

# Integrated monitoring and evaluation framework for the Marine Integrated Monitoring Program (MIMP)

## *NSW Marine Estate Management Strategy*

A Live Framework prepared for NSW Department of Primary  
Industries

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**A I T H E R**

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- Local Land Services
- NSW Department of Primary Industries
- NSW Environment Protection Authority
- NSW Department of Planning, Industry and Environment – Environment, Energy and Science
- NSW Department of Planning, Industry and Environment – Planning and Assessment
- Transport for New South Wales.

A full list of contributing staff is provided in Appendix E.

# Contents

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<i>Executive summary</i> .....	<i>iv</i>
<b>1. Introduction</b> .....	<b>1</b>
<b>2. Marine Estate Management Strategy</b> .....	<b>3</b>
<b>3. Framework overview</b> .....	<b>4</b>
3.1. Summary .....	4
3.2. Program logic.....	5
3.3. Monitoring .....	10
3.4. Evaluation .....	14
3.5. Reporting .....	16
<b>4. Applying the Framework</b> .....	<b>20</b>
4.1. Summary .....	20
4.2. Monitoring .....	20
4.3. Evaluation .....	32
4.4. Reporting .....	39
<b>5. Benefit realisation</b> .....	<b>42</b>
<b>6. Reviewing the Framework</b> .....	<b>44</b>
<b>7. References</b> .....	<b>45</b>
<b>Appendix A – Initiative program logics</b> .....	<b>47</b>
<b>Appendix B – Initiative monitoring plans</b> .....	<b>59</b>
<b>Appendix C – Data collection and management plan</b> .....	<b>132</b>
<b>Appendix D – Alignment of outcomes and benefits</b> .....	<b>143</b>
<b>Appendix E – Framework contributors</b> .....	<b>157</b>
<b>Document history</b> .....	<b>160</b>

## Tables

Table 1	Identified audiences and key messages for the MIMP report card .....	18
Table 2	Program delivery status definitions.....	20
Table 3	Summary of indicators with data collection via survey .....	21
Table 4	Key evaluation questions and rationale – <i>context and basis</i> .....	33
Table 5	Key evaluation questions and rationale – <i>process evaluation</i> .....	33
Table 6	Key evaluation questions and rationale – <i>outcome evaluation</i> .....	34
Table 7	Key evaluation questions and rationale – <i>economic evaluation</i> .....	36
Table 8	Evaluation method .....	37
Table 9	Summary of evaluation reporting requirements .....	39
Table 10	Key evaluation questions and rationale to inform review of this Framework .....	44
Table 11	Likert scale to be used in surveys to assess satisfaction.....	134
Table 12	Data requirements, collection and sources for evaluation questions.....	135
Table 13	NSW Information Management principles.....	139
Table 14	Open data principles.....	140
Table 15	Other relevant data management policies.....	141

## Figures

Figure 1	Summary of the main components of the Framework.....	v
Figure 2	Summary of the main components of the Framework.....	5
Figure 3	Program logic structure, terms and definitions .....	7
Figure 4	Overarching program logic developed for the Marine Estate Management Strategy .....	9
Figure 5	Types of indicators.....	12
Figure 6	Evaluation types and alignment with main components of the program logics Types of evaluation .....	15
Figure 7	KPIs aligned with overarching MEMS outcomes.....	30
Figure 8	Critical elements and draft structure for the report card .....	41
Figure 9	Stakeholder benefits identified in the business case.....	43

## Abbreviations

ABARES	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
AIATSIS	Australian Indigenous Australian and Torres Strait Islander Studies
CMP	Coastal Management Program
DPI	NSW Department of Primary Industries
DPIE-EES	NSW Department of Planning, Industry and Environment – Environment, Energy and Science
DPIE-PA	NSW Department of Planning, Industry and Environment – Planning and Assessment
EPA	NSW Environment Protection Authority
FRDC	Australian Fisheries Research and Development Corporation
GERAIS	Guidelines for Ethical Research in Australian Indigenous Studies
GSC	Greater Sydney Commission
INSW	Infrastructure NSW
IMF	Information Management Framework
KEQ	Key Evaluation Question
KPI	Key Performance Indicator
LGA	Local Government Area
LI	Leading Indicator
LLS	Local Land Services
MEMA	Marine Estate Management Authority
MEMS	Marine Estate Management Strategy
MIMP	Marine Integrated Monitoring Program
NPWS	National Parks and Wildlife Service
NSW	New South Wales
NSW DoI	New South Wales Department of Industry
OEH	Office of Environment and Heritage*
OLG	Office of Local Government
SMART	Specific, Measurable, Achievable, Realistic, Timely
SW	Sydney Water
TfNSW	Transport for NSW
TARA	Threat and Risk Assessment
WNSW	Water NSW

\*The agency previously known as the Office of Environment and Heritage is now established as Environment, Energy and Science under the Department of Planning, Industry and Environment (DPIE-EES).

# Executive summary

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## Introduction

This Framework to support the New South Wales' (NSW) Marine Integrated Monitoring Program (MIMP) has been prepared to guide monitoring and assessment of progress in delivering the Marine Estate Management Strategy (MEMS).

The marine estate is one of NSW's most significant natural assets. The NSW community derives social, cultural and economic value from the marine estate. These values are underpinned by good water quality, healthy habitats and diverse and abundant marine life. The Marine Estate Management Authority (MEMA) released the MEMS in 2018. The MEMS provides a ten-year, overarching framework for coordinated management of the NSW marine estate to deliver its vision for '*a healthy coast and sea, managed for the greatest wellbeing of the community, now and into the future*'. It sets out management objectives and a series of management actions across nine initiatives to achieve the vision. Progress towards implementing the MEMS and delivering the vision will be measured and reported through the MIMP.

## The purpose of the MIMP

The MIMP has three key purposes to:

1. monitor the condition and trend of environmental assets and community benefits to inform a five-year health check
2. evaluate the effectiveness of management initiatives and actions that aim to reduce priority threats and risks
3. fill knowledge gaps that were identified as part of the statewide TARA process.

This high level Framework focusses on the second purpose, to *evaluate the effectiveness of management initiatives and actions that aim to reduce priority threats and risks*. The other two purposes will be developed and documented through another process, however, given the interface between all three, this Framework will include summaries of purpose 1 and 3 where relevant.

This Framework integrates environmental, social, cultural and economic components, as well as threats and stressors, to measure and demonstrate progress of the MEMS. The Framework was developed in collaboration with representatives from each of MEMA agencies and the Marine Estate Expert Knowledge Panel (MEEKP).

## Framework overview

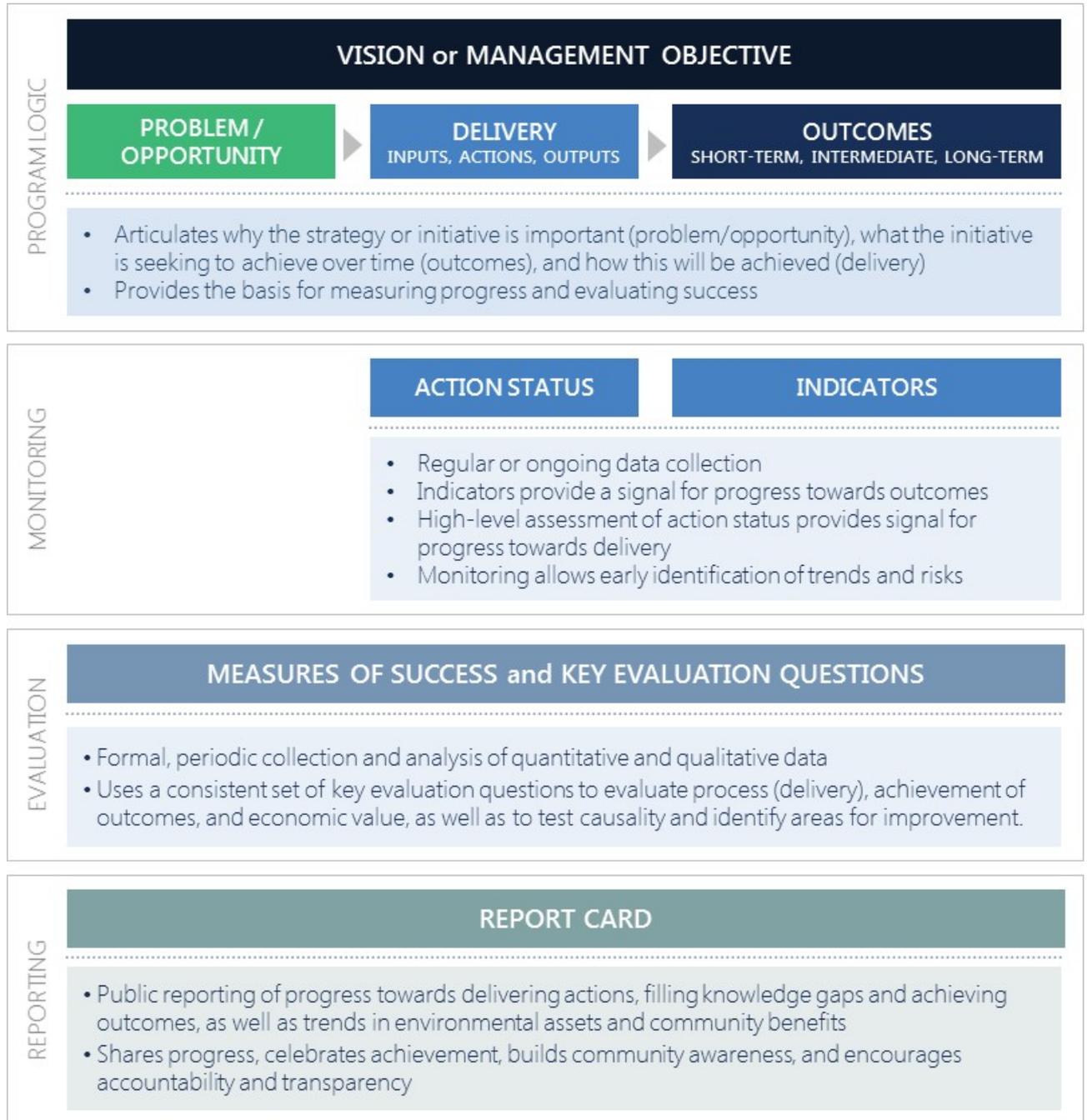
This high level Framework has four main components:

- **program logics**, which articulate the rationale, management actions and desired short-term, intermediate and long-term outcomes for each initiative, as well as the overarching MEMS. The program logics provide the basis for measuring progress and evaluating success.
- **monitoring** to track management action delivery and give an indication of progress towards achieving outcomes. Monitoring helps track progress and identify trends and risks early so that you can adjust delivery, if required.
- **evaluation** after two years, five years and 10 years to periodically assess achievement of outcomes and overall success, and to identify areas that may require further attention to ensure future success. Evaluation consists of process evaluation, outcomes evaluation and

economic evaluation to assess overall appropriateness, efficiency, effectiveness and sustainability of the MEMS and initiatives, and to provide insights for continuous improvement.

- **reporting** to share progress, insights and information with the community, responsible agencies and decision-makers and to celebrate achievements. Reporting also encourages community awareness of and interest in the marine estate, and accountability and transparency among marine estate managers.

These components are shown conceptually below (Figure 1).



**Figure 1 Summary of the main components of the Framework**

## Applying the Framework

The high level Framework focuses on establishing monitoring and providing guidance for evaluation of the overall MEMS and each management initiative. It sets out an approach for assessing progress against outcomes that management actions are expected to collectively achieve. It recognises that the management initiatives and actions are inherently interrelated, with individual actions often contributing to multiple outcomes within and across initiatives.

The Framework is intended for use by MIMP staff, initiative leads and external evaluators. It will guide monitoring, evaluation and reporting activities over the life of the MEMS. The high level Framework sets out:

- indicators to use as representative measures for monitoring progress against outcomes
- key evaluation questions to guide periodic evaluation of processes, outcomes and economic value
- a draft structure for a public report card.

This is supported by detailed monitoring requirements for each initiative, and a data collection and management plan, which includes what data should be collected and at what frequency.

While the Framework does not focus on individual management actions, delivery staff may apply a similar approach to designing and undertaking monitoring and evaluation for individual management actions. Action-level monitoring and evaluation will be important for understanding causality, and whether the current suite of management actions remain the most appropriate for achieving outcomes. It will also provide insights to inform evaluation of the overall MEMS.

## Reviewing the Framework

Initiative leads and MIMP staff will continue to identify and refine some details of the Framework. Relevant areas for possible refinement are identified in the Framework.

The Framework will be reviewed periodically as part of the evaluation process and updated, if required, to ensure it remains appropriate and practical.

## Importance of the Framework

The vision and management objectives of the MEMS set out the overarching strategic direction for the NSW marine estate. The MEMS also outlines a series of clear management actions that align with that direction. The Framework will be critical to effectively and efficiently deliver those management actions and achieve the strategic direction.

The Framework further clarifies and promotes a shared understanding among responsible agencies of the purpose of the MEMS and the value of undertaking the management actions. It contains short-term, intermediate, and long-term outcomes that articulate the theory of change that connects the management actions to the objectives of each initiative and the overarching MEMS. In doing so, it also identifies opportunities for integration and coordination between initiatives and responsible agencies, driving consistency and efficiency both in delivery of the MEMS and in implementation of the Framework.

The Framework will enable and drive adaptive management of the marine estate. Adaptive management is fundamental to making progress in complex systems. The Framework supports continuous improvement through systematic monitoring and evaluation of outcomes. This allows managers to build evidence over time of what's working, what's not working and how external factors may be affecting implementation. These insights allow managers to make adjustments to ensure

success and identify where their effort is creating the greatest benefit, so that they can prioritise resources accordingly and ensure efficient and effective management.

The Framework will support MEMA agencies in preparing business cases for ongoing funding for management of the marine estate. In the first instance, it allows MEMA to demonstrate it has a clear and robust method for measuring progress and associated outcomes and objectives sought through the MEMS. As the Framework is implemented, the findings will allow MEMA to demonstrate progress and report on early successes and insights. This builds confidence in MEMA's and responsible agencies' approach to managing the marine estate and demonstrates expected outcomes that could be achieved with further funding.

The Framework also drives transparency and accountability in the management of the marine estate for the NSW community. It allows MEMA, responsible agencies and relevant Ministers to report on progress, successes and areas that may need further attention. This gives the community confidence in management of the marine estate.

# 1. Introduction

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The marine estate is one of the most significant natural assets in New South Wales (NSW). It comprises tidal rivers and estuaries, the shoreline, submerged lands, offshore islands, and the waters of the NSW coast from the Queensland border to the Victorian border and out to three nautical miles offshore (NSW Marine Estate Management Authority, 2018). The NSW community derives social, cultural and economic benefits from the marine estate, which are underpinned by good water quality, healthy habitats and diverse and abundant marine life.

The Marine Estate Management Authority (MEMA) was established in 2013 and brings together the heads of the four NSW Government agencies with key marine estate responsibilities. It advises the NSW Government on policies, priorities and the direction of management of the marine estate. In 2018, MEMA released the Marine Estate Management Strategy (MEMS).

The MEMS provides the overarching framework for coordinated management of the marine estate to deliver its vision for *'a healthy coast and sea, managed for the greatest wellbeing of the community, now and into the future'* and to implement reforms to the way the marine estate is managed. It sets out management objectives and a series of management actions across nine initiatives that are intended to contribute towards achieving the vision. The need for reforms in order to achieve the vision was identified through the evidence-based statewide Threat and Risk Assessment (TARA) (NSW Marine Estate Management Authority, 2017). Government intervention is required to address market failures in management of the marine estate, including externalities, resource use conflict, under investment in value-creation opportunities, imperfect information and opportunity for greater government coordination and consolidation. The MEMS is a requirement of the Marine Estate Management Act 2014 and is the mechanism to address market failure and deliver the coordinated, holistic, triple bottom-line approach to the management of the NSW marine estate.

Progress towards implementing the MEMS and delivering the vision will be measured and reported through the Marine Integrated Monitoring Program (MIMP).

The MIMP has three key purposes to:

1. monitor the condition and trend of environmental assets and community benefits to inform a five-year health check
2. evaluate the effectiveness of management initiatives and actions that aim to reduce priority threats and risks
3. fill knowledge gaps that were identified as part of the statewide TARA process.

The Framework (this document) focusses on the second purpose, to *evaluate the effectiveness of management initiatives and actions that aim to reduce priority threats and risks*. The other two purposes will be developed and documented through another process, however, given the interface between all three, this Framework will include summaries of purpose 1 and 3 where relevant.

The Framework was developed in collaboration with representatives from each of the MEMA agencies and the Marine Estate Expert Knowledge Panel (MEEKP). It uses a program logic approach that integrates environmental, social, cultural and economic components as the basis against which to measure progress and demonstrate success in achieving the desired MEMS outcomes, and to identify areas that may require further attention. It is a high level Framework, and is also designed to:

- drive efficient and effective management of the marine estate by:
  - recognising the inherent inter-relationships between the nine management initiatives and facilitate coordination and efficiency across the initiatives and responsible agencies

- enabling and driving adaptive management of the marine estate
- enabling responsible agencies to identify where resources are having the greatest benefit, allowing resources to be prioritised accordingly.
- drive transparency and accountability in the management of the marine estate for the NSW community
- provide a practical approach for measuring progress and evaluating success
- support bids for ongoing funding for management of the NSW marine estate.

The Framework contains the following sections:

- **Section 1: Introduction (this section)** – introduces the Framework and provides a brief overview of this document and its purpose
- **Section 2: Marine Estate Management Strategy** – provides background on the MEMS, including its vision and management initiatives
- **Section 3: Framework overview** – introduces the conceptual approach that underpins the Framework
- **Section 4: Applying the Framework** – provides guidance for MIMP staff, initiative leads, other relevant agency staff and a third-party evaluator for applying the Framework
- **Section 5: Benefits realisation** – provides a broad overview of benefits realisation relative to the Framework.
- **Section 6: Reviewing the Framework** – provides an overview of when and how the Framework will be reviewed
- **Appendix A** – provides the detailed program logics corresponding to each management initiative
- **Appendix B** – provides the detailed monitoring plan for each initiative. Appendix B should be read in conjunction with Section 4 and Appendix C
- **Appendix C** – provides the data collection and management plan that will guide monitoring and evaluation activities within the Framework. This includes data collection and sources for monitoring management action status and indicators, and for undertaking periodic evaluation. Appendix C should be read in conjunction with Section 4 and Appendix B
- **Appendix D** – Documents how the outcomes identified in the program logics (Appendix A) align with the suite of broader benefits identified in the original business case for preparing the MEMS
- **Appendix E** – acknowledges the contribution of those who provided input into preparing this Framework.

## 2. Marine Estate Management Strategy

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The Marine Estate Management Authority (MEMA) released the [Marine Estate Management Strategy \(MEMS\)](#) in 2018. The MEMS is a ten-year strategy and provides the overarching framework for coordinated management of the NSW marine estate. It outlines nine management initiatives designed to address priority threats to the marine estate. These threats were identified through an evidence-based threat and risk assessment for the NSW marine estate ([state-wide TARA](#)) (NSW Marine Estate Management Authority, 2017). The management initiatives summarise management objectives, benefits, threats, stressors and proposed management actions. The nine management initiatives are:

1. Improving water quality and reducing litter
2. Delivering healthy coastal habitats with sustainable use and development
3. Planning for climate change
4. Protecting the Aboriginal cultural values of the marine estate
5. Reducing impacts on threatened and protected species
6. Ensuring sustainable fishing and aquaculture
7. Enabling safe and sustainable boating
8. Enhancing social, cultural and economic benefits
9. Delivering effective governance.

The MEMS also outlines high level roles and responsibilities for each of the Government agencies involved in managing the marine estate.

Implementation of the MEMS is guided by an Implementation Plan (*drafting note: weblink to be inserted when available*), which further articulates the management actions and sub-actions that will address priority threats, as well as timeframes and responsibilities for delivery. Progress towards delivering the MEMS and achieving success for each management initiative will be measured and reported through the Marine Integrated Monitoring Program (MIMP).

