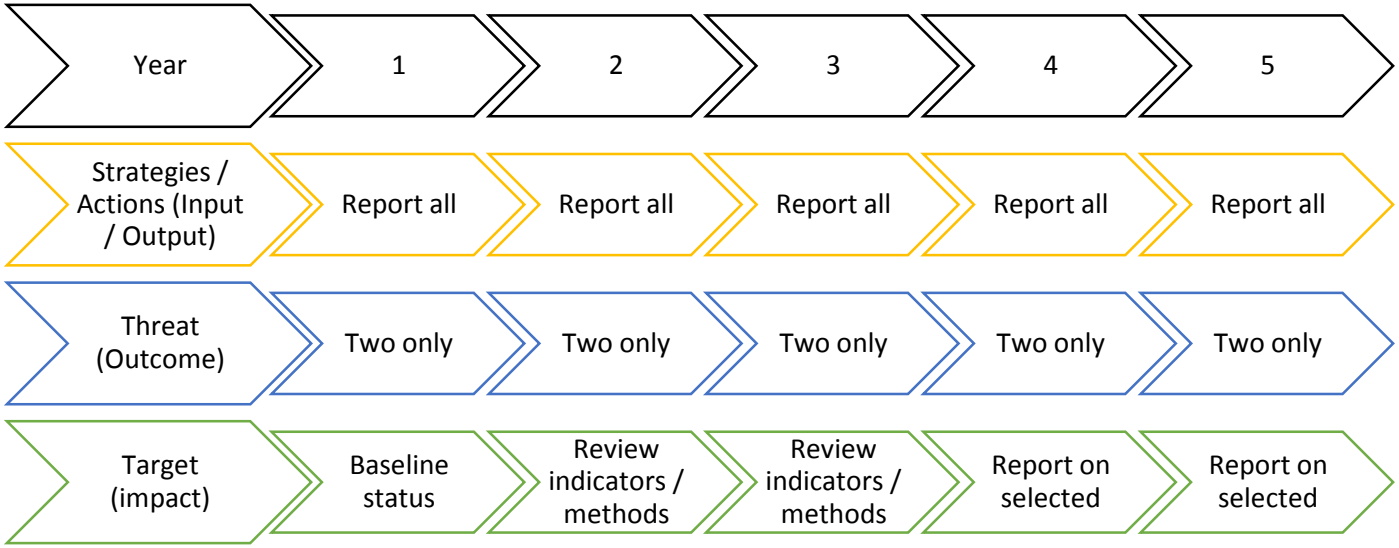
Reporting timetable

Reporting will follow the timetable below, to link with external and internal obligations. Over time, the reporting timetable should be linked to the Yawuru seasonal calendar.

Reporting cycle

Not all things need to be reported at all times. Input and outputs will need to be reported and reviewed regularly, whereas outcomes and impacts will be reported less often.

An example timetable might be something like below.



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6. Appendices and attachments

Talks about: detailed additional bits and pieces that are helpful but not essential

Use this to: enhance your understanding of the other sections

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Glossary

A longer list of words that are hard to remember

Glossary

Adaptive management—An approach to conservation planning in which testing and monitoring are integrated into a project's design and management. This kind of approach provides ongoing feedback that improves management decisions as the project progresses.

Actions—Specific tasks that help achieve one or more objectives. Actions are also called activities, interventions, responses, or strategic actions. When grouped together to achieve a goal, activities become strategies. Also called Activity

Contributing factor—Circumstances that help create a problem or threat to your targets, but might not be the only cause of the problem. For example, logging policies, demand for fish, and lack of access to renewable electricity can all be contributing factors. Contributing factors are sometimes referred to as root causes, although a root cause is the ultimate reason for a problem and a contributing factor might include threats that have several root causes. For example, if a threat to a species is overhunting, one contributing factor might be poor enforcement of wildlife laws. Roots causes might be the hunters' need for food or cultural norms that promote hunting.

Evaluation—An assessment of the degree to which an activity or project is achieving its goals and objectives. Evaluation and monitoring are closely related, and both aim to judge the effectiveness of a particular activity or project. In general, evaluation is the broad umbrella under which activities such as monitoring and assessment fall.

Goal—A broad statement that describes one or more impacts that a project should have on its conservation targets. While the project's vision describes the ultimate, broad aim of the project, the project's goals provide more specific statements of the impacts that are expected to help achieve the vision. Objectives, on the other hand, are more specific than goals, and describe how goals will be met. Good goals are linked to targets, impact oriented, measurable, time limited, and specific.

Indicator—A measurable factor that indicates progress toward an objective. Changes in a conservation target, a change in a threat, and changes in behaviour are all examples of indicators. It is related to a specific information need such as the status of animal or habitat target, change in a threat, or progress toward an objective. An indicator defines what you are trying to measure but should not include the desired level or trend that you wish to see. Good indicators are measurable, precise, consistent, and sensitive.

Logic model—A graphic that displays a project's goals, objectives, and indicators of success. Also called a "logical framework," logic models are most often presented as a matrix that displays a project's specific activities, expected outcomes, and measures of success. The aim of a logic model is to provide a shorthand display of the logic guiding the execution of a project and is a tool for explaining your theory of change.

Monitoring—The periodic collection and analysis of data to check progress toward a project's goals and objectives. The periodic collection and evaluation of data relative to stated project goals and objectives. (Many people often also refer to this process as monitoring and evaluation (abbreviated M&E)).

Method – A specific technique used to collect data to measure an indicator. A good method should meet the criteria of accurate, reliable, cost-effective, feasible, and appropriate.