## 3. Framework overview

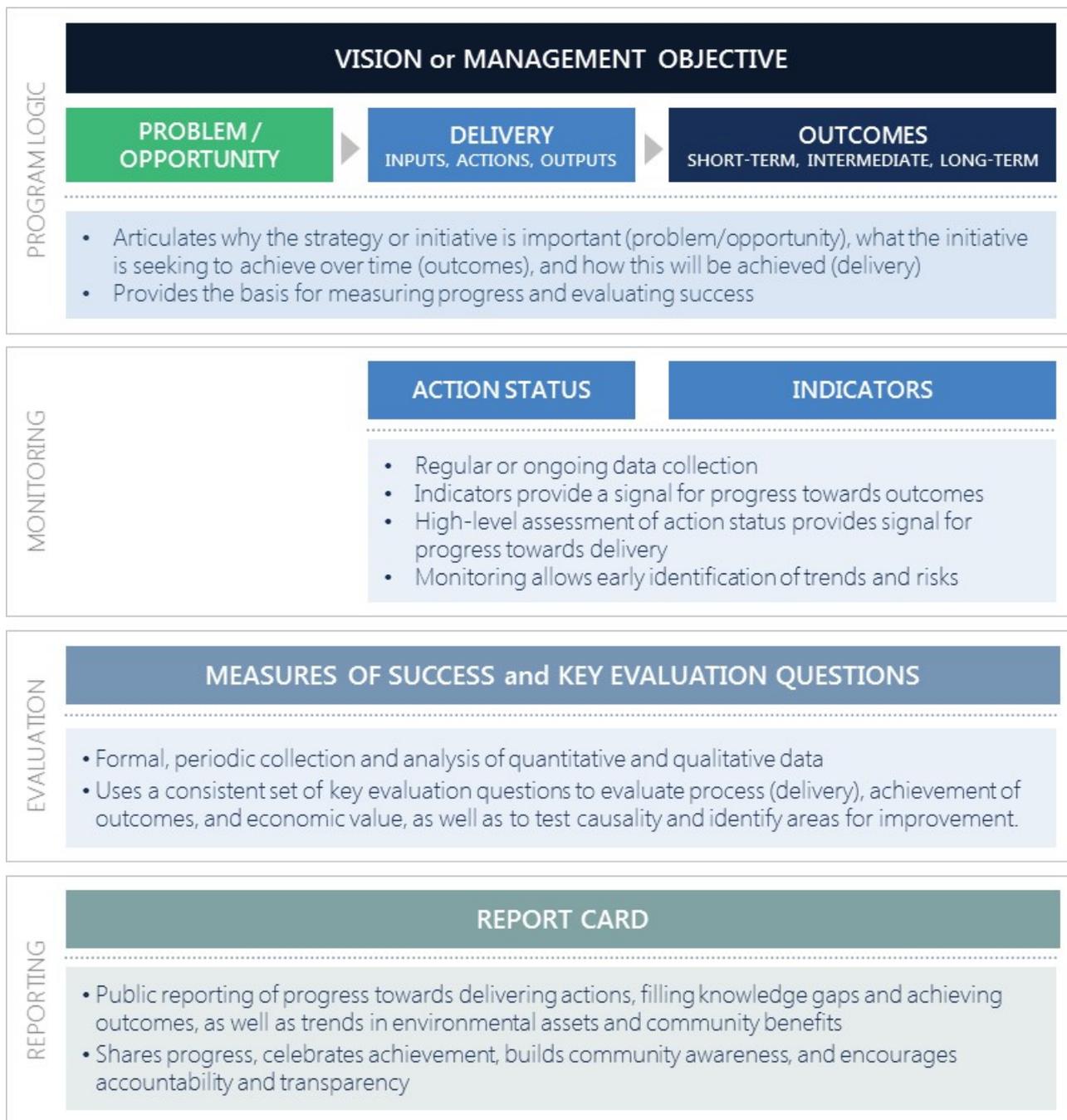
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### 3.1. Summary

The Framework has four main components:

- **program logics**, which articulate the rationale, management actions and desired short-term, intermediate and long-term outcomes for each initiative, as well as the overarching MEMS. The program logics provide the basis for measuring progress and evaluating success.
- **monitoring** to track management action delivery and give an indication of progress towards achieving outcomes. Monitoring helps track progress and identify trends and risks early so that delivery can be adjusted, if required.
- **evaluation** after two years, five years and 10 years to periodically assess achievement of outcomes and overall success, and to identify areas that may require further attention to ensure future success. Evaluation consists of process evaluation, outcomes evaluation and economic evaluation to assess overall appropriateness, efficiency, effectiveness and sustainability of the MEMS and initiatives, and to provide insights for continuous improvement.
- **reporting** to share progress, insights and information with the community, responsible agencies and decision-makers and to celebrate achievements. Reporting also encourages community awareness of and interest in the marine estate, and accountability and transparency among marine estate managers.

These components are shown conceptually below (Figure 2) and are described in more detail in the following sections.



**Figure 2 Summary of the main components of the Framework**

## 3.2. Program logic

### 3.2.1. Introduction

Program logic is a common approach to strategic planning. It expresses how change is expected to occur within a system. It captures the rationale behind a program or initiative, probing and outlining the anticipated cause-and-effect relationships between defined inputs, management actions, outputs and outcomes. Program logic also provides a consistent basis upon which to monitor success and drive continuous improvement in the way management actions and programs are identified, delivered and refined over time.

A program logic has been developed for the overarching MEMS and for each management initiative. Each initiative program logic provides:

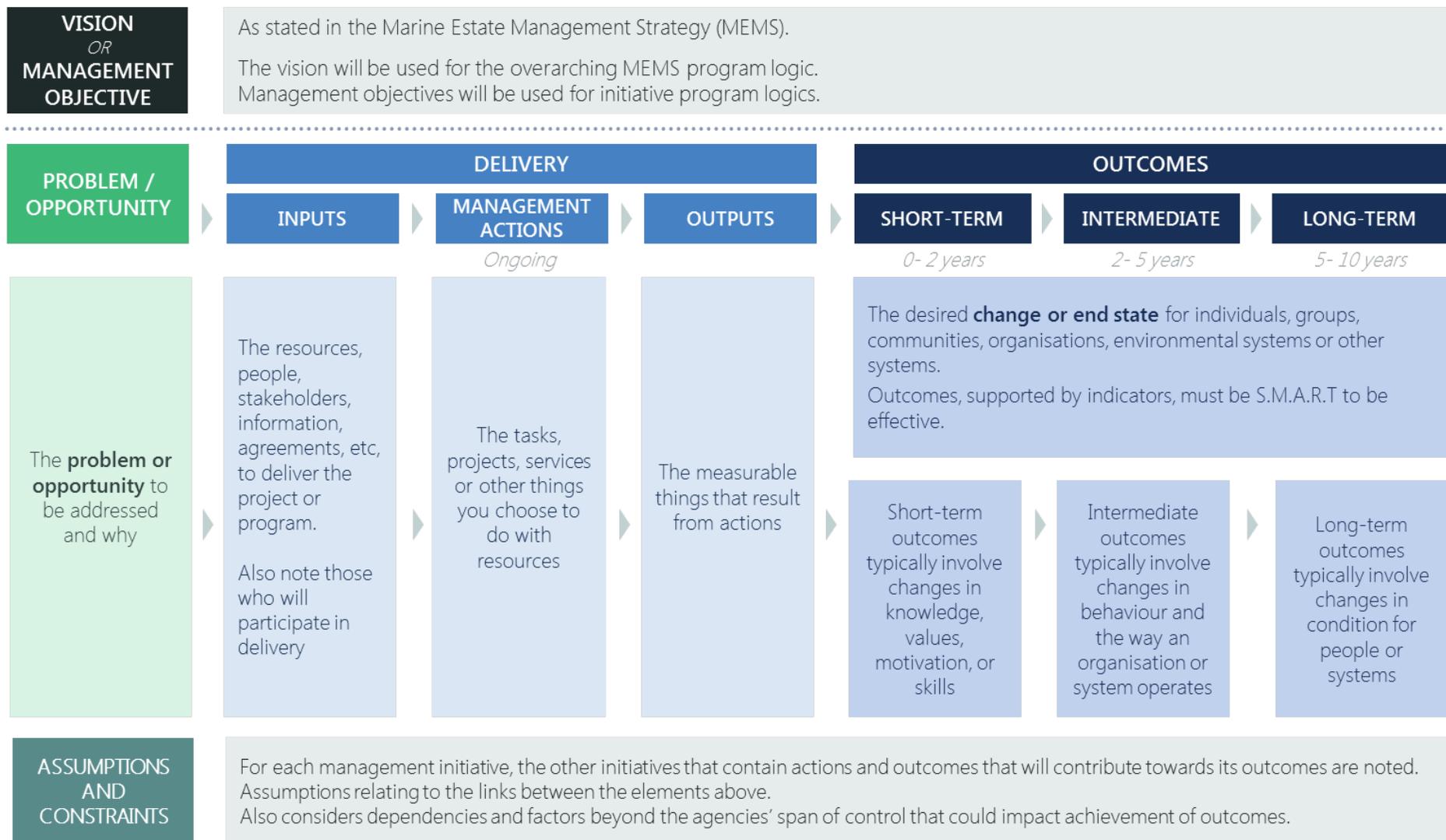
- a summary of the management actions identified in the MEMS
- a set of outcomes that articulate the desired change intended to result from undertaking the management actions collectively
- assumptions and constraints, including noting relationships with other management initiatives.

The outcomes in the program logics provide a bridge between the management actions and management objectives contained in the MEMS. The outcomes are articulated for short- (0-2 years), intermediate (2-5 years), and long-term (5-10 years) timeframes to reflect the expected incremental nature of change, or theory of change, that is required to achieve success over the life of the ten-year MEMS. Although there is expected to be demonstrable progress towards these outcomes within the identified timeframes, it is important to note that ongoing effort may be required to ensure that these outcomes endure beyond those timeframes. This is particularly true of the long-term outcomes, where it is expected that progress will be made towards these outcomes over the next ten years, however, further and ongoing management of the marine estate will be required to ensure these outcomes are maintained and continue beyond the life of the MEMS.

There are approximately 80 outcomes across the nine initiatives. The outcomes:

- seek to clearly articulate what success looks like for each initiative
- are deliberately high level, largely avoiding prescribing specific actions or processes
- are framed, with appropriate detail, for the intended audience (e.g. Minister, senior executive, general public)
- are often inherently interrelated, both within and between management initiatives, reflecting the interrelationships between the management initiatives and what the existing suite of management actions is seeking to achieve.

The general program logic structure and summary of terms used for this Framework is provided below (Figure 3). The program logics for the overall MEMS and for each management initiative are introduced in the following sections.



**Figure 3 Program logic structure, terms and definitions**

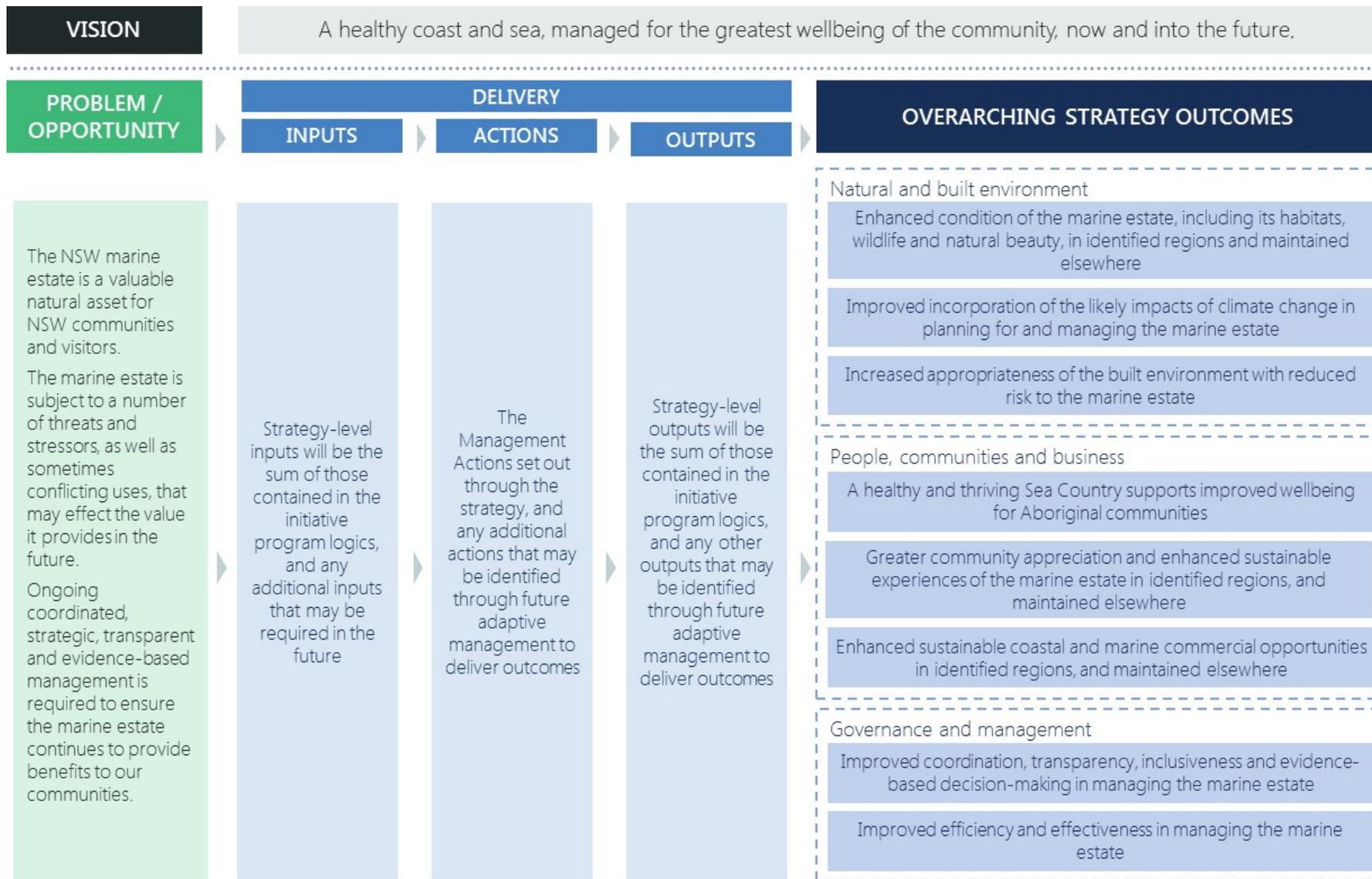
### 3.2.2. Overarching MEMS program logic

The overarching program logic articulates a concise set of high level MEMS outcomes that deliver upon MEMA's vision of '*a healthy coast and sea, managed for the greatest wellbeing of the community, now and into the future*'. The MEMS outcomes are grouped into the following overarching areas of change:

- natural and built environment
- people, communities and business
- governance and management.

The areas of change are inherently interrelated, with outcomes in one area often supporting outcomes in others. In particular, achievement of outcomes in governance and management will be important for success in the other two areas, while some outcomes within the people, communities and business domain will be supported by success in each of the other two domains. It is expected that progress will be made towards these outcomes over the next ten years, however, further and ongoing management of the marine estate will be required to ensure these outcomes are maintained and continue beyond the life of the MEMS.

The overarching program logic for the MEMS is presented below (Figure 4).



**Figure 4** Overarching program logic developed for the Marine Estate Management Strategy

### 3.2.3. Initiative program logics

The Framework contains nine initiative level program logics, which articulate the intended outcomes sought by each management initiative. These are:

- **Initiative 1: Improving water quality and reducing litter** focuses on improving water quality and reducing marine litter for the benefit of marine habitats, wildlife and the community
- **Initiative 2: Delivering healthy coastal habitats with sustainable use and development** focuses on protecting coastal and marine habitats and associated species and enhancing the health of the marine estate by improving the design, quality and ongoing management of foreshore development, use and waterway infrastructure
- **Initiative 3: Planning for climate change** focuses on understanding, adapting and increasing resilience to help mitigate the impacts of climate change on the NSW marine estate
- **Initiative 4: Protecting the Aboriginal cultural values of the marine estate** focuses on working with Aboriginal communities in the management of Sea Country to reduce threats and risks to Aboriginal cultural heritage
- **Initiative 5: Reducing impacts on threatened and protected species** focuses on understanding and mitigating threats to threatened and protected species in NSW
- **Initiative 6: Ensuring sustainable fishing and aquaculture** focuses on ensuring that fishing and aquaculture is managed in a way that is consistent with ecologically sustainable use while providing for the health, heritage and social benefits of fishing and seafood consumption
- **Initiative 7: Enabling safe and sustainable boating** focuses on balancing protection of coastal and marine habitat and species with ongoing access and safe and sustainable boating
- **Initiative 8: Enhancing social, cultural and economic benefits** focuses on improving the social, cultural and economic benefits that the NSW community derives from the marine estate by responding to priority threats
- **Initiative 9: Delivering effective governance** focuses on improving governance arrangements across the marine estate to support coordinated, transparent, inclusive and effective decision-making.

The initiative level program logics are provided in Appendix A. The management initiatives are interrelated, with progress in one often supporting or depending on progress in another. Each program logic notes the other initiatives that contain management actions and outcomes that are important for achieving success in the given management initiative. There are also a number of outcomes within and across the initiatives that are closely related. These are summarised at the end of Appendix A. Further detail on how each management action is expected to contribute towards achieving outcomes within its initiative is provided within the initiative monitoring plans in Appendix B.

## 3.3. Monitoring

### 3.3.1. Introduction

Monitoring is the regular systematic collection and analysis of data or information to track management action implementation and gives an indication of progress towards achieving outcomes. It is important to note that monitoring does not assess program success or achievement of outcomes. Instead, it uses indicators to help identify trends, issues or risks in relation to achieving outcomes.

Monitoring focuses on four main areas:

- monitoring program delivery through **management action status**
- monitoring of outcomes through **indicators**
- monitoring condition and trend of environmental assets and community benefits
- monitoring of **knowledge gaps**

These are described below. Details for how monitoring will be undertaken are provided in Section 4: Applying the Framework.

### 3.3.2. Monitoring program delivery

The MEMS governance and project management framework has been established across MEMA agencies to provide a formal process for monitoring program delivery. A three-tiered reporting structure will assess management action status within each initiative and across the entire MEMS program on a quarterly and annual basis. This will provide an understanding how implementation of each management action and initiative is progressing in terms of budget, scope and schedule and to identify any issues or risks to the completion of management actions. Monitoring program delivery involves collecting and assessing program and project management documentation relating to inputs, management actions and outputs.

### 3.3.3. Monitoring progress towards outcomes

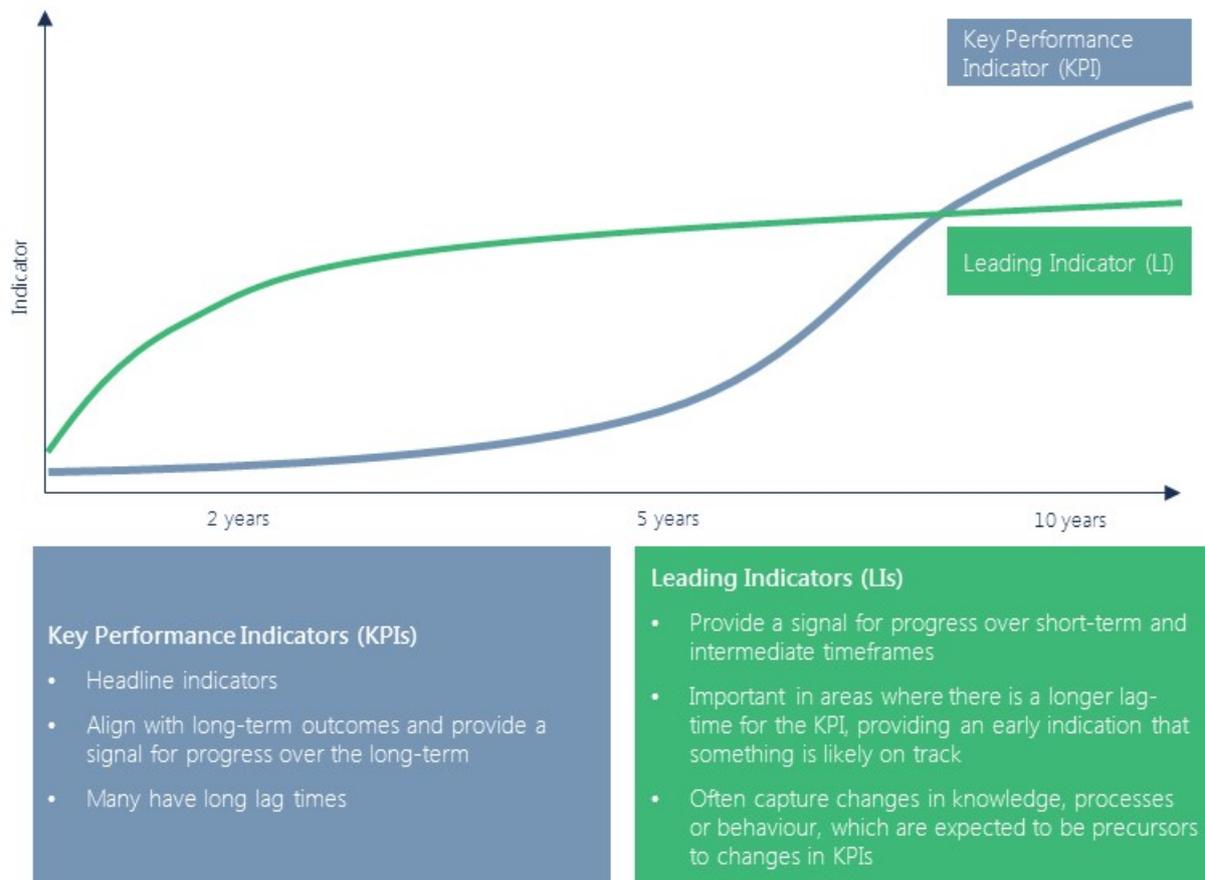
Indicators will be used to provide quantifiable metrics for tracking performance towards outcomes over time. Indicators are aligned with outcomes, but cannot capture all aspects of each outcome. Instead, they provide an indication or signal of the performance of a program, so that adjustments can be made, if required. They can be understood as the minimum level of information required to determine whether a program is on track to achieve its intended outcomes.

The framework uses two types of indicators: Key Performance Indicators (KPIs) and Leading Indicators (LIs). In summary:

- **KPIs** are headline indicators that generally align with long-term outcomes. Due to the sometimes-long lag times between management actions and observed changes for long-term outcomes, KPIs may not be appropriate for measuring outcomes that are expected to be achieved over the short to intermediate term. They might also be thought of as ‘lagging indicators’.
- **LIs** provide a signal for progress over the short-term and intermediate timeframes. LIs provide an early indication of performance and are important in areas where there is a longer lag time between undertaking an action and achieving the desired change. Monitoring these indicators allows for early intervention in management action design and delivery to ensure outcomes are achieved. They typically capture changes in knowledge, processes and behaviour, which are expected to be precursors to changes in KPIs.

A conceptual representation of KPIs and LIs is outlined below in Figure 5.

Both KPIs and LIs are intended primarily to provide a signal for progress towards the outcomes articulated in the program logics. Some indicators will also support monitoring of environmental assets, community benefits and knowledge gaps. *(to be developed as part of addressing objectives 1 and 3 of the MIMP).*



**Figure 5 Types of indicators**

There are many interrelationships and common themes across the 80 outcomes, both within and across the initiatives. To reflect these interrelationships and to facilitate coordination and efficiency in monitoring across the nine management initiatives, a single indicator may be used to track progress towards more than one outcome. This is more common among the LIs, where at least half are linked to more than one outcome. KPIs tend to be unique to each initiative, with only four KPIs applying to more than one initiative. Mapping of indicators to outcomes is shown for each management initiative in the monitoring plans in Appendix B.

Although change is expected to be observed at different timescales for different indicators, generally all indicators will be monitored over the life of the MEMS. This will allow marine estate managers to identify a baseline for each indicator. It will also demonstrate if, when and how trends begin to emerge and change over time. The frequency of data collection varies for each indicator and is specified in the initiative monitoring plans in Appendix B.

Some indicators are currently quite broad in scope. Where required, initiative leads will continue to review and identify details for these indicators during the first stage of the MIMP. This will help to focus the scope of the indicator and data collection on the minimum information required to provide a signal of whether the relevant outcomes may be on track. Further details may relate to, for example, specific stakeholders, processes and guidelines, risks or values.

### 3.3.4. Monitoring the condition and trend of community benefits and environmental assets

A community benefit is anything that contributes to the wellbeing of the community. In the marine estate these have been broadly categorised into economic, social, cultural and environmental benefits with many being based on what people think is important (what they value) (NSW Marine Estate Management Authority 2017). Examples of community benefits include swimming at the beach, boating, harvesting seafood, running a business, clean waters and marine biodiversity, and valuing the environment regardless of direct benefits.

Monitoring community benefits, and the threats and stressors that pose a risk to these benefits, is a key component of the MIMP. This monitoring will allow the extent of impacts and reduction of risks to benefits to be tracked among locations and through time. The Monitoring Program will focus on a broad range of social, cultural and economic benefits identified in the statewide TARA and NSW community surveys.

Monitoring of threats and stressors to community benefits will primarily focus on those that contributed to moderate, high or cumulative risk levels in the statewide TARA, the 'priority threats' (Appendix A of the TARA). In this context, the greatest threats were primarily associated with water pollution and a general lack of social, cultural and economic information, lack of compliance with regulations, and lack of access to the marine estate. Unassessed threats will also be monitored, including those related to maritime heritage, such as shipwrecks and significant coastal landscapes (highlighted by the community as a gap in the statewide TARA), to ensure that management actions can be taken in the future, if necessary.

Broad-scale monitoring is required to continue to evaluate the condition and trend of environmental assets and related stressors that contributed to moderate, high or cumulative risk levels in the statewide TARA in order to inform the five-year health check and assessment of risks. An understanding of environmental condition and interaction with stressors at the local scale is essential components of risk evaluation, and one key mechanism in the MEMS in order to assess regional risks. This includes continuation and further implementation of indicators and measures in the previous NSW Monitoring, Evaluation and Reporting (MER) program that was reported in Roper et al. (2011).

These key datasets reported in the previous MER program relates to an assessment of water quality and the extent and distribution of aquatic macrophytes (seagrass, mangroves and saltmarsh). Additional stressors that are relevant to values other than aquatic ecological health will be added, such as primary contact recreation and edible seafood. In addition, broad-scale monitoring of environmental indicators will be developed during further stages of the MEMS, including the assessment and monitoring of estuarine and rocky reef fish assemblages. The program will include short to medium-term, response monitoring, long-term monitoring and citizen science monitoring.

### 3.3.5. Addressing knowledge gaps

Key knowledge gaps relate to those specific issues that were identified as having low, moderate and high risk to the environmental assets and social, cultural and economic benefits in the TARA (MEMA 2017), and these risks being supported by limited or inferred evidence. Further knowledge gaps were provided by stakeholders as part of public consultation on the TARA. It is important that these knowledge gaps are addressed alongside implementation of the MEMS and through monitoring and evaluation processes in order to inform future planning.

Key known social, cultural and economic knowledge gaps relate to:

1. resource use conflict (in particular overcrowding/congestion, loss or decline of marine industries)
2. effect of climate change on social and economic benefits of the marine estate
3. environmental (in particular wildlife disturbance, pests and diseases, modified hydrology/hydraulics and flow regime, sediment contamination and climate change)
4. governance of the marine estate (in particular lack of community awareness of the marine estate)
5. public safety (in particular wildlife interactions, seafood contamination, other water pollution/contamination affecting human health and safety)
6. critical knowledge gaps (inadequate social and economic information)
7. loss of public access (in particular, limited or lack of access infrastructure to the marine estate, loss of public access)
8. knowledge and awareness of the tangible and intangible benefits that indigenous people derive from the marine estate.

Key known environmental knowledge gaps relate to:

1. extent of wildlife disturbance impacts (including noise) on protected species
2. impacts on trophic levels of fish assemblages from recreational and commercial fishing
3. many climate change stressors for both 20 and 50 year projections
4. dredging, aquaculture, mining activities, service infrastructure and some fishing methods on threatened and protected marine mammals, seabirds and reptiles
5. urban stormwater discharge on several environmental assets
6. point discharges and sewage effluent on several environmental assets.

For risks identified in the Environmental TARA, it was also acknowledged that there are several critical knowledge gaps including:

1. effects of fishing on trophic structure and community function
2. vessel strikes (shipping and boating) on marine megafauna
3. stock levels of non-target fish species
4. water quality issues in the context of the connection between estuaries and coast and marine waters.

## 3.4. Evaluation

### 3.4.1. Introduction

Evaluation is the formal, periodic collection and analysis of data or information to understand and demonstrate the value of the program and the extent to which it is achieving, or has achieved, what it set out to achieve. The NSW Government Program Evaluation Guidelines describes evaluation as 'a rigorous, systematic and objective process to assess the effectiveness, efficiency, appropriateness

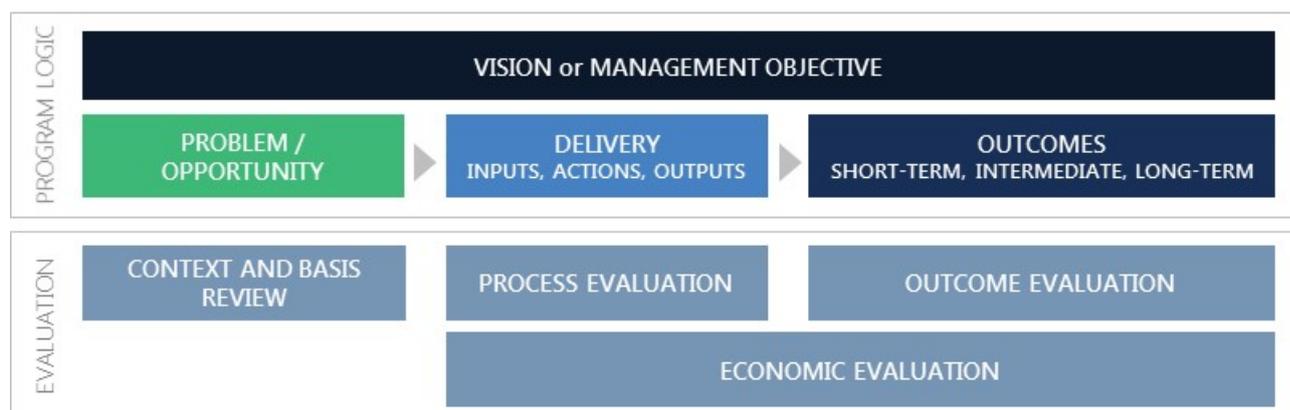
and sustainability of programs' (NSW Department of Premier and Cabinet, 2016). Evaluation also includes consideration of implementation risks, lessons and recommendations for future planning.

This Framework includes three types of evaluation:

- **process evaluation**, which focuses on delivery of management actions
- **outcome evaluation**, which focuses on assessing the extent to which outcomes are achieved or are on track to be achieved
- **economic evaluation**, which considers the value and efficiency of the program.

These are described in more detail below (Section 3.4.2). The evaluation types align with the main components of the program logic, shown conceptually below (Figure 6). Each type of evaluation will be complemented by a brief review of the context and basis for the MEMS or particular management initiative. This helps to identify any changes in the broader management context or understanding of issues that may affect (positively or negatively) program delivery or success.

Evaluation will provide an assessment against overarching measures of success (see Section 3.4.3), which will be explored through key evaluation questions (KEQs) (see Section 3.4.4). Evaluation will draw on a range of data, including, but not limited to, data collected through monitoring processes. Details for how evaluation will be undertaken are provided in Section 4: Applying the Framework.



**Figure 6 Evaluation types and alignment with main components of the program logics Types of evaluation**

### 3.4.2. Types of evaluation

The three types of evaluation (process, outcome and economic) are outlined below. The evaluation types and definitions are drawn from the *NSW Government Program Evaluation Guidelines* (NSW Department of Premier and Cabinet, 2016).

#### Process evaluation

Process evaluation looks at how a program is delivered, describing the program's current operating conditions and identifying processes that may hinder success. It supports adaptive management and continuous improvement by identifying and informing adjustments to service delivery to ensure success. Process evaluation is also valuable in supporting outcome evaluation, as it can help diagnose issues if a program has not achieved the intended outcomes.

### **Outcome evaluation**

Outcome evaluation considers whether a program has achieved, or is on track to achieving, its intended outcomes and tests the anticipated causal links between actions and outcomes. Outcome evaluation also considers whether the program has produced any positive or negative unintended consequences for participants or stakeholders.

### **Economic evaluation**

Economic evaluation often combines qualitative and quantitative measures that seek to identify, measure and value a program's economic costs and benefits. It can be used to inform decision-making and promote efficiency in delivery. Ideally, economic evaluation includes cost benefit analysis (CBA).

#### **3.4.3. Measures of success**

Measures of success provide an overarching assessment of MEMS delivery, processes and achievement. The measures of success are:

- did you do what you said you would do; on time and within budget?
- did you achieve the outcomes you set out to achieve?
- were your actions appropriate for achieving the outcomes?

Measures of success are explored during evaluation through a set of KEQs.

#### **3.4.4. Key evaluation questions**

Each type of evaluation will be guided by KEQs, which align with the main elements of the program logics. The KEQs are important for developing an accurate picture and evidence-base to understand successes and learning opportunities from implementation of the MEMS. The KEQs have been developed to assess the appropriateness, efficiency, effectiveness and sustainability of the MEMS and initiatives, and are tailored for process, outcome and economic evaluations. Evaluation will draw on a range of quantitative and qualitative data and information, including but not limited to data gathered through monitoring processes (see Section 3.3).

The same set of questions is applicable to the overarching MEMS and to each initiative, ensuring that evaluation is undertaken consistently across all initiatives.

## **3.5. Reporting**

### **3.5.1. Introduction**

Reporting on progress and sharing information is an important part of implementing any strategy or program. Reporting encourages accountability for responsible agencies through transparent reporting of progress towards outcomes and the fulfilment of responsibilities. It provides a platform for celebrating success and for sharing knowledge and insights, so that agencies can learn from each other, adapt and continually improve. It can also be used to build community awareness and interest, leading to positive behaviour change and strengthened social licence.

Reporting for the MIMP will be undertaken through a public report card. The report card will draw on content from MEMS annual reports, and monitoring and evaluation findings. The main drivers for producing a report card are to:

- **create behaviour change** – by building community awareness of the marine estate, including what the marine estate incorporates; the social, economic and environmental values that the marine estate provides; and how community and individual behaviour can have a positive or negative effect on these values. Creating behaviour change also includes building community ownership for the condition and management of the marine estate.
- **provide accountability** – through transparent reporting of marine estate condition and management, evaluation provides incentives for delivery and partner agencies to fulfil responsibilities and complete management actions; to strive for continuous improvement in their own jurisdictions or remit; and ensure MEMS implementation delivers value for money.
- **secure social and political licence** – by building a more informed and engaged community with increased expectations for government support and action; establishing credibility of the marine estate managers through sharing progress and celebrating success; and building the case for future resources.
- **share and build knowledge** – through documenting and sharing data and information to support a greater shared knowledge-base.

### 3.5.2. Principles for the report card

The report card template and structure, and the content and information that is reported through the report card, will be developed in accordance with the following principles:

- **simple and clear** – it can be easily understood by a broad audience
- **transparent** – it openly and visibly shows the processes, management actions and outcomes of marine estate management
- **accountable** – it keeps agencies focused on delivering the commitments of the MEMS and initiatives
- **accessible** – it can be easily accessed by the target audiences, including those with different needs or abilities
- **credible** – it is robust and based on sound evidence
- **relevant** – it is meaningful to the target audiences and their particular interests
- **honest** – it reports results, trends and analysis openly and accurately.

### 3.5.3. Audiences and key messages

Four audience groups are identified for the report card. These are described below (Table 1), along with the key message to convey to each audience group and the type of information that may be required to convey that message.

**Table 1 Identified audiences and key messages for the MIMP report card**

Priority	Audience	Description	Key message	Types of information to convey key message
1	Targeted stakeholders (engaged community)	Includes community interest groups, Aboriginal groups, industry and peak bodies, conservation groups, avid and vocal users of the marine estate	<ul style="list-style-type: none"> <li>We recognise your knowledge and passion for the marine estate.</li> <li>We are working with you to better manage the marine estate, through consideration of the attributes and values that are most important to you and sharing with you the management actions we are taking and why.</li> </ul>	<ul style="list-style-type: none"> <li>Information on marine estate values and benefits.</li> <li>Information on management actions and why they were taken, including consideration of community input and scientific basis</li> <li>The outcomes that these management actions contribute towards.</li> <li>Information on opportunities to participate in and influence marine estate management.</li> </ul>
2	Decision-makers	Includes Ministers, other politicians, Treasury, senior government staff	<ul style="list-style-type: none"> <li>A healthy marine estate is fundamental to the NSW community and economy.</li> <li>We manage the marine estate with contribution from the community to enhance the benefits it provides to the NSW community and the economy</li> <li>We are delivering what we said we would deliver, efficiently and effectively.</li> </ul>	<ul style="list-style-type: none"> <li>The vision for the marine estate.</li> <li>Broad information on values associated with the marine estate.</li> <li>Broad information on the benefits, both expected and realised, of effective management of the marine estate.</li> <li>Why we need to deliver management actions, including the risks of not delivering.</li> <li>Progress in delivering management actions.</li> <li>Evaluation of effectiveness, efficiency and outcome achievement.</li> </ul>
3	General community (engageable community)	The broader public, who may have some limited interaction with or interest in the marine estate, but have the potential to become more engaged.	<ul style="list-style-type: none"> <li>What the marine estate is</li> <li>The marine estate is healthy and productive, and it benefits you (and the wider NSW community) in many ways</li> <li>We manage the marine estate to enhance the benefits it provides (such as beaches, open space,</li> </ul>	<ul style="list-style-type: none"> <li>The vision for the marine estate.</li> <li>Broad information on values associated with the marine estate.</li> <li>Broad information on the benefits of our work managing the marine estate.</li> <li>Broad information on how we are managing the marine estate.</li> </ul>

Priority	Audience	Description	Key message	Types of information to convey key message
			production of food, recreation, economic return, etc.) for you and the wider NSW community	
4	Responsible agencies	Agency delivery partners: Marine estate managers, including relevant government departments and agencies, councils, researchers	<ul style="list-style-type: none"> <li>• We have shared objectives for the marine estate</li> <li>• We are working collectively and collaboratively to achieve these objectives</li> <li>• We also have responsibilities and priorities specific to individual agencies to ensure our shared objectives are achieved</li> </ul>	<ul style="list-style-type: none"> <li>• Progress in delivering management actions, including individual and collective progress.</li> <li>• <i>Information to be contained in internal communication between partner agencies. External and internal reporting should not be contradictory; however, they may include different levels of detail.</i> <ul style="list-style-type: none"> <li>– agencies' respective future priorities</li> <li>– agencies' respective roles, responsibilities and capacity/capability to support other agencies' in delivery of theirs.</li> </ul> </li> </ul>

## 4. Applying the Framework

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### 4.1. Summary

This section provides guidance for MIMP staff, initiative leads, other relevant agency staff and any potential third-party evaluator on applying the Framework. It sets out:

- the approach to monitoring program delivery, progress towards outcomes, condition and trend of environmental assets and community benefits, and knowledge gaps. It introduces indicators and describes the suite of KPIs, with details of each indicator and initiative level monitoring provided in the appendices.
- evaluation questions, method, stages and reporting.
- the framework for the public report card.

Detailed guidance on data sources, collection and management for monitoring and evaluation is provided in Appendix C.

### 4.2. Monitoring

#### 4.2.1. Monitoring program delivery

Program delivery (process) will be monitored through assessment of management action status within each management initiative. Monitoring data for management action status will be collected through the MEMS project management process for quarterly and annual status reporting. It will include data relating to inputs, outputs and progress in delivering the scope of each management action. Further detail on data collection for monitoring program delivery is provided in Appendix C.

Management action status categories and definitions are provided below (Table 2).

**Table 2 Program delivery status definitions**

<b>Management action status</b>	<b>Definition</b>
Not yet commenced	The management action has not yet commenced. It should be noted if this aligns with the delivery schedule.
In progress and on track	The management action is currently being undertaken and is aligned with the delivery schedule.
In progress but delayed	This management action is currently being undertaken but has been delayed. Strategies are in place to get the action back on track.
Achieved and ongoing	The management action has been achieved, but ongoing effort is needed to ensure the intended outcome of the management action continues to be maintained.
Achieved and completed	The management action has been completed in full.

## 4.2.2. Monitoring progress towards outcomes

Monitoring of progress towards outcomes will be undertaken by collecting data against a suite of outcome indicators. These include key performance indicators (KPIs) and leading indicators (LIs) (see Section 3.3 for definitions). A complete list of indicators is provided at the end of Appendix B. Individual KPIs are described in the following section (Section 4.2.3).

Detailed monitoring requirements for each initiative are provided in the initiative monitoring plans in Appendix B. The initiative monitoring plans include specifications, measures, data sources, collection frequency, lead agency and assumptions for each indicator linked to the outcomes within that initiative. All indicators (KPIs and LIs) will be measured over the life of the MEMS. Further information on data sources, including survey data, is provided in the data collection and management plan in Appendix C. The identified lead agencies will collect data for each indicator as specified in Appendix B and in accordance with the data collection and management plan in Appendix C.

The approach to monitoring against outcomes seeks to support data collection that is practical and efficient, while providing sufficient insights to inform management of the marine estate. In the first instance, data collection for indicators draws on existing monitoring processes and data as much as possible. By considering monitoring needs across the MEMS more broadly, it also creates opportunities to coordinate among initiatives and responsible agencies.

Since a number of initiatives and outcomes share indicators, common data collection processes will be used across multiple initiatives and outcomes, where possible. However, in some cases, data sets will be tailored to capture the specific focus of individual initiatives, such as stakeholder groups or administrative processes that are of particular interest to that initiative.

A number of indicators require data to be collected through survey questions of relevant stakeholders, which may be the general community, targeted stakeholders and/or responsible agencies. These indicators and the relevant stakeholders are defined in the Appendix B. It is intended that data collection through this method will be coordinated across all relevant management initiatives and indicators, such that data is collected through the minimum number of surveys. A summary of those indicators that will be measured (or partly measured) through surveys is provided below (Table 3). In addition, some indicators will draw on data collected in post event surveys, for example feedback surveys following a specific workshop, presentation or other kind of engagement activity.

**Table 3 Summary of indicators with data collection via survey**

KPI / LI code	KPI / LI	Survey type		
		Community	Targeted stakeholder	Responsible agencies
KPI 3	Community wellbeing indicator	✓	✓	
KPI 6	Aboriginal people report satisfaction with Sea Country management		✓	
KPI 12	Community and stakeholders report satisfaction with governance of the marine estate	✓	✓	✓
KPI 13	Community members report awareness and appreciation of the significance of Sea Country values	✓		
KPI 15	Adoption of best practice approaches and processes for undertaking activities related to the marine estate among the	✓	✓	

KPI / LI code	KPI / LI	Survey type		
		Community	Targeted stakeholder	Responsible agencies
	community and targeted stakeholders			
KPI 16	Stakeholders report satisfaction with efficiency and effectiveness governance of the marine estate			✓
LI 5	Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate			✓
LI 6	Responsible agencies report improved processing times for regulatory processes and approvals			✓
LI 7	Agency staff report using information relating to social, cultural, economic and environmental values in their strategies, plans, programs and decision-making processes			✓
LI 8	New or improved processes or events for sharing knowledge among responsible agencies, and between responsible agencies and targeted stakeholders and the community			✓
LI 9	Community and targeted stakeholders demonstrate improved capacity to anticipate and adapt to climate change impacts	✓	✓	
LI 10	Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate	✓	✓	
LI 11	Responsible agencies report confidence with capacity to fulfil governance roles and responsibilities			✓
LI 17	Responsible agencies recognise and demonstrate understanding of Aboriginal cultural values, roles and responsibilities in managing Sea Country			✓
LI 21	Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate	✓	✓	
LI 23	Community and targeted stakeholders report enhanced opportunities and	✓	✓	

KPI / LI code	KPI / LI	Survey type		
		Community	Targeted stakeholder	Responsible agencies
	experiences for activities relating to marine estate			
LI 24	Community members report awareness and clarity of agencies' respective roles and responsibilities in managing the marine estate	✓		
LI 27	Community members report awareness and appreciation of the benefits and significance of fishing and aquaculture	✓		

#### 4.2.3. Overview of KPIs

There are 16 KPIs identified for monitoring trends against long-term outcomes across the nine initiatives. A number of these KPIs will also be relevant for monitoring trends against the overarching MEMS outcomes. The KPIs are described in this section, with further details provided in Appendix B. There are existing data collection processes for some of these KPIs, while data collection for others is expected to commence by mid-2020.