Objective—A statement that details a specific desired outcome of a project. Objectives should help a project reach its goals, which ultimately will help the project achieve its vision. A typical project will have multiple objectives. If the project is well conceptualized and designed, realization of all the project's objectives should lead to the fulfillment of the project's vision. A good objective meets the criteria of being: specific, measurable, achievable, relevant, and time limited.

Operational Plan – A plan that includes analyses of: funding required; human capacity and skills and other non-financial resources required; risk assessment and mitigation; and estimate of project lifespan and exit strategy.

Outcomes—what you get by implementing a strategy. Needs to be related to objective to be useful (see **Examples** below)

Outputs—the amount of something produced by a person, machine, or industry (see **Examples** below)

Program—A group of projects that together aim to achieve a common broad vision. For example, a program with a mission to protect a broad geographic area might include projects focused on the protection of specific species or habitats within that geographic area.

Glossary

Project—A set of activities guided by practitioners to achieve defined goals and objectives. Projects are the basic unit of conservation work, and, when grouped together to achieve a common broad vision, create programs. Some people use programs and projects interchangeably, since projects and programs

Result – The desired future state of a target or factor. Results include impacts which are linked to targets and outcomes which are linked to threats and opportunities

Results chain—A graphic that displays the logical sequence that links a project strategy to one or more conservation targets. The steps in a results chain should be linked in an "if-then" fashion that explains the causal links between specific project activities, the expected outcomes of the activity, and the effect those outcomes should have on the conservation target.

Scope—The broad geographic focus of a project. The scope can also include other elements, defined by a planning group.

Stakeholder—Any individual, group, or institution that has a vested interest in the natural resources of the project area or may be affected by project activities. Stakeholders are all the people or groups whose participation and support are critical to a project's success.

Strategic plan—The overall plan for a project that describes the project's scope, vision, targets, goals, and objectives. The plan should also detail the strategies to be used to achieve the objectives, the practitioners and stakeholders who will be involved, plans for monitoring and evaluation, and operational considerations such as funding, risk assessment, project timing, and others. A strategic plan is sometimes divided into strategic goals and operational goals, as well as component parts that include an action plan, monitoring plan, and an operational plan.

Strategy—A group of actions with a common focus that work together to reduce threats, capitalize on opportunities, or restore natural systems and protect human welfare. Strategies include one or more activities and are designed to achieve specific objectives and goals. A good strategy is linked, focused, feasible, and appropriate.

Target—One or more elements of biodiversity or human welfare at a project site. Biodiversity targets could be a species, habitat, ecological system, or ecological process that a project has chosen to focus on. If a project is focused on a particular geographic area or ecological system, the targets should represent the full suite of biodiversity in the area. For example, a project focused on a particular riparian habitat might include targets such as key species of trees, grasses, mammals, fish, insects, and amphibians.

Nested Targets-values and assets whose needs are looked after in one or more Targets.

Threat—A human activity that directly or indirectly degrades a target. A project typically identifies stakeholders that are responsible for specific threats. Some sources also differentiate between direct threats and indirect threats (contributing factors and root causes are indirect threats).

Vision—A description of the ultimate condition that a project is working to achieve.

Work plan – A short-term schedule for implementing an action or monitoring plan. Work plans typically list tasks required, who will be responsible for each task, when each task will need to be undertaken, and how much money and other resources will be required

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Examples of outputs and outcomes

Outputs (examples for ecological and social outcomes) (Audubon 2011)

People:

- Number of participants/volunteers involved*
- Person hours (hours worked by volunteers/participants)*
- Number of work days*
- Diversity of participants (number breakdowns and estimates ideal)*
- Number of underserved and new populations reached*
- Number of organization's members involved*

Media/Communication:

- Number of press releases
- Type of press outlet (for example, television, newspaper, journal, national magazine, or newsletter)
- Distribution level of press outlet (size of distribution area such as national, regional, state, metropolitan area, city, or town)
- Number of interviews
- Website (number of unique visitors)

Ecological:

- Habitat
  - Hectares restored
  - Hectares improved
- Vegetation planted
  - Number of trees
  - Native grasses (square metres, hectares)
  - Ground cover, shrubs, woody vegetation
- Invasive species removed
  - Species
  - Volume
  - Percentage of coverage (reduction)
- Number of erosion sites removed
  - Size (acres)
  - Other specific improvements
- Monitoring
  - Size of area monitored
  - Number of species monitored
  - Number of GIS maps generated
  - Reports completed

Water

- Litres captured or saved
- Number of cisterns
- Surface area converted from impervious surface
- Surface area of converted landscaping (square feet, square meters)
- Number of low-water landscapes/gardens installed
- Other quantifiable accomplishments

Energy

- Number of low-energy light bulbs installed
- Other quantifiable accomplishments

- *Input or output depending on goals of project

Outcomes (Audubon 2011)

People:

- Number of people who perform the targeted behaviour
- Behaviour measure (standardized instrument that assesses intention to act)
- Increased knowledge of XX issue
- More positive attitude toward XX species

Ecological:

- Habitat
  - See outputs (outputs list may serve as outcomes depending on scale of project and goals)
  - Population trends in target species
  - Threat assessment (post-program)
  - Development impacts reduced (directly measured or qualitatively described)
  - Threat impacts reduced (directly measured or qualitatively described)
  - Number of species protected
  - Diversity of species protected
  - Survival rates improved
  - Increased productivity (specific ecosystem services protected)
  - Population sizes of target species observed
  - Decrease in nest abandonment
- Water
  - See outputs
  - Water quality improvements
  - Water availability
  - Policy changes
- Energy
  - Reduction in kilowatts used (quantified)
  - Reduction in carbon emissions (quantified)
  - Kilos of material recycled
  - Carbon/ecological footprint
  - Policy changes

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References

Audubon Society. 2011. Tools of Engagement: A Toolkit for Engaging People in Conservation. National Audubon Society January 2011