##### *KPI 1 – Water quality supports values and uses*

This indicator relates to the long-term outcome: 1A 'Improved water quality and waterway health in the marine estate in alignment with community values' and also relates to the overarching MEMS outcome '*Enhanced condition of the marine estate, including its habitats, wildlife and natural beauty, in identified regions and maintained elsewhere*'.

This indicator focusses on aligning available water quality data with related community values and uses of the NSW marine estate. The NSW Water Quality and River Flow Objectives highlight the community values for each estuary and catchment in NSW, as well as water quality indicators that reflect those specific community values. Protection of aquatic ecosystems, primary contact recreation and edible seafood are identified as the primary community values in the NSW marine estate. As a result, this indicator will have three facets, reflecting the three primary community values. These will not be combined into a single measurement but used separately. Existing NSW Government programs including DPIE-EES water quality monitoring, Beachwatch and Safe Foods Australia will be used to inform this indicator.

##### *KPI 2 – National Litter Index results for NSW*

This indicator primarily relates to long-term outcome 1B '*Reduction in input litter to the marine estate in alignment with community values*' within Initiative 1 '*Improving water quality and reducing litter*'. It also relates to the overarching MEMS outcome '*Enhanced condition of the marine estate, including its habitats, wildlife and natural beauty, in identified regions and maintained elsewhere*'.

Data will be drawn from the existing monitoring program operated by NSW EPA. Measurement will be based on the volume of litter per 1000 square metres published in the quarterly Keep Australia Beautiful National Litter Index. Use of this indicator assumes that land based litter is a suitable proxy for litter entering the marine estate, and recognises that survey sites vary in location in size between assessments.

### **KPI 3 – Community wellbeing indicator**

This indicator is primarily related to the social and cultural component of long-term outcome 8A *'Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community'* within Initiative 8 *'Enhancing social, cultural and economic benefits'*. It also relates to the overarching MEMS outcome *'Greater community appreciation and enhanced sustainable experiences of the marine estate in identified regions, and maintained elsewhere'*.

This indicator focuses on the perceptions of the marine estate's contribution to a person's overall quality of life. Quality of life is the individual perception of their position in life, and is a broad ranging concept that can include a person's physical and mental health, values and beliefs, social relations and their dependency on the environment. This indicator will capture subjective aspects of quality of life and will be measured through respondents' satisfaction in relation to feelings about themselves and their dependency on the marine estate.

Perceptions of the degree to which the marine estate contributes to quality of life will be assessed via stakeholder and wider community surveys. The components of quality of life that will be measured are currently under development.

### **KPI 4 – Biodiversity and habitat indicator**

This indicator primarily relates to outcomes 1C and 2B *'Maintained or improved biodiversity and marine habitats'*. It also relates to the overarching MEMS outcome *'Enhanced condition of the marine estate, including its habitats, wildlife and natural beauty, in identified regions and maintained elsewhere'*.

This indicator incorporates measures of biodiversity and ecological integrity. These themes are consistent with those identified within the broader *Biodiversity Indicator Program*, which is currently defined for terrestrial environments (NSW OEH and CSIRO, 2018) and is being expanded to cover aquatic environments. It also relates to the monitoring of management responses, stressors and the status of biodiversity. The measures will be implemented progressively during the MEMS, reflecting resource availability and readiness of data and technology. Some measures are developmental and require further research or confirmation of new technologies to confirm their feasibility.

Measures will be developed and reported in different ways and at different geographic, taxonomic and temporal scales. The ecological integrity theme includes measures of habitat condition, indicating capacity to maintain natural functions and processes that support estuarine species and ecosystems in NSW, and includes measurement of specific stressors that impact habitat condition. Overall, the biodiversity and habitat indicator will also aim to allow improved evaluation of ecosystem resilience in deriving an overall measure of ecological health.

### **KPI 5 – Key stressors to populations across threatened coastal and marine species in NSW**

This indicator relates to outcome 5A *'Improved or maintained conservation status and health of targeted threatened and protected species in the wild'* within Initiative 5 *'Reducing impacts on threatened and protected species'* and outcome 6A *'Improved ecological sustainability, economic viability and community wellbeing of fishing and aquaculture in the marine estate'* within Initiative 6 *'Ensuring sustainable fishing and aquaculture'*. It also relates to the overarching MEMS outcome *'Enhanced condition of the marine estate, including its habitats, wildlife and natural beauty, in identified regions and maintained elsewhere'*.

This indicator seeks to measure trends in the cumulative threats to threatened and protected species that may, in turn, impact upon the social, cultural and economic benefits from the biodiversity of the marine estate. Key threats that will be considered through this indicator include: charter activities, boating and boating infrastructure, habitat disturbance, physical disturbance and bycatch.

### **KPI 6 – Aboriginal stakeholders report satisfaction with Sea Country management**

This indicator relates to outcome 4A *'Improved Aboriginal satisfaction with Sea Country management'* within Initiative 4 *'Protecting the Aboriginal cultural values of the marine estate'*. It also relates to the overarching MEMS outcome *'Sea Country supports improved wellbeing for Aboriginal communities'*.

This indicator is designed to focus on Aboriginal peoples' satisfaction with processes for participating in and influencing Sea Country management. Measurement of this indicator will focus on those involved in programs, initiatives or activities that result from the framework for effective and appropriate Aboriginal involvement in Sea Country management and decision-making, and the integrated Aboriginal engagement model for participation in Sea Country management, planning and monitoring, both to be developed through Initiative 4. The measure for this indicator is the average satisfaction rating and will be collected through targeted stakeholder surveys.

### **KPI 7 – Aboriginal employment in industries relating to the marine estate**

This indicator relates to outcome 4B *'Aboriginal people derive greater economic benefit from the marine estate'* within Initiative 4 *'Protecting the Aboriginal cultural values of the marine estate'*. It also relates to the overarching MEMS outcome *'Sea Country supports improved wellbeing for Aboriginal communities'*.

This indicator focuses on selected industries for communities located in coastal local government areas (LGAs). The industries reflect categories measured through ABS census data and include aquaculture, fishing, seafood processing, accommodation and food services, scenic and sightseeing transport and nature reserves and conservation parks operation. The measure for this indicator is the number of Aboriginal people employed in industries related to the marine estate reflected in ABS census data.

This indicator also includes employment of Aboriginal people in related roles in the NSW public sector. The measure for this indicator is the number of Aboriginal people employed in government roles related to management of the marine estate reflected in NSW public employment data.

### **KPI 8 – Trend in ecological sustainability, economic viability and community wellbeing measures for fishing and aquaculture**

This indicator primarily relates to outcome 6A *'Improved ecological sustainability, economic viability and community wellbeing relating to fishing and aquaculture in the marine estate'* within Initiative 6 *'Ensuring sustainable fishing and aquaculture'*.

This indicator includes measures for recreational fishing, and commercial fishing and aquaculture across the areas described below. Each draws on data collected through existing programs.

- **Ecological sustainability:** Stock status of species for commercial, recreational and cultural fishing and harvesting. This may include tracking of species that are currently undefined or for which there is not yet data. Species stock status is measured using an index of species stock status (number of stocks assessed versus the number of stocks sustainable/ data deficient) using data published in Status of Australian Fish Stocks Reports by the FRDC.
- **Economic viability:** Fisheries production includes both commercial fishing and aquaculture production. It is measured by the gross value of fisheries production for commercial (wild caught) and aquaculture using data published by the NSW Department of Industry and the Australian Bureau of Agricultural and Resource Economics (ABARES).
- **Community wellbeing:** Recreational fishing includes recreational fishing participation rates per capita, quality of recreational fishing and expenditure and economic impact of recreational fishing in NSW. Data across each of these is currently collected by the Recreational Fishing Integrated Monitoring Program.

### **KPI 9 – Trend in economic, ecological and social measures for boating**

This indicator relates to outcome 7A *‘Boating provides increased social and economic benefits for NSW communities while supporting sustainable social, economic, cultural and environmental benefits of the marine estate’* within Initiative 7 *‘Enabling safe and sustainable boating’*.

This indicator draws on data collected by Transport for NSW and the Centre for Maritime Safety across the following measures:

- frequency of fatal and serious injury boating incidents
- number and type of boating trips, including satisfaction with boating experiences
- number and type of complaints relating to boating behaviour.

These measures are based on data published in ‘Boating incidents in NSW’ reporting published by the NSW Centre for Maritime Safety and agency administrative data.

### **KPI 10 – Number of strategic plans and operational activities that reflect climate change science, including risks, consequences and appropriate management responses**

This indicator relates to outcome 3A *‘Adaptation planning, strategies and decision making across the marine estate incorporates the likely future impacts of climate change’* within Initiative 3 *‘Planning for climate change’*. It also relates to the overarching MEMS outcome *‘Improved incorporation of the likely impacts of climate change in planning for and managing the marine estate’*.

The strategic plans and operational activities within the scope of this indicator include Coastal Management Plans (CMPs), scoping studies, as well as others to be progressively identified. The measure for this indicator is the number of strategies, plans, processes and other activities that reflect likelihood and consequence of climate change risks. The data for this indicator will be captured through an audit of a sample of specified strategic plans and operational activities. It assumes that climate risks considered are relevant to the specific strategy, plan, process or activity.

### **KPI 11 – Economic benefits indicator**

This indicator primarily relates to outcome 8A *‘Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community’*. It also relates to the overarching MEMS outcome *‘Enhanced sustainable coastal and marine commercial opportunities in identified regions, and maintained elsewhere’*.

This indicator is intended to provide a signal for the overall status of economic indicators related to the marine estate. It will consist of a suite of performance measures developed to monitor a sub-set of economic benefits as part of the Marine Integrated Monitoring Program (MIMP) community wellbeing framework. It will focus on tracking the health of businesses and livelihoods that rely on the marine estate, as well as the range of values held by the community in relation to the marine estate.

The MEMS recognises that there are trade-offs to consider in management of the marine estate. Monitoring through KPI 11 will focus on economic measures that are applicable across the marine estate, rather than those related only to specific management initiatives and actions. Monitoring of the economic impacts of individual initiatives and actions is still considered important, and will be addressed by specific initiatives and actions, where relevant. Specific initiative-based economic indicators have already been identified in the MIMP for Initiative 6 (KPI 8 - Commercial fishing gross value of production, and recreational fishing number of licences) and Initiative 7 (KPI 9 - Charter fishing gross turnover (gross revenue), Investment in maritime infrastructure, Registered recreational vessels numbers).

A key challenge in selecting economic indicators related to the marine estate is the lack of readily available data that is ‘fit for purpose’ and available at appropriate time series and scale. The suite of measures within KP11 includes measures for which data is available on an annual basis, and

measures where additional information gathering would be required. Further measures will be identified as part of the task to fill knowledge gaps identified through the statewide TARA process.

The purpose of the indicators is to monitor trends. More comprehensive evaluation of economic benefits will be undertaken as part of evaluation. As part of the evaluation, data collected through monitoring of this indicator will be considered in the context of a wider range of factors and information that may have influenced outcomes.

### **KPI 12 – Community and stakeholders report satisfaction with governance of the marine estate**

This indicator primarily relates to outcomes 9A *'Improved coordination, transparency, consistency and inclusiveness of managing the marine estate'* within Initiative 9 *'Delivering effective governance'*. It also relates to the overarching MEMS outcomes *'Improved coordination, transparency, inclusiveness and evidence-based decision-making in managing the marine estate'*.

Community and stakeholder satisfaction will be assessed through concise measures for each of the following governance themes: coordination, consistency, transparency and inclusiveness. These measures are described below.

Data collection will be undertaken through a survey of randomly selected individuals within identified stakeholder categories. Community and stakeholder categories are:

- responsible agencies, including marine estate managers from relevant government departments, agencies, statutory authorities and local government. Targeted stakeholders including Aboriginal people, community interest groups, industry and peak bodies, conservation groups and avid users of the marine estate.
- general community, capturing the broader public, who may have some limited interaction with or interest in the marine estate, but have the potential to become more engaged in the future.

#### **Coordination**

Responsible agency staff satisfaction with **coordination** across and within responsible agencies in relation to the marine estate (*assess separately for coordination within own organisation and across responsible agencies*):

- coordination is embedded in business as usual practice
- coordination is generally purposeful and productive
- the scale and nature of coordination is generally appropriate to the project, task, issue, etc., and desired outcomes, without creating unnecessary administrative burden

#### **Consistency**

Responsible agency staff satisfaction with **consistency** of decision-making and management actions in relation to the marine estate (*assess separately for consistency within own organisation and across responsible agencies*):

- relevant plans, priorities, projects, activities, etc., are aligned with the MEMS
- the same or similar decision is likely to be reached regardless of which individual or agency is responsible for making the decision

#### **Transparency**

Responsible agency staff, targeted stakeholder and general community satisfaction with **transparency** of decision-making in relation to the marine estate:

- decision-making processes and responsibilities are documented and accessible (including being clear and easily understood) by a general audience
- decisions, and the reasons for decisions, are clearly communicated to interested or affected stakeholders
- information relating to performance (including fulfilment of responsibilities and achievement of outcomes) is communicated clearly and in a timely manner

## Inclusiveness

Responsible agency staff, targeted stakeholder and general community satisfaction with **inclusiveness** of decision-making and management actions in relation to the marine estate:

- there are opportunities for all relevant stakeholders to participate and equally engage in decision-making processes and outcomes
- stakeholders have clear understanding of the extent to which they can contribute to or influence decision-making
- engagement activities and information provided allows informed and meaningful participation for all relevant stakeholders
- stakeholders' views are respected and considered

## KPI 13 – Community members report awareness and appreciation of the significance of Sea Country values

This indicator relates to outcome 4C *'The broader NSW community has a greater appreciation of the significance of Sea Country for Aboriginal people'* within Initiative 4 *'Protecting the Aboriginal cultural values of the marine estate'*.

The indicator is measured based on the proportion of survey participants reporting awareness and appreciation captured through community surveys. Data collection will be undertaken through a survey of randomly selected individuals within identified stakeholder categories:

- engaged community, including Aboriginal people, community interest groups, industry and peak bodies, conservation groups and avid users of the marine estate
- general community, capturing the broader public, who may have some limited interaction with or interest in the marine estate, but have the potential to become more engaged in the future.

## KPI 14 – Agency staff report using decision-making and approvals processes for foreshore and coastal land use management, design and development that balances social and economic benefits with enhancing coastal and marine habitats

This indicator relates to outcome 2A *'Improved design and management of foreshore and coastal land use and development, balancing social and economic benefits of development with enhanced coastal and marine habitat'* within Initiative 2 *'Delivering healthy coastal habitats with sustainable use and development'*. It also relates to the overarching MEMS outcome *'Increased appropriateness of the built environment with reduced risk to the marine estate'*.

Specific decision-making and approvals processes will be progressively identified. Measurement will be by self-reporting of use of the identified processes by relevant agency staff. It assumes that the survey will be designed to support accurate self-reporting, and that use of these processes is effective and appropriate.

## KPI 15 - Adoption of best practice approaches and processes for undertaking activities related to the marine estate among the community and targeted stakeholders

This indicator primarily relates to long-term outcome 8B *'Increased stakeholder and community adoption of safe and sustainable use of the marine estate'* within Initiative 8 *'Enhancing social, cultural and economic benefits'*.

Specific approaches and processes will be progressively identified; however, it includes those relevant to activities relating to land use and management, water pollution and litter, marine pests, commercial fishing and aquaculture, recreational fishing and boating. Specific stakeholders will also be identified. Measurement will be by self-reporting through the survey of community members and targeted stakeholders. It assumes that the survey will be designed to support accurate self-reporting.

### ***KPI 16 – Responsible agencies report satisfaction with efficiency and effectiveness of governance of the marine estate***

This indicator primarily relates to outcome 9B *‘Improved efficiency and effectiveness in managing the marine estate’* within Initiative 9 *‘Delivering effective governance’*. It also relates to the overarching MEMS outcome *‘Improved efficiency and effectiveness in managing the marine estate.’*

Satisfaction will be assessed through the following measures (*assessed separately for consistency within own organisation and across responsible agencies*):

- allocation of resources, including staff and funding, across management of the marine estate is clearly directed towards identified outcomes
- systems, processes, skills, knowledge and governance and administrative arrangements allow organisations and individuals to efficiently and effectively deliver their responsibilities, with minimal duplication, unreasonable delays or unnecessary activities
- responsible agencies are achieving, or on track to achieve, identified outcomes within budget

Data collection will be undertaken through a survey of randomly selected individuals from responsible agencies, including marine estate managers from relevant government departments, agencies, statutory authorities and local government.

### ***Alignment of KPIs and MEMS outcomes***

Selected KPIs will also be used as indicators for the overarching MEMS outcomes. The alignment of relevant KPIs to the overarching MEMS outcomes is shown below (Figure 7).

OVERARCHING MEMS OUTCOMES	ALIGNED KPIS
Enhanced condition of the marine estate, including its habitats, wildlife and natural beauty, in identified regions and maintained elsewhere	Water quality supports community values and uses (KPI 1) National Litter Index results for NSW (KPI 2) Biodiversity and habitat indicator (KPI 4) Key stressors to populations across threatened coastal and marine species in NSW (KPI 5)
Improved incorporation of the likely impacts of climate change in planning for and managing the marine estate	Number of strategic plans and operational activities that reflect climate change science, including risks, consequences and appropriate management responses (KPI 10)
Increased appropriateness of the built environment with reduced risk to the marine estate	Agency staff report using decision-making and approvals processes for foreshore and coastal land use management, design and development that balances social and economic benefits with enhancing coastal and marine habitats (KPI 14)
A healthy and thriving Sea Country supports improved wellbeing for Aboriginal communities	Aboriginal people report satisfaction with Sea Country management (KPI 6) Aboriginal employment in industries relating to the marine estate (KPI 7)
Greater community appreciation and enhanced sustainable experiences of the marine estate in identified regions, and maintained elsewhere	Community wellbeing indicator (KPI 3)
Enhanced sustainable coastal and marine commercial opportunities in identified regions, and maintained elsewhere	Economics benefits indicator (KPI 11)
Improved coordination, transparency, inclusiveness and evidence-based decision-making in managing the marine estate	Community and stakeholders report satisfaction with governance of the marine estate (KPI 12) Responsible agencies report satisfaction with efficiency and effectiveness of governance of the marine estate (KPI 16)
Improved efficiency and effectiveness in managing the marine estate	

**Figure 7 KPIs aligned with overarching MEMS outcomes**

#### 4.2.4. Monitoring condition and trend of community benefits and environmental assets

##### *Monitoring community benefits*

Systematic monitoring of human dimensions of the NSW marine estate is novel. As such, a ‘community wellbeing framework’ is being developed to address the critical knowledge gap relating to social, cultural and economic information, which was identified in the TARA, and allow for a coordinated and robust approach to monitoring trends and impacts to human dimensions of the marine estate. MEMA defines community wellbeing as the overall aggregate of economic, social, cultural and environmental benefits (NSW Marine Estate and Management Authority, 2015).

The community wellbeing framework, including methodology for the collection of data, is currently being developed. It will use a hierarchical structure, including dimensions, attributes, indicator themes

and indicators, to organise the human dimensions of community wellbeing related to the NSW marine estate. Dimensions include: community use, health and safety; community awareness and environmental stewardship; culture and heritage; economic benefits; and governance and management.

The framework captures and builds upon relevant LIs and KPIs identified for objective 2 of the MIMP (management effectiveness) by identifying and filling gaps relevant to objective 1 and 3 of the MIMP (i.e. monitoring community benefits and filling knowledge gaps). While the framework is designed to comprehensively capture all relevant human dimensions of the marine estate that could be monitored, prioritisation of components will also be undertaken to allow for strategic monitoring by MEMA agencies within available resources.

### **Broad-scale monitoring of environmental assets**

Broad-scale environmental monitoring will focus on water quality, biodiversity and habitats and threatened and protected species indicators. These are the key components of the environmental assets of the marine estate in which risks were assessed. Given the statewide extent of these assets, they will be reported in different ways and at different geographic, taxonomic and temporal scales. It will also include characterisation of natural variations in the patterns of a number of biological and physical attributes in order that changes influenced by management actions can be detected. Variation in human impacts adds extra complexity to the difficult task of assessing variable marine environments, as impacts may be episodic (short-lived) or sustained (long-term), occur over a range of spatial scales (metres to 100s km), and affect ecosystems in ways that are difficult to predict or detect over and above natural variability. As such, understanding the range of natural variation is a key priority for broad-scale monitoring.

The existing DPIE-EES long-term water quality monitoring program provides a key broad-scale environmental dataset on water quality condition and pressures. The program identifies trends, issues and risks to water quality condition, targeting both short- and long-term responses to pressures on water quality. Key indicators of ecological health reflect the response of a waterway to long-term changes in pressure and threats. Throughout the implementation of the MEMS, water quality monitoring will be ongoing and the data generated will inform the relevant KPIs and LIs in this Framework.

A second key set of environmental assets to be monitored are categorised as aquatic macrophytes (seagrass, mangroves and saltmarsh). This will occur principally through regular analysis of aerial imagery. Seagrass mapping will be focused on those estuaries containing endangered seagrass communities, with other species also mapped in the lower reaches of estuaries. Mangroves and saltmarshes will also be mapped to examine whether mangroves are displacing saltmarshes in the most heavily disturbed NSW estuaries. A range of attributes of aquatic macrophytes will be calculated and compared over time and among estuary types to monitor extent and the amount of change through time.

Other broad-scale monitoring will be developed during further stages of the MEMS, including the assessment and monitoring of estuarine and rocky reef fish assemblages. The estuarine fish developing indicator will be progressed based on available funding and progression of relevant methods to allow robust and cost-effective monitoring. Further targeted monitoring of specific stressors identified to be resulting on moderate and high risks to environmental assets are also expected to be developed.

#### **4.2.5. Addressing knowledge gaps**

The need to fill key social, cultural and economic knowledge gaps identified in the statewide TARA is captured through multiple outcomes across various management initiatives. These outcomes include:

- improved understanding among responsible agencies of methods, associated effectiveness and benefit of investment for managing water quality and litter (1F)
- improved understanding of current coastal and foreshore environments and land uses in prioritised regions among responsible agencies (2H)
- improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community (2I)
- Improved knowledge of the likely future impacts of climate change on environmental, social, cultural and economic values related to key components of the marine estate (3B)
- coastal and marine managers, and communities have improved access to and knowledge of the impacts of climate change on environmental, social, cultural and economic values of the marine estate (3D)
- improved information base on human dimensions of the marine estate relevant to management (8F)
- increased stakeholder and community awareness of safe and sustainable use of the marine estate (8G).

The development of the community wellbeing framework is the primary mechanism through which social, cultural and economic gaps will be addressed. To address key knowledge gaps relating to environmental assets, specific projects will be developed that will range from desktop analysis, targeted field surveys and/or laboratory experiments. This is expected to include further analysis of the extent and distribution of stressors, and studies to better understand how these interact with environmental assets. The new knowledge will be incorporated into updated background reports and be reflected in improved certainty in the reporting of condition and trends.

This work will be progressed through a network of organisations that use or generate monitoring data or reporting products, and these will be engaged in the development and implementation of projects that address knowledge gaps. This includes marine management agencies, universities, local government, consultants and the local community who will be encouraged to participate to ensure effective monitoring. However, it is important to coordinate this effort as the time and resources required for effective research are considerable, and this will be reviewed annually.

Progress in filling knowledge gaps will be monitored via LI3 '*Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches*', with progress measured through the number of knowledge gaps with status (as noted in the statewide TARA) changing from 'inferred' to 'adequate'.

## 4.3. Evaluation

### 4.3.1. Evaluation questions

The evaluator will use the evaluation questions to guide data gathering and analysis, and to identify insights into achievements to date and areas for future improvement. The evaluation questions align with each type of evaluation and the main components of the program logic. The KEQs draw on multiple lines of evidence and capture standard evaluation themes of appropriateness, efficiency, effectiveness and sustainability, which align with the NSW Government Program Evaluation Guidelines (NSW Government, 2018). The themes are useful for guiding the evaluation and for reporting summary findings.

The evaluation questions, rationale and related evaluation theme are provided below for each component of the program logic (Table 4, Table 5 and Table 6). Detailed guidance on data types, sources and collection for each evaluation question is provided in Appendix C.

**Table 4 Key evaluation questions and rationale – context and basis**

Key evaluation questions	Rationale	Evaluation theme
What was the rationale and intent of the initiative?	<ul style="list-style-type: none"> <li>• Captures the basis and broad rationale for investment</li> </ul>	Appropriateness
<p>How has the policy context changed since the initiative was developed?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li>• <i>Policy and management context</i></li> <li>• <i>Community expectations</i></li> </ul>	<ul style="list-style-type: none"> <li>• Captures any changes in the broader context, which may affect current or future areas of focus and implementation.</li> <li>• Allows consideration of whether the original basis for the initiative is still applicable, and whether any revision or amendments may be required to ensure ongoing relevance of the initiative.</li> </ul>	Appropriateness
How has understanding of marine estate environments and issues evolved since the initiative commenced?		Appropriateness

**Table 5 Key evaluation questions and rationale – process evaluation**

Key evaluation questions	Rationale	Evaluation theme
<p>Were management actions completed and outputs achieved, within budget, scope and timeframes?</p> <p>Why or why not?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li>• <i>Were budget, scope and timeframes appropriate for the intended management actions and outputs?</i></li> <li>• <i>Are management actions and outputs still considered the right areas for investment?</i></li> <li>• <i>What could be done differently?</i></li> <li>• <i>Has implementation been influenced by external factors?</i></li> <li>• <i>Have costs of implementation been influenced by external factors?</i></li> <li>• <i>To what extent have completed management actions and</i></li> </ul>	<ul style="list-style-type: none"> <li>• Captures progress towards implementation of management actions and delivery of outputs.</li> <li>• Captures unforeseen risks to delivery, which may inform improved future planning.</li> <li>• Considers whether the existing management actions and outputs remain the most appropriate, efficient and effective way to achieve outcomes.</li> <li>• Helps to understand what is working, what's not working and what may need attention to ensure ongoing and future success.</li> </ul>	Appropriateness, efficiency, effectiveness

Key evaluation questions	Rationale	Evaluation theme
<i>outputs contributed towards outcomes?</i>		
<p>Was implementation constrained in any way by inputs? Why or why not?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li>• <i>funding</i></li> <li>• <i>resources</i></li> <li>• <i>Involvement of stakeholders</i></li> <li>• <i>Partnerships or agreements</i></li> </ul>	<ul style="list-style-type: none"> <li>• Provides insights into why elements of the initiative may or may not have been successfully implemented.</li> <li>• Contributes to understanding any barriers to successful implementation and identifies areas that may need attention to ensure success in the future.</li> </ul>	Appropriateness, efficiency

**Table 6 Key evaluation questions and rationale – outcome evaluation**

Key evaluation questions	Rationale	Evaluation theme
<p>To what extent have outcomes been achieved? Why / why not?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li>• <i>what trends have been identified through indicators?</i></li> <li>• <i>were management actions/outputs targeted effectively towards achieving outcomes?</i></li> <li>• <i>was achievement of outcomes influenced by external factors?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Assesses success of initiative implementation for delivering benefit to marine estate and NSW community.</li> <li>• Helps to understand what is working, what's not working and what may need attention to ensure ongoing and future success.</li> <li>• Identifies unexpected risks that impacted success, some of which may be better managed in the future.</li> </ul>	Effectiveness
<p>Has the initiative produced any positive or negative unintended or unexpected outcomes? Why/why not?</p> <p><i>Consider (for example):</i></p> <ul style="list-style-type: none"> <li>• <i>community and cultural: safety, access, relationships and</i></li> </ul>	<ul style="list-style-type: none"> <li>• Helps to understand what is working, what's not working and what may need attention to ensure ongoing and future success.</li> <li>• Helps to identify issues for management, either through additional action or changes to program design or implementation</li> </ul>	Appropriateness

Key evaluation questions	Rationale	Evaluation theme
<p><i>interactions, employment, attitudes and behaviour, physical and mental health</i></p> <ul style="list-style-type: none"> <li><i>economic: industry structure, industry expansion/contraction, business/industry practices, goods/services prices</i></li> <li><i>environment: species population growth/decline, species/individual health and safety, greenhouse gas emissions, soil/water/air pollution, ecosystem disruption</i></li> <li><i>responsible agencies: administrative burden, indicator fixation, restricted focus, misinterpretation, gaming the system</i></li> </ul>		
<p>Are outcomes and indicators appropriate to the identified need? Why/why not?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li><i>were outcomes and indicators effectively aligned with the original identified need?</i></li> <li><i>are outcomes and indicators still relevant given any changes in the broader context?</i></li> <li><i>do / did indicators provide sufficient and appropriate signal for progress towards outcomes and/or any emerging risks?</i></li> <li><i>is / was data collection against indicators achievable?</i></li> </ul>	<ul style="list-style-type: none"> <li>Identifies whether outcomes represented the right areas of focus initially, whether these remain the right areas of focus, and what (if any) changes should be made.</li> <li>Identifies whether indicators represent the right signal for outcomes, whether these remain appropriate, and what (if any) changes should be made</li> </ul>	Appropriateness
<p>What insights are there for ensuring achieved outcomes are maintained in the future?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li><i>are impacts likely to endure through subsequent planning timeframes?</i></li> <li><i>how should management responsibilities be assigned?</i></li> </ul>	<ul style="list-style-type: none"> <li>Identifies actions required (if any) to ensure initiative leaves a positive and enduring impact.</li> </ul>	Sustainability

**Table 7 Key evaluation questions and rationale – economic evaluation**

Key evaluation questions	Rationale	Evaluation theme
<p>Have outcomes been achieved efficiently? Why/why not?</p> <p>Consider:</p> <ul style="list-style-type: none"> <li>• <i>What were the initiative's implementation costs?</i></li> <li>• <i>What are, or were, the initiative's expected or achieved, net benefits in monetary terms? (Note: a cost benefit analysis (CBA) is required to answer this question. Undertaking CBA for a program of this scale would be a significant task and should be carefully considered.)</i></li> <li>• <i>What are the key drivers of costs/benefits?</i></li> <li>• <i>How do the costs compare with other programs targeting the same need or issue?</i></li> <li>• <i>Could similar or greater benefits have been achieved through different actions?</i></li> <li>• <i>Can resources be allocated more efficiently?</i></li> <li>• <i>Is the return on expenditure adequate to justify ongoing investment in the program?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Identifies measures and values a program's costs and benefits in monetary terms for economic, social and environmental domains across time for a designated community.</li> <li>• Provides a consistent basis for informing decision making about resource allocation and comparison of alternative options</li> <li>• Assesses success of initiative implementation for delivering benefit in monetary terms to marine estate and NSW community.</li> <li>• Helps identify opportunities for improving efficiency</li> </ul>	<p>Efficiency and effectiveness</p>

### 4.3.2. Evaluation stages and method

A longitudinal approach to evaluation builds the performance story over time. Ideally, this would include the following stages:

- **Baseline / formative evaluation** should review the context, basis and processes for the MEMS, enable the MIMP to gather important baseline data (where not yet available) and establish targets. It is also an opportunity to review the current suite of indicators and measures and update if required. The formative evaluation should be undertaken during the early stage of implementation.
- **Mid-term evaluation** of the MEMS will occur through a five-year health check. The five-year health check is an established part of the MEMS and will: review and communicate the progress of implementation of the MEMS; respond to research and monitoring outputs; and consider new evidence and emerging threats that need a management response. The five-year health check will include a mid-term review of the statewide TARA, which will assess whether the risk of threats identified in the 2017 TARA have changed.
- **Summative evaluation** will allow MEMA agencies to make a final assessment of implementation and understand the implications for future strategies. This evaluation is outcome-focused and provides insights into unintended outcomes and lessons for improvement. The final assessment of implementation could also identify areas for improvement to inform future planning, either in subsequent stages of the current MEMS or in future strategies. To develop a case for continued government intervention beyond the current 10-year strategy, an economic evaluation would be required (ex-post CBA) for a business case to assess if the program would provide value for money and supports efficient and effective resource allocation.

Given the MEMS is in early stages of implementation, evaluation across all three of above evaluations stages will be relevant. Evaluation at each stage will be undertaken by a suitably qualified evaluator. The evaluation method is outlined below (Table 8).

**Table 8 Evaluation method**

<b>Stage</b>	<b>Baseline / formative evaluation</b>
<b>Timeframe</b>	2020
<b>Purpose</b>	Review context and basis for the MEMS and each initiative, evaluate processes for delivery, establish baseline data against which to measure future progress and establish targets, evaluate initial progress towards outcomes
<b>Evaluation activities</b>	<ul style="list-style-type: none"> <li>• review context and basis for investment</li> <li>• review baseline data, and establish targets, if desired</li> <li>• review indicators</li> <li>• assess progress against inputs, management actions and outputs (process evaluation)</li> <li>• assess achievement of short-term outcomes and progress towards intermediate outcomes (outcome evaluation)</li> <li>• prepare formative evaluation report</li> </ul>
<b>Stage</b>	<b>Mid-term evaluation (five-year health check)</b>
<b>Timeframe</b>	2023
<b>Purpose</b>	Evaluate implementation of management actions and progress towards MEMS and initiative outcomes. Identify any changes that may need to be made to ensure the MEMS achieves the intended outcomes.
<b>Evaluation</b>	<ul style="list-style-type: none"> <li>• review context and basis of investment, with a focus on identifying any changes</li> </ul>

<b>activities</b>	<p>since the formative evaluation</p> <ul style="list-style-type: none"> <li>• update progress against inputs, management actions and outputs (process evaluation)</li> <li>• assess and document achievement of intermediate outcomes and progress towards long-term outcomes (outcome evaluation)</li> <li>• incorporate overall findings from project-level evaluations</li> <li>• capture any insights and feedback that provide supporting evidence for why MEMS performance may (or may not) be as expected</li> <li>• assess assumptions</li> <li>• assess efficiency and effectiveness of program to date (economic evaluation)</li> <li>• identify and consider any areas that may need attention to ensure the MEMS achieves intended outcomes</li> <li>• produce interim evaluation report and recommendations (five-year health check report)</li> </ul>
<b>Stage</b>	<b>Summative evaluation</b>
<b>Timeframe</b>	2027-2028
<b>Purpose</b>	Evaluate achievement of outcomes, review delivery of management actions and outputs, reflect on overall implementation of the MEMS and initiatives, document lessons learnt and insights to inform future planning, and communicate performance
<b>Evaluation activities</b>	<ul style="list-style-type: none"> <li>• review context and basis of investment, with a focus on identifying any changes since the MEMS commenced</li> <li>• final review of delivery (process evaluation)</li> <li>• assess achievement of long-term outcomes (outcome evaluation)</li> <li>• assess assumptions</li> <li>• assess overall efficiency and effectiveness of program (economic evaluation)</li> <li>• identify lessons or insights to inform future planning</li> <li>• produce evaluation report</li> </ul>

#### 4.3.3. Evaluation documentation

The evaluator should document findings from each evaluation stage in a clear and accessible evaluation report. The report should contain an executive summary that can be used as a stand-alone document and is appropriate for the Minister(s) and the general public. The main body of the report should contain detail for MEMA and responsible agencies to help understand progress, success and areas for improvement. Both components should be publicly available. A summary of reporting requirements is provided below (Table 9).

**Table 9 Summary of evaluation reporting requirements**

Report section	Content
Executive summary	Summary of policy context, evaluation context, approach, findings and recommendations, framed for the Minister(s) or public audience
Introduction and context	Summary of policy and environmental context Summary of the context for the evaluation Document the evaluator and their relationship with MEMA and MEMS
Evaluation method, design and data	Outline the evaluation method, KEQs and data types and sources
Key findings	Synthesis of findings for each KEQ Identify areas for improvement to inform future planning, either in subsequent stages of the current MEMS or in future strategies
Recommendations	Conclusions and recommendations for future system monitoring and planning
Appendices	All collated and reviewed findings against each KEQ

## 4.4. Reporting

The report card will be prepared through the MIMP, with contribution from partner agencies where relevant and in alignment with their responsibilities for data collection and provision through monitoring and evaluation. The report card will contain the critical elements and reflect the draft structure shown below (Figure 8).

### 4.4.1. Reporting frequency

The first report card will be prepared in 2020 and will be updated annually in alignment with annual reporting processes through the MIMP. Although updated annually, not all critical elements will be reported on at this frequency. In general, specific content will be reported on at the following frequencies:

- Action status and supporting narratives will be reported on annually.
- Short-term and intermediate outcomes will be reported on at the end of year 2 and year 5; long-term outcomes will be reported on at the end of year 5 and year 10.
- Reporting against indicators (both KPIs and LIs) will reflect data collection frequency for the specific indicator, with a maximum frequency of reporting annually.
- Summaries of evaluation findings will be reported when available.
- A selection of case studies will be identified and reported on annually. The number of case studies may vary from year to year, depending on what has been achieved or progressed in that year and is appropriate for reporting.

There will be some critical elements that can't be reported, or fully reported, against initially. These should still be included in the early report cards along with commentary indicating that these will be reported against in the future.

### 4.4.2. Reporting platform

It is recommended that an early decision be made about the platform for the first report card, and whether a different platform should be explored for future report cards. The critical elements of the report card and draft structure could initially be reflected in a traditional report format and may be

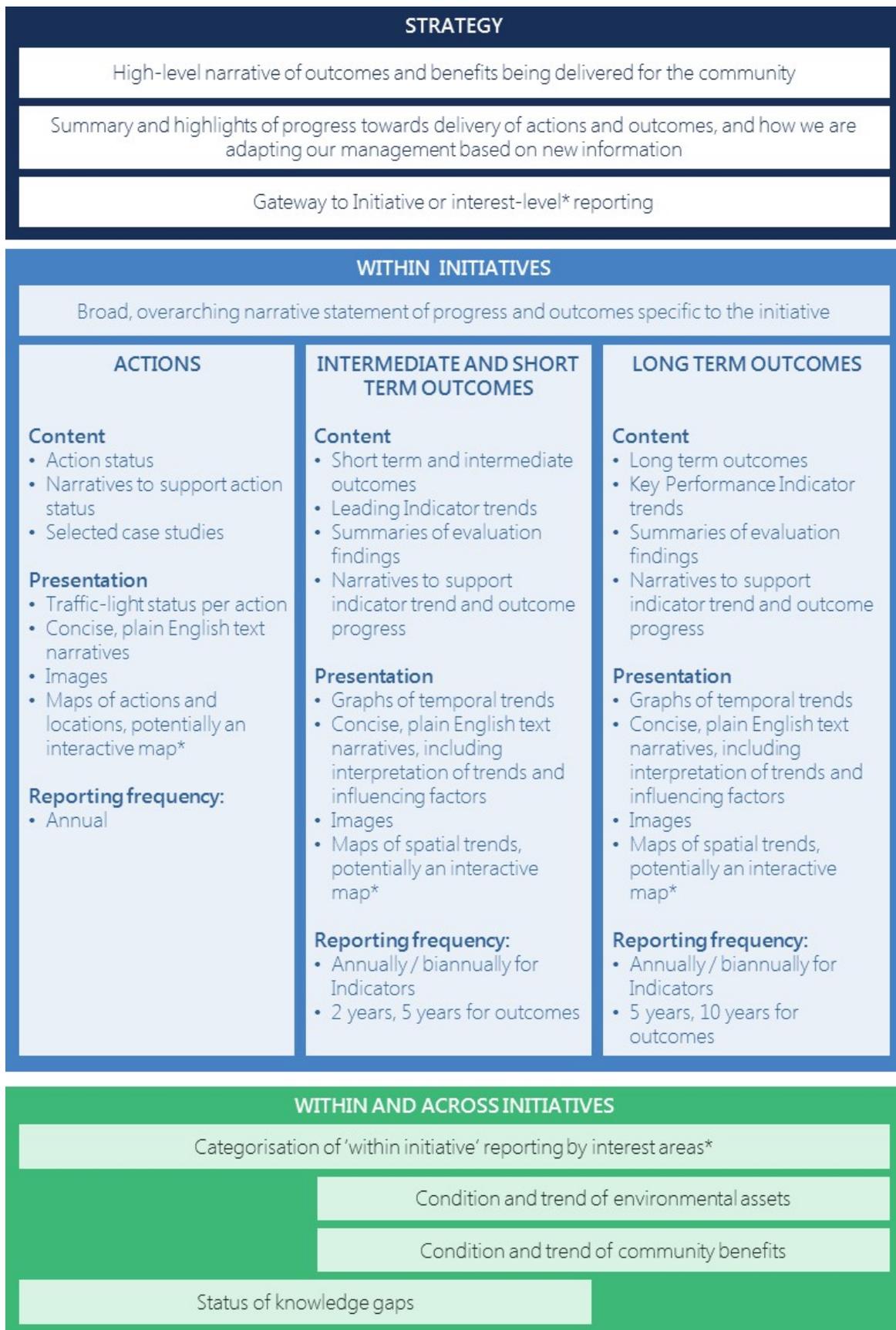
used as the basis for designing a more interactive web platform in the future (pending funding availability). The report card should be available for download through the NSW marine estate website.

#### **4.4.3. Case studies**

Case studies will be used to support reporting on management action delivery. When used appropriately, case studies can provide an effective way to communicate progress, success and lessons. Case studies used in the report card should:

- be interesting to the audience
- directly align with the MEMS
- be consistent with monitoring and evaluation findings
- enable adaptive management
- be scientifically defensible.

Case studies are likely to evolve over time and will be considered against the criteria above before being included in the report card.



*\*For future consideration if adopting a web-based reporting platform*

**Figure 8 Critical elements and draft structure for the report card**

## 5. Benefit realisation

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Benefits Realisation Management refers to identifying, planning, managing and evaluating intended benefits of an investment. It is undertaken through the following broad steps (NSW Department of Finance, Services and Innovation, 2018):

1. understand
2. plan
3. manage and report
4. evaluate.

The first two steps are addressed in the MEMS business case (NSW Department of Primary Industries, 2018), the MEMS (NSW Marine Estate Management Authority, 2018) and the MEMS Implementation Plan (NSW Marine Estate Management Authority, 2019). Steps 3 and 4 are captured through this Framework. Collectively, the business case, the MEMS, the Implementation Plan and this framework align with the principles set out in the NSW Benefits Realisation Framework (NSW Department of Finance, Services and Innovation, 2018).

The MEMS business case (NSW Department of Primary Industries, 2018) identified a number of benefits across six types of stakeholder categories that can be expected to be delivered through implementation of the strategy initiatives. These are shown below (Figure 9). The benefits are mixed in terms of likely timeframes, alignment with management initiatives and whether they reflect an outcome or an output. As such, they were considered in development of the outcomes articulated in the program logics but the alignment between outcomes and benefits may be characterised by one of the following relationships:

- outcome(s) directly align with or capture the benefit
- outcome(s) *contribute towards* achieving the benefit
- outcome(s) may *result from* the identified benefit.

Benefits were considered in the context of their stakeholder category and the outcomes mapped to reflect the focus of the category. The benefits and their aligned outcomes are provided in Appendix D.



**Communities**

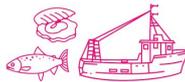
- Abundant and diverse marine life for current and future generations
- Improved water quality, healthier habitats and less litter
- Improved outcomes for threatened and protected species
- Improved commercial and recreational opportunities
- Increased consumer confidence in NSW seafood
- Improved climate resilience
- Improved health and wellbeing from positive marine interactions
- Coordinated and inclusive approach to management
- Improved communication and education
- Reduced conflict between marine users

**Aboriginal People**

- Abundant and diverse marine life for current and future generations
- Improved water quality, healthier habitats and less litter
- More participation in events effecting culturally significant species
- Co-management of Sea County
- Greater support for Aboriginal cultural fishing practices
- Training and job opportunities
- Enhanced opportunities to share cultural knowledge
- Improved health and wellbeing from positive marine interactions
- Coordinated and inclusive approach to management
- Research and monitoring to inform adaptive management

**Landowners: Rural and Urban**

- Clearer guidelines and better land use management
- Reduced loss of topsoil and erosion events
- Clearer guidelines on appropriate location for development and access infrastructure
- Better support to implement best management practices
- Reduced red tape in permits and administration
- Better climate change support tools and guidance
- Improved communication and education
- Coordinated and inclusive approach to management
- Research and monitoring to inform adaptive management
- Improved capacity building



**Fishers and Aquaculturalists**

- Improved water quality, healthier habitats and better fishing
- Reduced by-catch and interactions with threatened and protected species
- Reduced risk of marine pests and disease
- Reduced conflict with other users
- New aquaculture opportunities and business growth
- Transparent reporting and data sharing
- Clearer rules and improved opportunities for self-compliance
- Greater social acceptance of fishing and industry
- Improved fishing opportunities through fisheries enhancements
- Research and monitoring to inform adaptive management

**Tourists & Tour Operators**

- Abundant and diverse marine life for current and future generations
- Better water quality and less litter
- Increased business activity and growth
- Reduced red tape in permits and administration
- Improved fishing opportunities
- More tourist interest in the marine estate
- Enhanced visitor education and awareness
- Enhanced marine eco-tourism opportunities
- Improved health and wellbeing from positive marine interactions
- Research and monitoring to inform adaptive management

**Boat Users**

- Improved outcomes for threatened and protected species
- Improved health and wellbeing from positive marine interactions
- Better mooring management
- Reduced conflict with other users
- Better boating access and waterway infrastructure
- Improved boating behaviour
- Coordinated and inclusive approach to management
- Improved communication and education
- Reduced red tape in permits and administration
- Research and monitoring to inform adaptive management

Source: NSW Department of Industries 2018. Marine Estate Management Strategy - Business Case - Part A.

**Figure 9 Stakeholder benefits identified in the business case**

## 6. Reviewing the Framework

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This Framework, in particular the monitoring plans in Appendix B, is a live document. Some details, particularly in refining the scope of identified indicators, will be further developed during the early stages of implementation.

The Framework will be reviewed periodically in alignment with evaluation processes set out in Section 4.3. The evaluations will include consideration of the evaluation questions that relate specifically to this Framework, shown below (Table 10).

**Table 10 Key evaluation questions and rationale to inform review of this Framework**

Key evaluation questions	Rationale
<p>Are outcomes and indicators appropriate to the identified need? Why/why not?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li>• <i>were outcomes and indicators effectively aligned with the original identified need?</i></li> <li>• <i>are outcomes and indicators still relevant given any changes in the broader context?</i></li> <li>• <i>do / did indicators provide sufficient and appropriate signal for progress towards outcomes and/or any emerging risks?</i></li> <li>• <i>is / was data collection against indicators achievable?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Identifies whether outcomes represented the right areas of focus initially, whether these remain the right areas of focus, and what (if any) changes should be made.</li> <li>• Identifies whether indicators represent the right signal for outcomes, whether these remain appropriate, and what (if any) changes should be made</li> </ul>

The Framework will be updated if and where required based on findings of the periodic evaluations. The review should also consider whether effective application of the Framework is constrained in any way by ongoing funding arrangements and, if so, provide recommendations for responding to these constraints.

## 7. References

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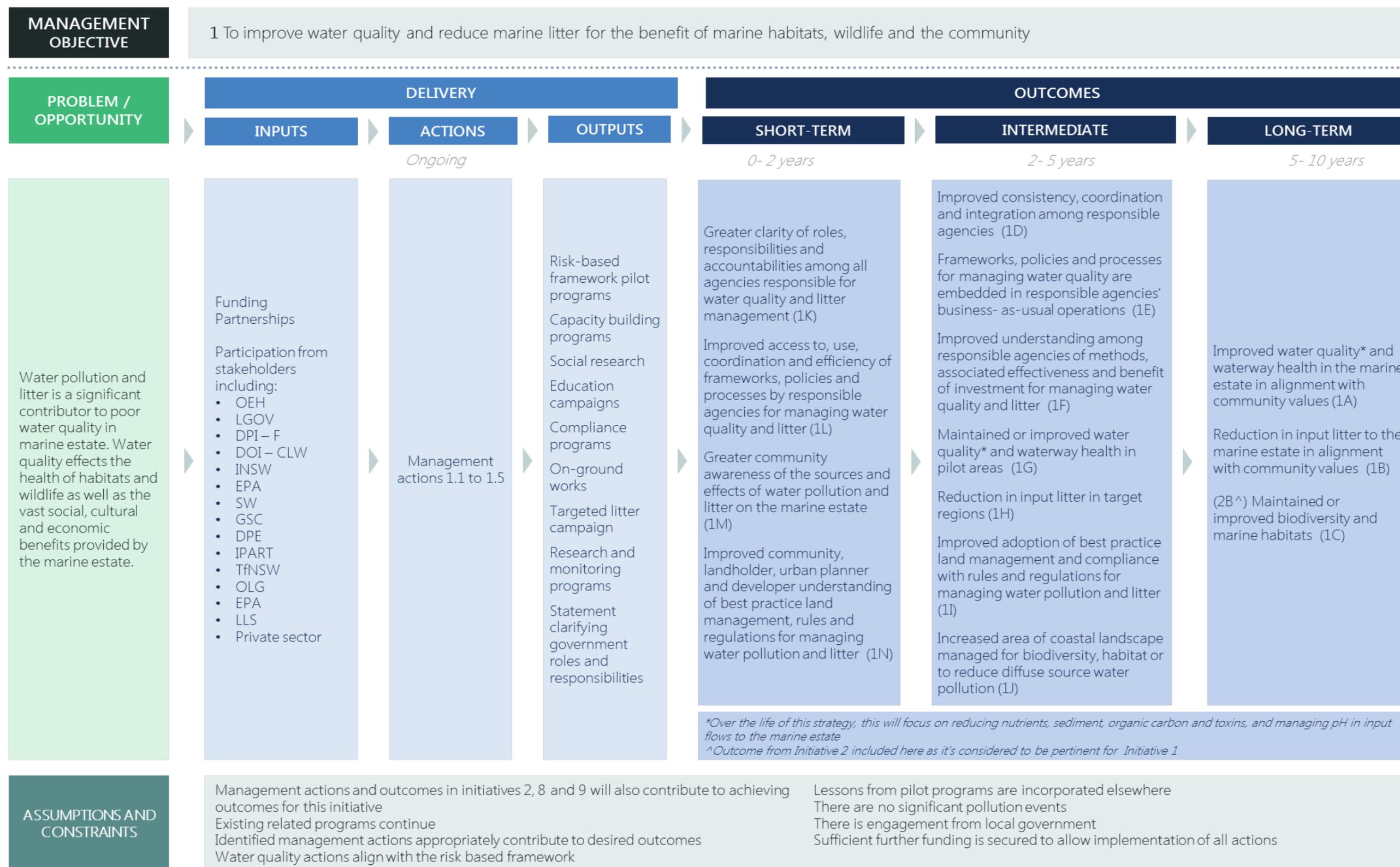
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# Appendix A – Initiative program logics

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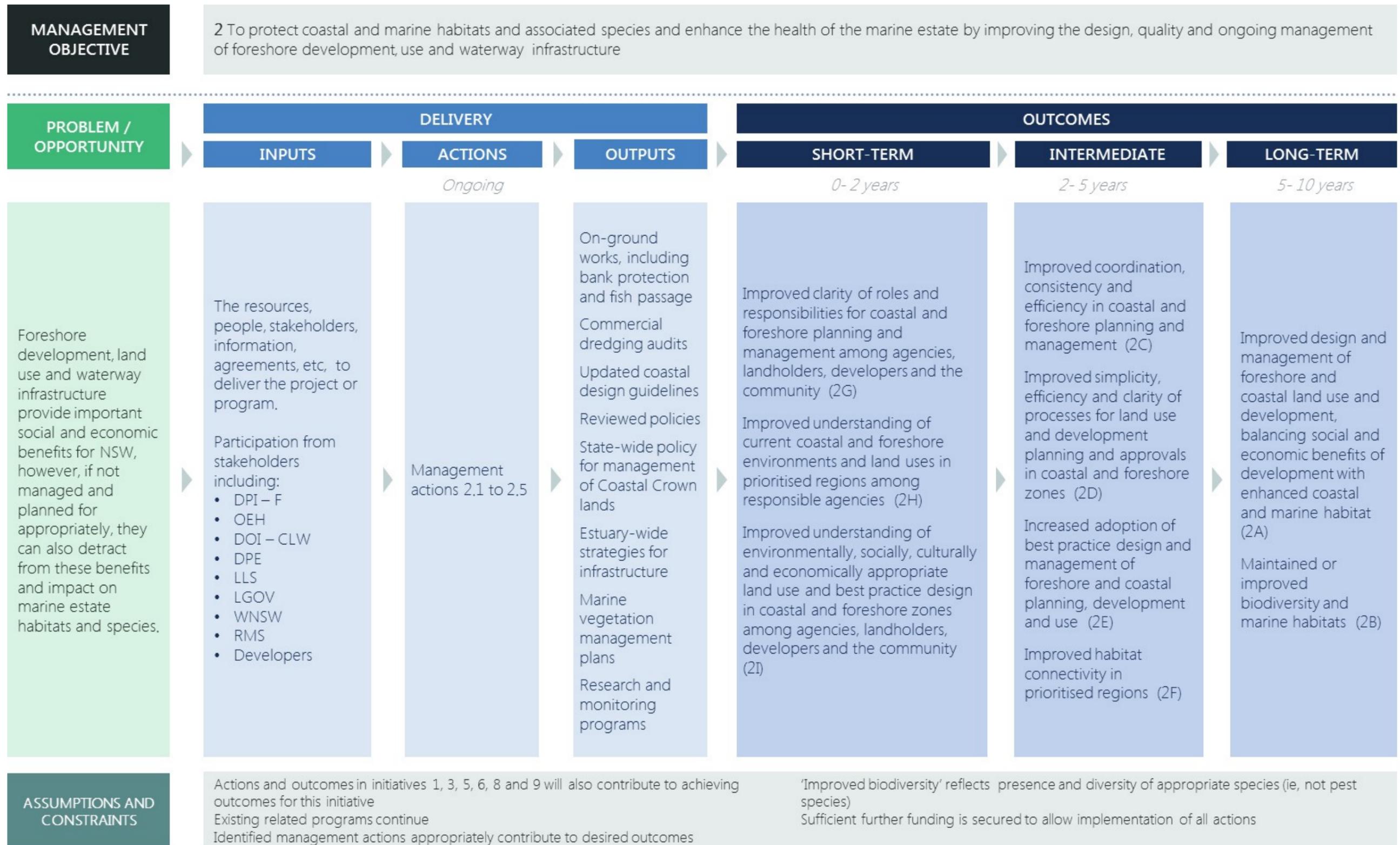
Program logics for each initiative are provided below. These should be read in conjunction with Section 3.2. Further detail on each management action is expected to contribute towards achieving outcomes is provided within the initiative monitoring plans in Appendix B.

## Initiative 1 - Improving water quality and reducing litter

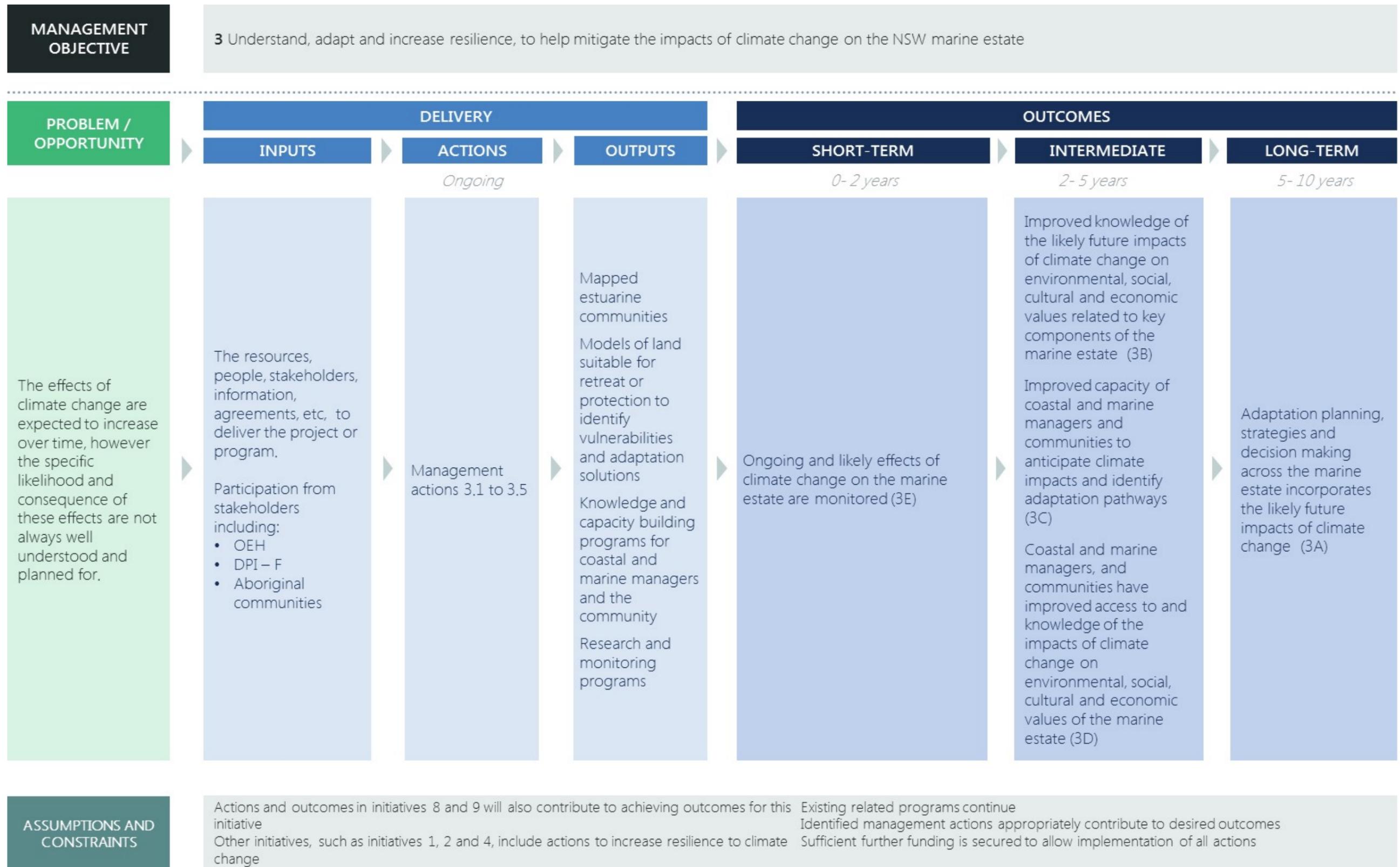


\*Over the life of this strategy, this will focus on reducing nutrients, sediment, organic carbon and toxins, and managing pH in input flows to the marine estate  
 ^Outcome from Initiative 2 included here as it's considered to be pertinent for Initiative 1

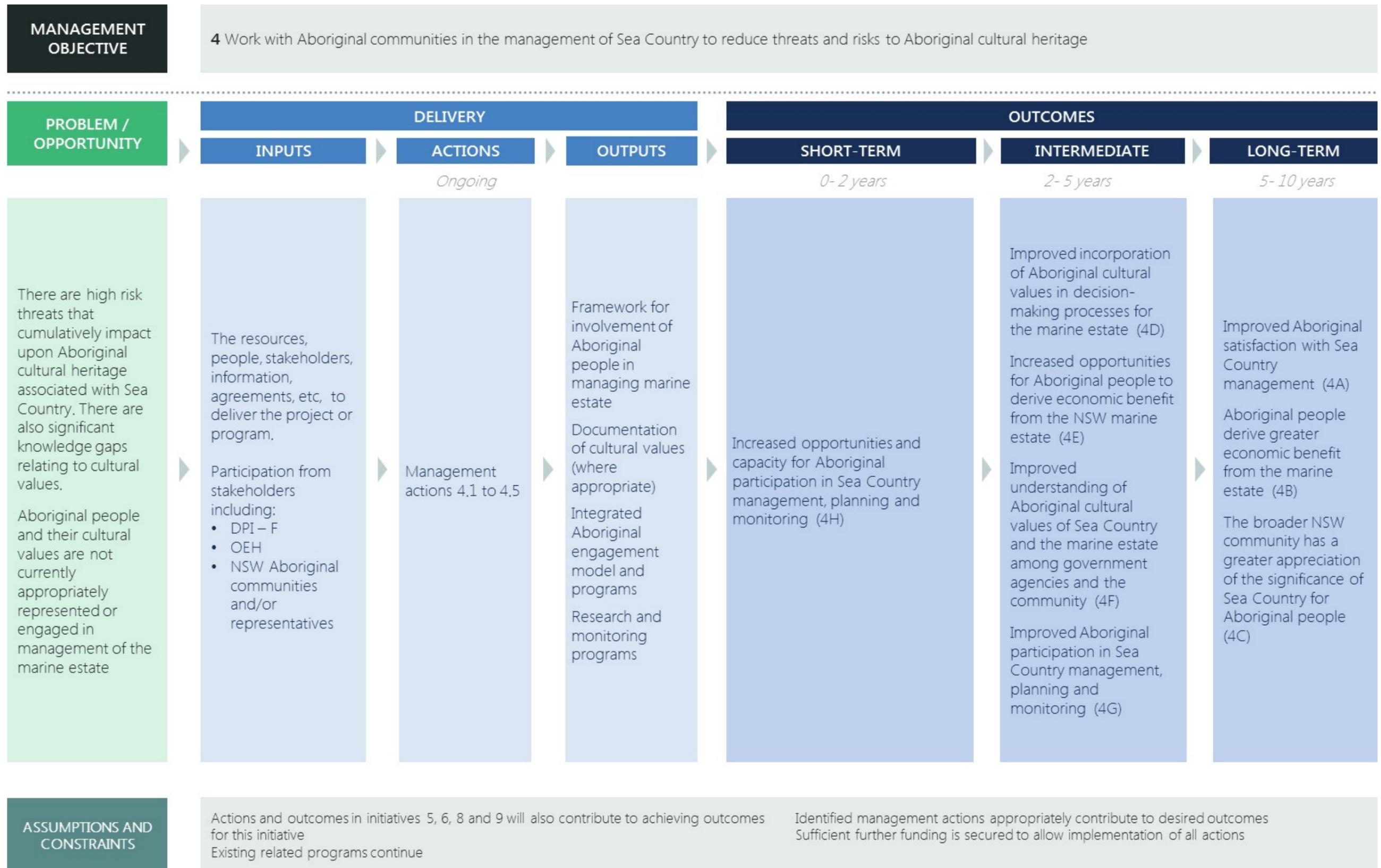
## Initiative 2 - Delivering healthy coastal habitats with sustainable use and development



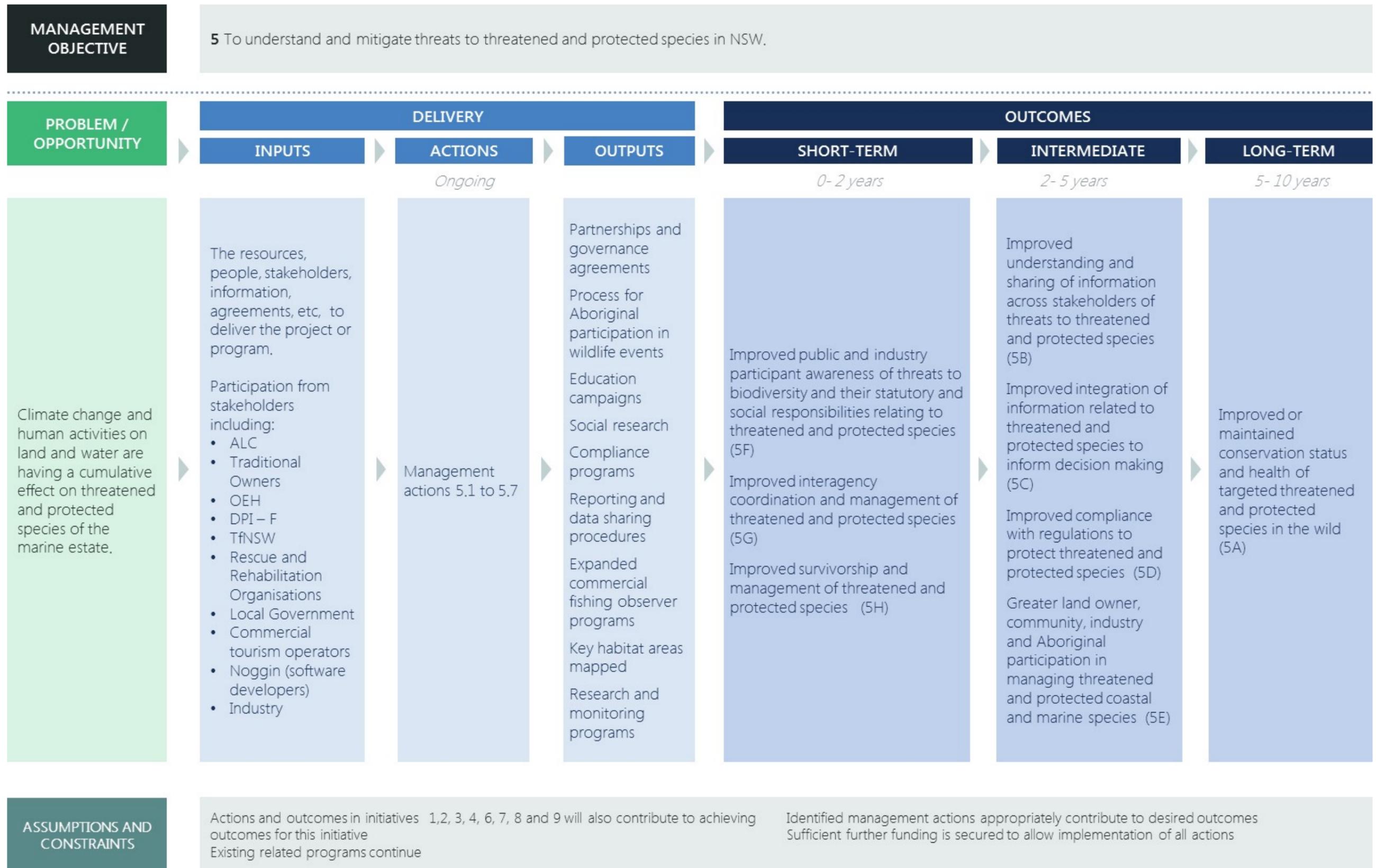
### Initiative 3 - Planning for climate change



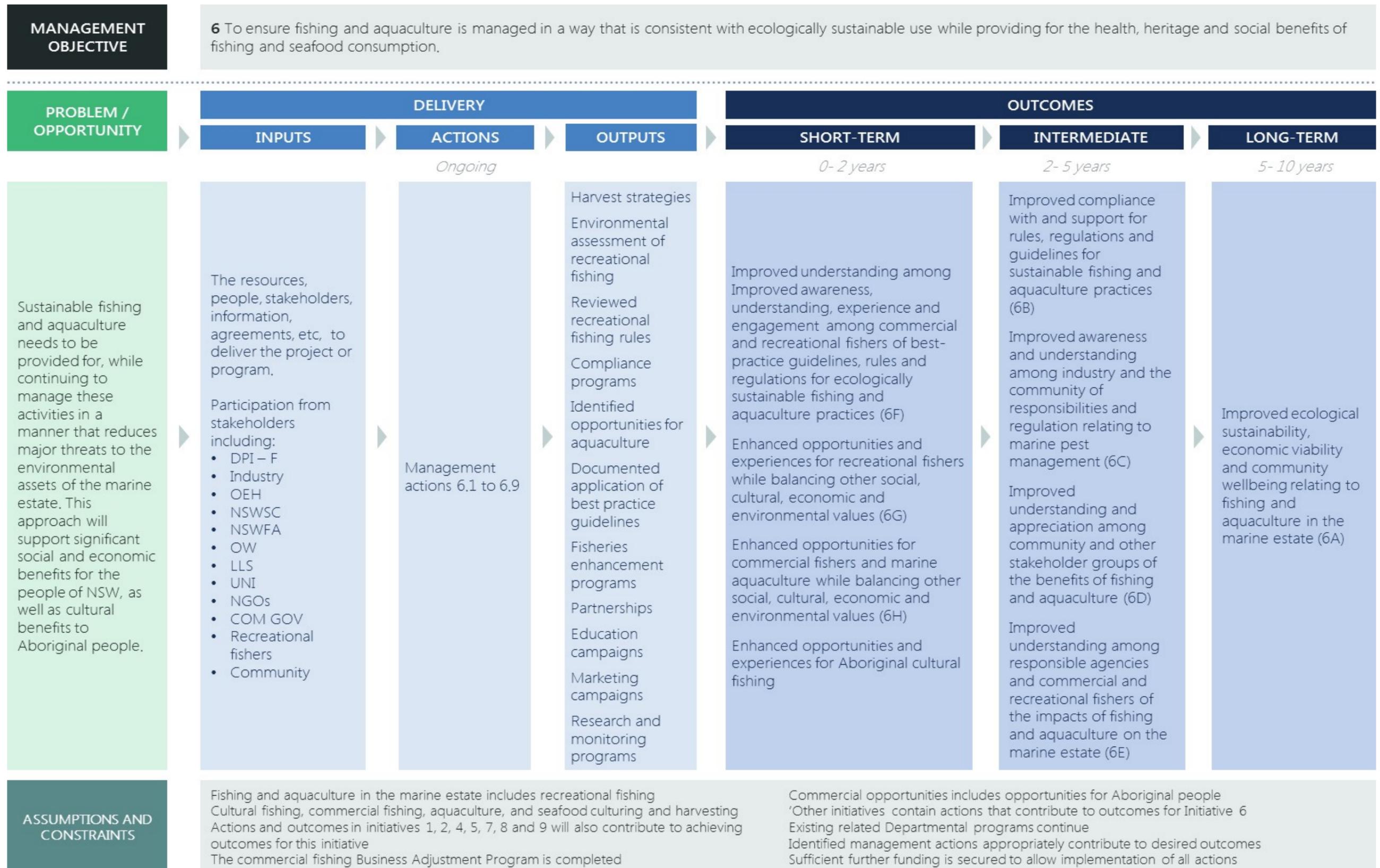
## Initiative 4 - Protecting the Aboriginal cultural values of the marine estate



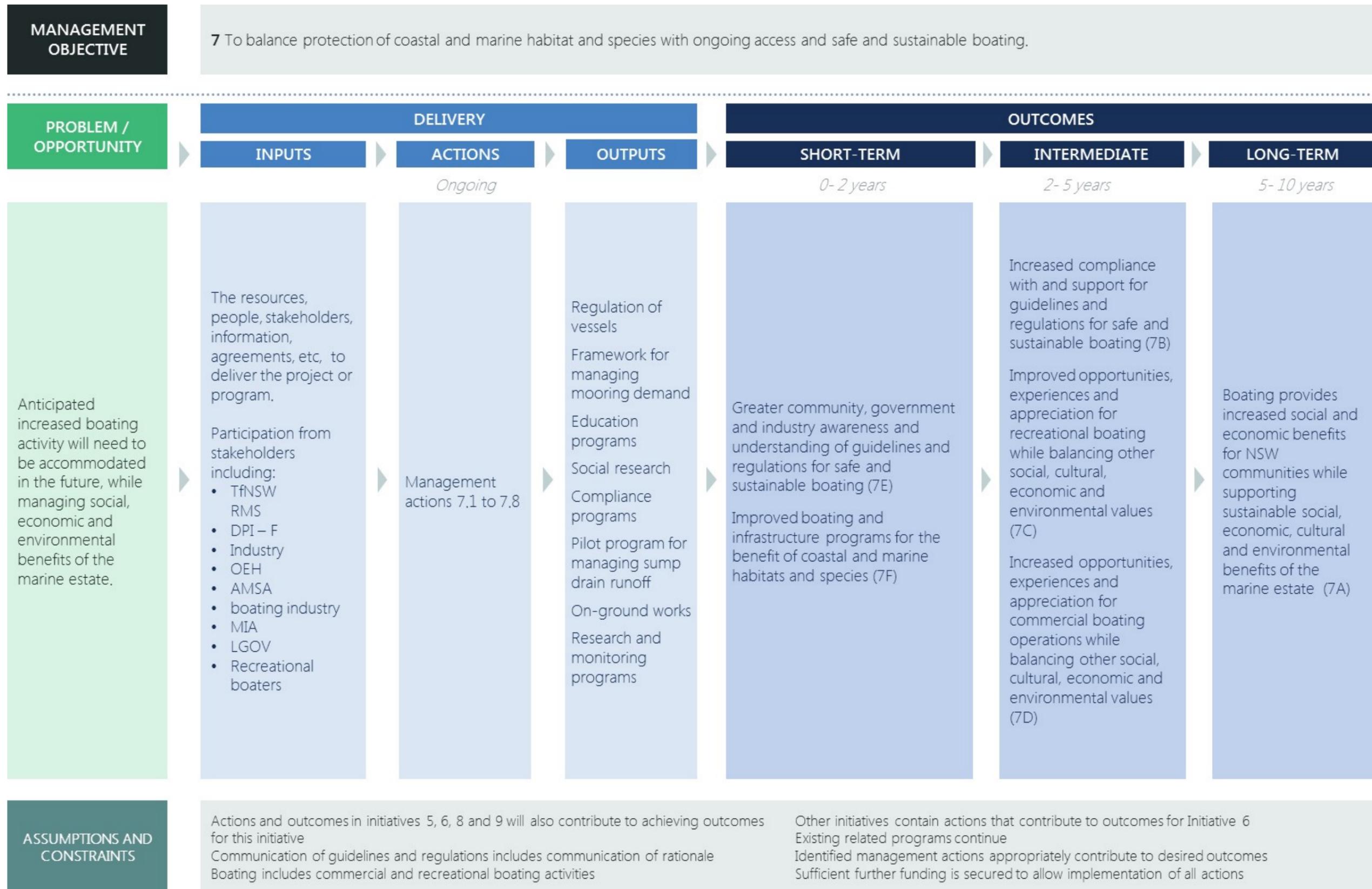
## Initiative 5 - Reducing impacts on threatened and protected species



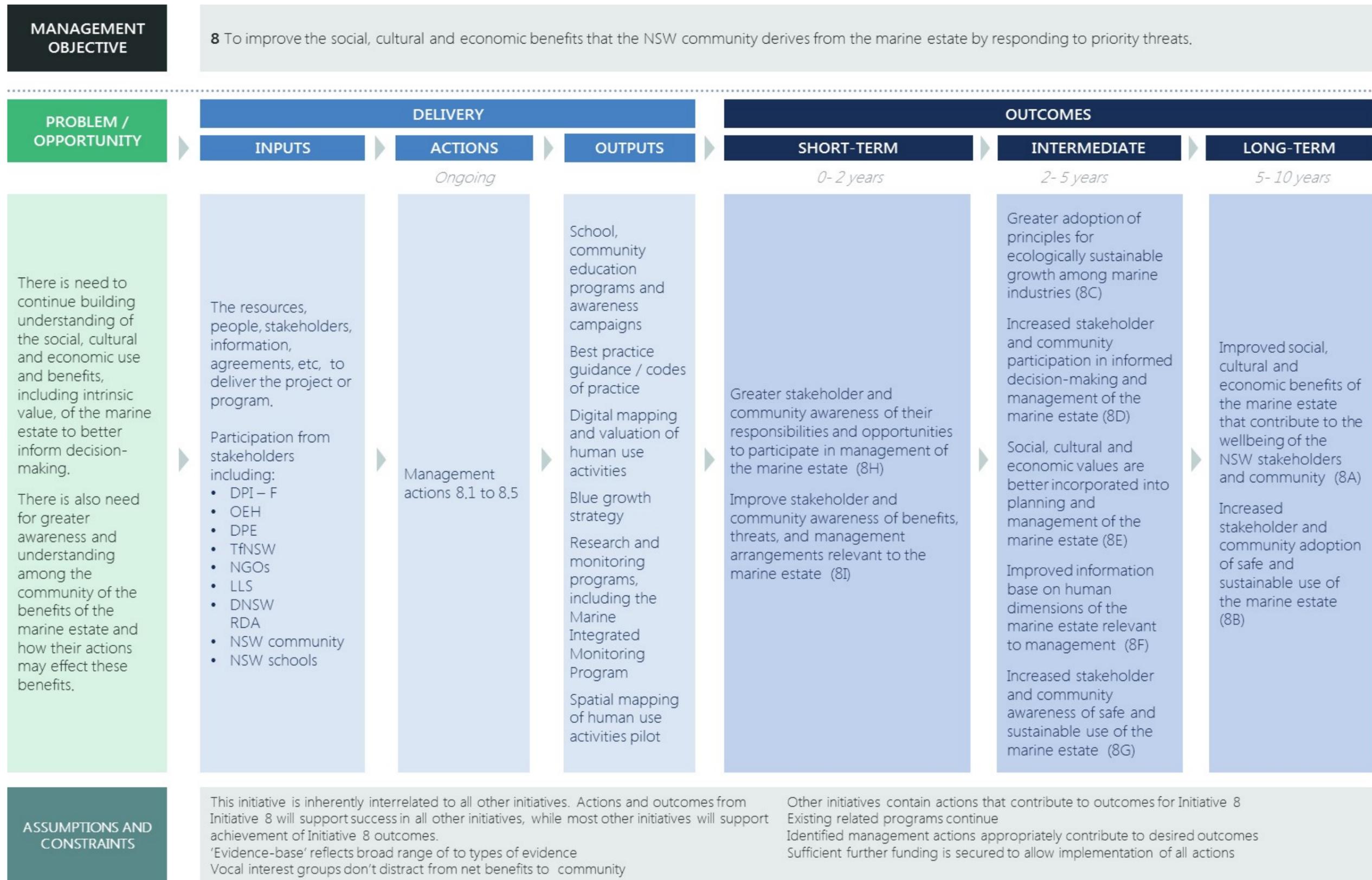
## Initiative 6 - Ensuring sustainable fishing and aquaculture



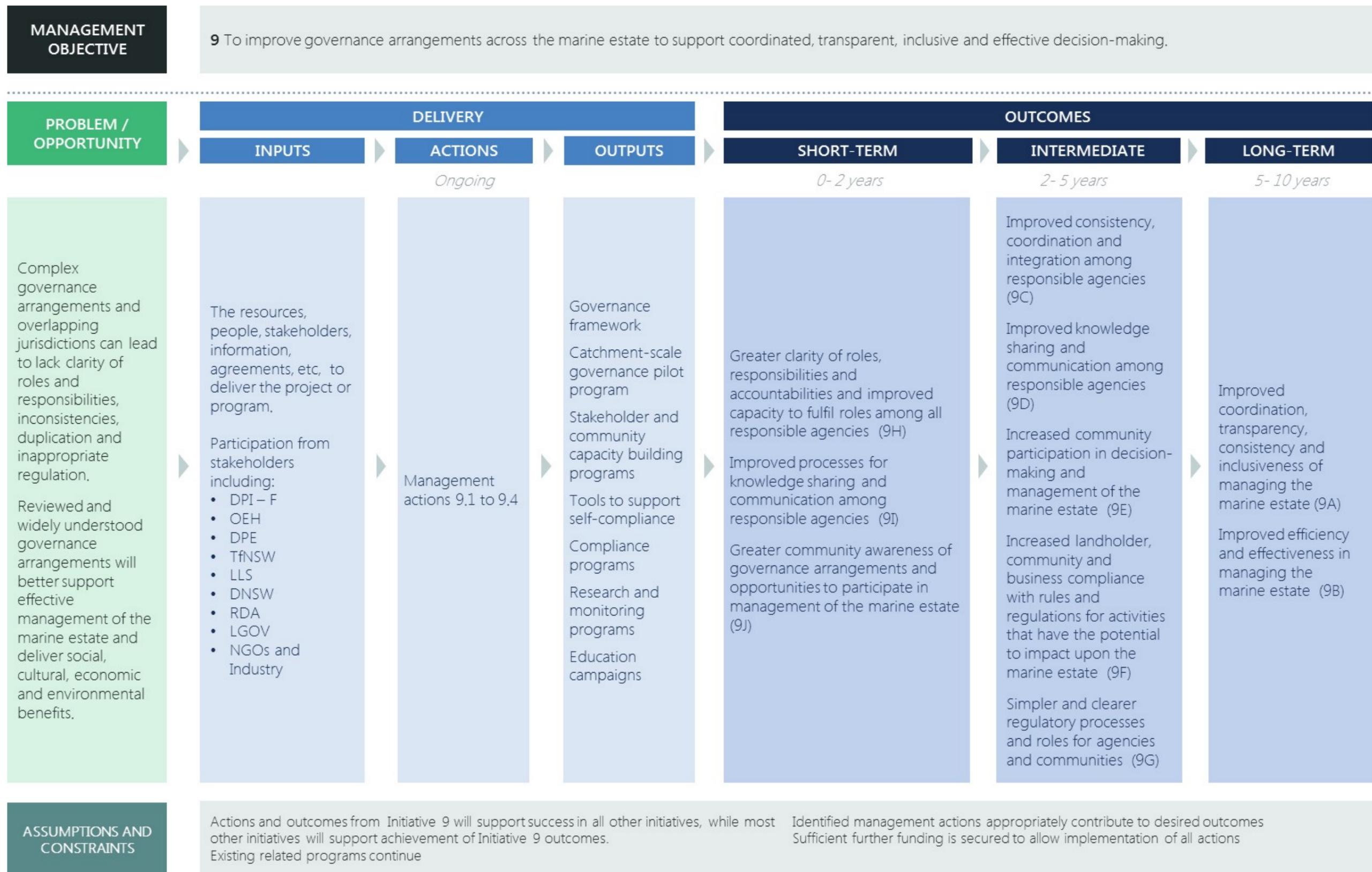
## Initiative 7 - Enabling safe and sustainable boating



## Initiative 8 - Enhancing social, cultural and economic benefits



## Initiative 9 - Delivering effective governance



## INTERRELATED OUTCOMES – GROUPED WITHIN TABLE CELLS

(2B) Maintained or improved biodiversity and marine habitats (1C)

Maintained or improved biodiversity and marine habitats (2B)

Aboriginal people derive greater economic benefit from the marine estate (4B)

Increased opportunities for Aboriginal people to derive economic benefit from the NSW marine estate (4E)

Improved consistency, coordination and integration among responsible agencies (1D)

Improved coordination, consistency and efficiency in coastal and foreshore planning and management (2C)

Improved coordination, transparency, consistency and inclusiveness of managing the marine estate (9A)

Improved efficiency and effectiveness in managing the marine estate (9B)

Improved adoption of best practice land management and compliance with rules and regulations for managing water pollution and litter (1I)

Increased adoption of best practice design and management of foreshore and coastal planning, development and use (2E)

Increased stakeholder and community adoption of safe and sustainable use of the marine estate (8B)

Frameworks, policies and processes for managing water quality are embedded in responsible agencies' business- as usual operations (1E)

Improved understanding among responsible agencies of methods, associated effectiveness and benefit of investment for managing water quality and litter (1F)

Improved access to, use, coordination and efficiency of frameworks, policies and processes by responsible agencies for managing water quality and litter (1L)

Improved understanding among responsible agencies of methods, associated effectiveness and benefit of investment for managing water quality and litter (1F)

Improved understanding of current coastal and foreshore environments and land uses in prioritised regions among responsible agencies (2H)

Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community (2I)

Improved knowledge of the likely future impacts of climate change on environmental, social, cultural and economic values related to key components of the marine estate (3B)

Coastal and marine managers, and communities have improved access to and knowledge of the impacts of climate change on environmental, social, cultural and economic values of the marine estate (3D)

Improved information base on human dimensions of the marine estate relevant to management (8F)

Increased stakeholder and community awareness of safe and sustainable use of the marine estate (8G)

Improve stakeholder and community awareness of benefits, threats, and management arrangements relevant to the marine estate (8I)

Maintained or improved water quality\* and waterway health in pilot areas (1G)

Increased area of coastal landscape managed for biodiversity, habitat or to reduce diffuse source water pollution (1J)

Improved habitat connectivity in prioritised regions (2F)

Greater clarity of roles, responsibilities and accountabilities among all agencies responsible for water quality and litter management (1K)

Improved clarity of roles and responsibilities for coastal and foreshore planning and management among agencies, landholders, developers and the community (2G)

Greater clarity of roles, responsibilities and accountabilities and improved capacity to fulfil roles among all responsible agencies (9H)

Improved simplicity, efficiency and clarity of processes for land use and development planning and approvals in coastal and foreshore zones (2D)

Simpler and clearer regulatory processes and roles for agencies and communities (9G)

Improved integration of information related to threatened and protected species to inform decision making (5C)

Greater adoption of principles for ecologically sustainable growth among marine industries (8C)

Social, cultural and economic values are better incorporated into planning and management of the marine estate (8E)

Improved understanding and sharing of information across stakeholders of threats to threatened and protected species (5B)

Improved knowledge sharing and communication among responsible agencies (9D)

Improved processes for knowledge sharing and communication among responsible agencies (9I)

## INTERRELATED OUTCOMES – GROUPED WITHIN TABLE CELLS

Greater community awareness of the sources and effects of water pollution and litter on the marine estate (1M)

Coastal and marine managers, and communities have improved access to and knowledge of the impacts of climate change on environmental, social, cultural and economic values of the marine estate (3D)

Improved public and industry participant awareness of threats to biodiversity and their statutory and social responsibilities relating to threatened and protected species (5F)

Improved understanding among responsible agencies and commercial and recreational fishers of the impacts of fishing and aquaculture on the marine estate (6E)

Improved information base on human dimensions of the marine estate relevant to management (8F)

Improve stakeholder and community awareness of benefits, threats, and management arrangements relevant to the marine estate (8I)

Improved adoption of best practice land management and compliance with rules and regulations for managing water pollution and litter (1I)

Improved compliance with regulations to protect threatened and protected species (5D)

Increased compliance with and support for guidelines and regulations for safe and sustainable boating (7B)

Increased landholder, community and business compliance with rules and regulations for activities that have the potential to impact upon the marine estate (9F)

Improved incorporation of Aboriginal cultural values in decision-making processes for the marine estate (4D)

Improved Aboriginal participation in Sea Country management, planning and monitoring (4G)

Improved Aboriginal participation in Sea Country management, planning and monitoring (4G)

Increased opportunities and capacity for Aboriginal participation in Sea Country management, planning and monitoring (4H)

Greater land owner, community, industry and Aboriginal participation in managing threatened and protected coastal and marine species (5E)

Increased opportunities, experiences and appreciation for commercial boating operations while balancing other social, cultural, economic and environmental values (7D)

Greater community, government and industry awareness and understanding of guidelines and regulations for safe and sustainable boating (7E)

Improved community, landholder, urban planner and developer understanding of best practice land management, rules and regulations for managing water pollution and litter (1N)

Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community (2I)

Improved awareness and understanding among industry and the community of responsibilities and regulation relating to marine pest management (6C)

Improved awareness, understanding, experience and engagement among commercial and recreational fishers of best practice guidelines, rules and regulations for ecologically sustainable fishing and aquaculture practices (6F)

Enhanced opportunities and experiences for recreational fishers while balancing other social, cultural, economic and environmental values (6G)

Greater stakeholder and community awareness of their responsibilities and opportunities to participate in management of the marine estate (8H)

Greater land owner, community, industry and Aboriginal participation in managing threatened and protected coastal and marine species (5E)

Increased stakeholder and community participation in informed decision-making and management of the marine estate (8D)

Greater stakeholder and community awareness of their responsibilities and opportunities to participate in management of the marine estate (8H)

Increased community participation in decision-making and management of the marine estate (9E)

Enhanced opportunities and experiences for recreational fishers while balancing other social, cultural, economic and environmental values (6G)

Enhanced opportunities for commercial fishers and marine aquaculture while balancing other social, cultural, economic and environmental values (6H)

Enhanced opportunities and experiences for Aboriginal cultural fishing practices (6I)

Improved opportunities, experiences and appreciation for recreational boating while balancing other social, cultural, economic and environmental values (7C)

Increased opportunities, experiences and appreciation for commercial boating operations while balancing other social, cultural, economic and environmental values (7D)

## Appendix B – Initiative monitoring plans

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Monitoring plans for each initiative are provided below. These should be read alongside sections 3.3 and 4.2, and Appendix C.

Monitoring plans for each initiative show the short-term, intermediate and long-term outcomes for each initiative and identifies their respective KPIs and LIs. Importantly, the indicators in this Framework link to outcomes, not management actions.

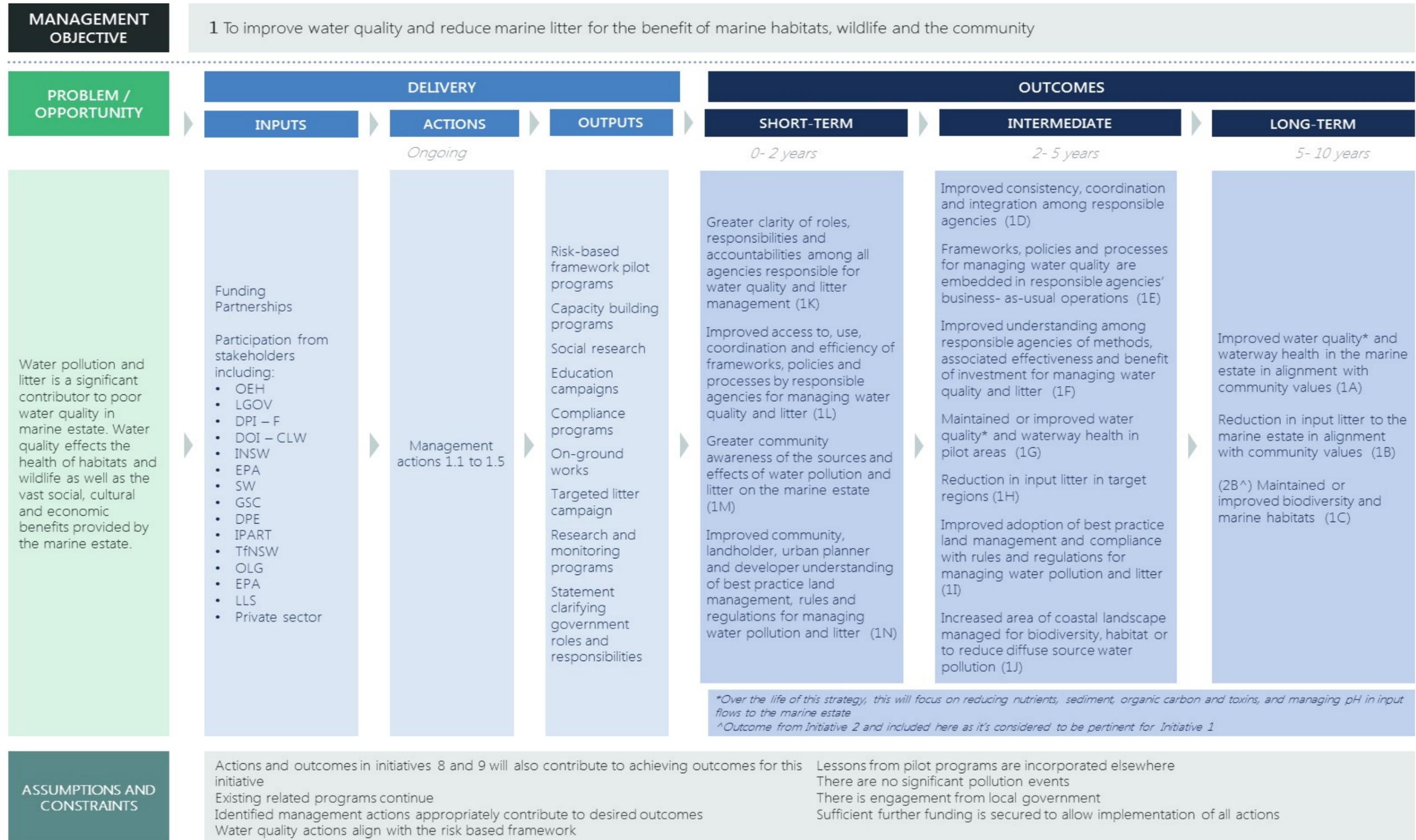
The plans use a matrix to map management actions to the short-term and intermediate outcomes that each is expected to most strongly contribute towards achieving. All management actions in each initiative are expected to collectively contribute to the long-term outcomes.

The plans document detailed requirements for each indicator linked to outcomes within that initiative, including specifications, measures, data sources, collection frequency, lead agency and assumptions. There are common indicators and common data collection processes across the initiatives. These will be approached in a coordinated and efficient manner.

The monitoring plans, like the Framework broadly, are live plans. Some details, particularly in refining the scope of identified indicators, will be further developed during the early stages of implementation.

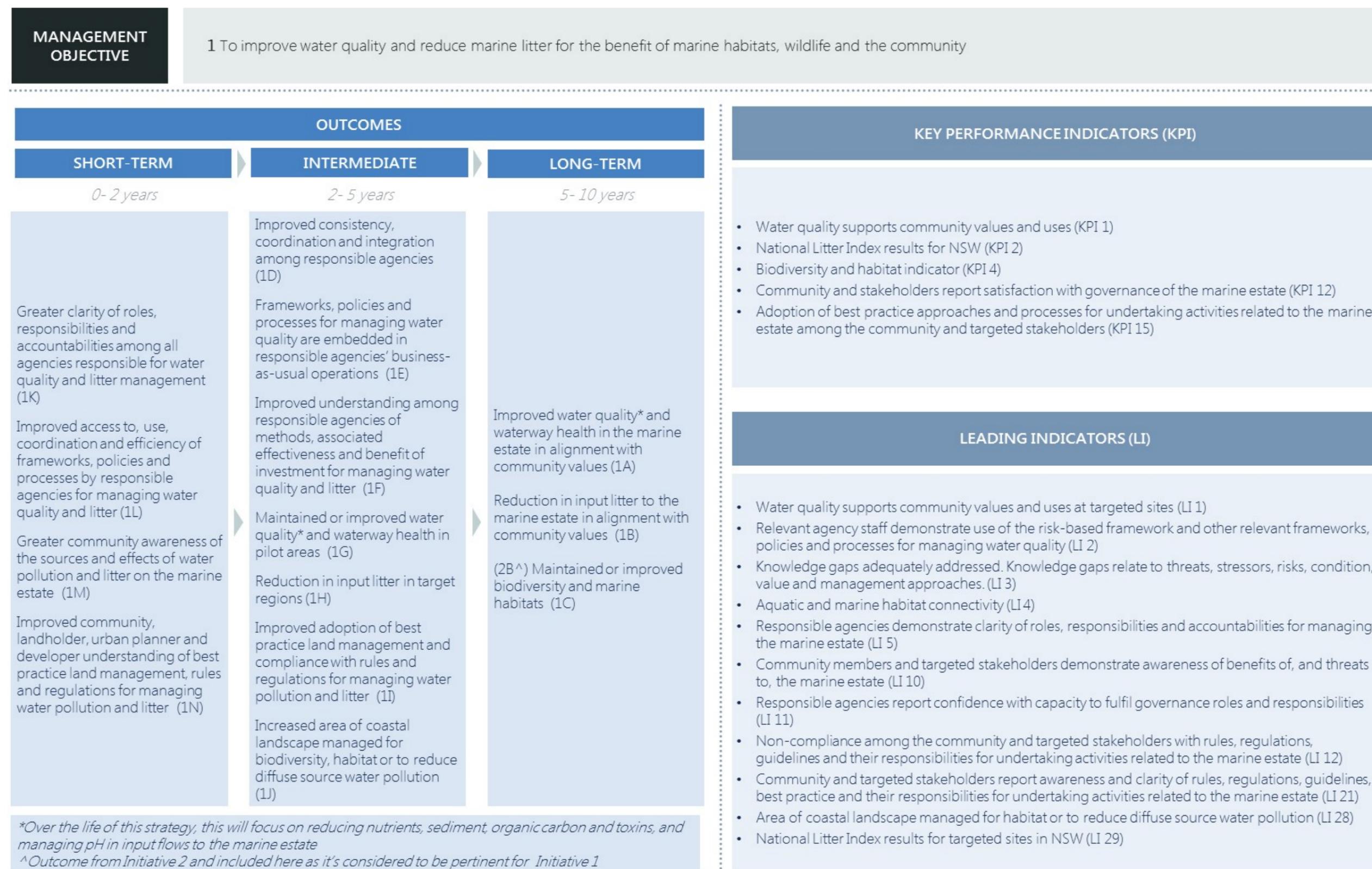
# Initiative 1 - Improving water quality and reducing litter

## Program logic



\*Over the life of this strategy, this will focus on reducing nutrients, sediment, organic carbon and toxins, and managing pH in input flows to the marine estate  
 ^Outcome from Initiative 2 and included here as it's considered to be pertinent for Initiative 1

## Summary of Initiative outcomes and indicators



Alignment of management actions with outcomes, and corresponding indicators

OUTCOME CODE	1N	1M	1L	1K	1J	1I	1H	1G	1F	1E	1D	1C	1B	1A	
<b>OUTCOME</b>	Improved community, landholder, urban planner and developer understanding of best practice land management, rules and regulations for managing water pollution and litter	Greater community awareness of the sources and effects of water pollution and litter on the marine estate	Improved access to, use, coordination and efficiency of frameworks, policies and processes by responsible agencies for managing water quality and litter	Greater clarity of roles, responsibilities and accountabilities among all agencies responsible for water quality and litter management	Increased area of coastal landscape managed for biodiversity, habitat or to reduce diffuse source water pollution	Improved adoption of best practice land management and compliance with rules and regulations for managing water pollution and litter	Reduction in input litter in target regions	Maintained or improved water quality* and waterway health in pilot areas	Improved understanding among responsible agencies of methods, associated effectiveness and benefit of investment for managing water quality and litter	Frameworks, policies and processes for managing water quality are embedded in responsible agencies' business- as usual operations	Improved consistency, coordination and integration among responsible agencies	(2B) Maintained or improved biodiversity and marine habitats	Reduction in input litter to the marine estate in alignment with community values	Improved water quality* and waterway health in the marine estate in alignment with community values	
<b>OUTCOME TIMEFRAME</b>	<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>	<i>Long-term</i>	<i>Long-term</i>	
<b>OUTCOME INDICATORS</b>	LI 21	LI 10	LI 2, LI 11	LI 5	LI 4, LI 28	KPI 15, LI 12	LI 29	LI 1, LI 4	LI 2, LI 3, LI 11	LI 2, LI 5, LI 11	KPI 12, LI 2, LI 5	KPI 4	KPI 2	KPI 1	
<b>MANAGEMENT ACTIONS</b>															
1.1	Improve water quality in agricultural and urban catchments using a pilot-based implementation of the Risk-based Framework.	LI 21	LI 10	LI 2, LI 11	LI 5	LI 4, LI 28	KPI 15, LI 12	LI 29	LI 1, LI 4	LI 2, LI 3, LI 11	LI 2, LI 5, LI 11	KPI 12, LI 2, LI 5	KPI 4	KPI 2	KPI 1
1.2	Improve the management of diffuse source water pollution by:												KPI 4	KPI 2	KPI 1
1.2 (a)	clarifying NSW Government and local government roles and responsibilities			LI 2, LI 11	LI 5				LI1	LI 2, LI 3, LI 11	LI 2, LI 5, LI 11	KPI 12, LI 2, LI 5	KPI 4	KPI 2	KPI 1
1.2 (b)	building capacity to implement the Risk-based framework			LI 2, LI 11					LI1	LI 2, LI 3, LI 11	LI 2, LI 5, LI 11		KPI 4	KPI 2	KPI 1
1.2 (c)	using mechanisms within existing policy, planning and legislative frameworks to improve outcomes			LI 2, LI 11	LI 5				LI1		LI 2, LI 5, LI 11		KPI 4	KPI 2	KPI 1
1.2 (d)	improving minimum requirements for industry standards and ensuring compliance with regulations and best practice through social research, education campaigns and	LI 21	LI 10				KPI 15, LI 12		LI1	LI 2, LI 3, LI 11			KPI 4	KPI 2	KPI 1

OUTCOME CODE	1N	1M	1L	1K	1J	1I	1H	1G	1F	1E	1D	1C	1B	1A
<b>OUTCOME</b>	Improved community, landholder, urban planner and developer understanding of best practice land management, rules and regulations for managing water pollution and litter	Greater community awareness of the sources and effects of water pollution and litter on the marine estate	Improved access to, use, coordination and efficiency of frameworks, policies and processes by responsible agencies for managing water quality and litter	Greater clarity of roles, responsibilities and accountabilities among all agencies responsible for water quality and litter management	Increased area of coastal landscape managed for biodiversity, habitat or to reduce diffuse source water pollution	Improved adoption of best practice land management and compliance with rules and regulations for managing water pollution and litter	Reduction in input litter in target regions	Maintained or improved water quality* and waterway health in pilot areas	Improved understanding among responsible agencies of methods, associated effectiveness and benefit of investment for managing water quality and litter	Frameworks, policies and processes for managing water quality are embedded in responsible agencies' business- as usual operations	Improved consistency, coordination and integration among responsible agencies	(2B) Maintained or improved biodiversity and marine habitats	Reduction in input litter to the marine estate in alignment with community values	Improved water quality* and waterway health in the marine estate in alignment with community values
<b>OUTCOME TIMEFRAME</b>	<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>	<i>Long-term</i>	<i>Long-term</i>
<b>OUTCOME INDICATORS</b>	LI 21	LI 10	LI 2, LI 11	LI 5	LI 4, LI 28	KPI 15, LI 12	LI 29	LI 1, LI 4	LI 2, LI 3, LI 11	LI 2, LI 5, LI 11	KPI 12, LI 2, LI 5	KPI 4	KPI 2	KPI 1

**MANAGEMENT ACTIONS**

	compliance programs.													
1.3	Facilitate and deliver on-ground activities that reduce diffuse source water pollution through investigation and provision of funding programs and financial incentives.		LI 10			KPI 15, LI 12		LI 1, LI 4				KPI 4	KPI 2	KPI 1
1.4	Implement a targeted marine litter campaign and establish a Marine Litter Working Group.	LI 21	LI 10		LI 5		LI 29					KPI 4	KPI 2	KPI 1
1.5	Develop monitoring, reporting and performance indicators for water quality actions and fill key knowledge gaps. This action is integrated into the Monitoring Program.		LI 10				LI 29	LI	LI 2, LI 3, LI 11		KPI 12, LI 2, LI 5	KPI 4	KPI 2	KPI 1

## Indicator details

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 1	Water quality supports community values and uses	To be assessed through the three primary uses and values: Protection of Aquatic Ecosystems (PAE), Primary Contact Recreation (swimming, PCR) and Edible Seafood (ES). As a consequence, this indicator will have 3 facets reflecting the 3 primary indices. These will not be combined into a single measurement but used separately	PAE: Estuary Health Grade (A, B, C, D, F) PCR: Beachwatch Grades (A, B, C, D, E) ES: need more time to investigate data, but it will be converted to Grade as well	PAE: will use the current estuary health grade scores ( <a href="https://www.environment.nsw.gov.au/soc/assess-estuary-ecosystem-health-160250.htm">https://www.environment.nsw.gov.au/soc/assess-estuary-ecosystem-health-160250.htm</a> ) and will work on development of additional measures for pH impact to integrate into the same calculation framework. Data collection will focus around the existing Statewide MEMA Cumulative Impact Monitoring being done by DPIE-EES, with additional sites included as necessary. PCR: will use Beachwatch Grades from existing Beachwatch program ES: will use Safe Foods Australia grades for oyster producing estuaries plus results from National Food Standards seafood surveys and any other surveys (pippies, other contaminants) that are done in the time period. Supplemented by some additional monitoring as part of Management Action 1.5	Annual		PAE, PCR – DPIE-EES, ES – DPI, FoodSafe NSW	Y	All YES, >10 years		PAE - Initiative 1.5, PCR – DPIE-EES, ES: Foodsafe and oyster industry, plus some Action 1.5		1A
KPI 2	National Litter Index results for NSW		Volume of litter per 1000 square metres	National Litter Index Keep Australia Beautiful	Quarterly	2005	NSW EPA	Y	yes	National Litter Index Keep Australia Beautiful	Yes, currently funded under the Litter Prevention Unit	Land based litter is a suitable proxy for litter inputs to the marine estate  Surveyed sites vary between assessments in terms of location and area  Data excludes illegally dumped materials  NLI is appropriate for measuring trendlines over time for litter in the environment. It does not account for changes in behaviour, or other influencing factors such as population changes, weather or clean-up activities	1B
KPI 4	Biodiversity and habitat indicator	Responsible agencies, including marine ecosystem researchers. Data collection will be undertaken through targeted surveys	Estuarine fish abundance and diversity	Targeted surveys	Biannual	2022	DPI	N	N		MEMS and consolidated revenue	Funding is made available in stage 3	1C, 2B
KPI 12	Community and stakeholders report satisfaction with governance of the marine estate	Satisfaction to be assessed through concise measures for each of the following governance themes: coordination, consistency, transparency and inclusiveness. Details for measures are provided separately.  Data collection will be undertaken through a survey of	Average satisfaction rating based on Likert scale for each measure	Responsible agencies staff survey	Biennial (ideally), or minimum of three (3) surveys over the life of the MEMS (to collect baseline data, progress at mid-point, end-of-strategy achievement)	Year 2	DPI (Initiative 8, coordinator staff survey)	N	N	NA	TBC	Sufficient funding is secured to undertaken minimum survey requirements Survey respondents are selected randomly from a within the identified stakeholder categories, rather than targeting specific individuals, groups or organisations	1D, 2C, 9A

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
		randomly selected individuals within identified stakeholder categories. Unless otherwise specified, all categories will be surveyed. Stakeholder categories are: <ul style="list-style-type: none"> <li>Responsible agencies, including marine estate managers from relevant government departments, agencies and statutory authorities; local government; and, researchers.</li> <li>Targeted stakeholders (engaged community), including Aboriginal people, community interest groups, industry and peak bodies, conservation groups and avid users of the marine estate.</li> <li>General community, capturing the broader public, who may have some limited interaction with or interest in the marine estate, but have the potential to become more engaged in the future</li> </ul>											
KPI 15	Adoption of best practice approaches and processes for undertaking activities related to the marine estate among the community and targeted stakeholders	Activities include those relating to: <ul style="list-style-type: none"> <li>land use and management</li> <li>water pollution and litter</li> </ul> Best practice approaches and processes include: <ul style="list-style-type: none"> <li>Specific, documented approaches and processes TBC by initiative lead(s)</li> </ul> Targeted stakeholders include: <ul style="list-style-type: none"> <li>Education/capacity building event participants (Ag industries, council, construction) landholders / participants in on-ground works</li> <li>TBC by initiative lead(s)</li> </ul>	Proportion of survey respondents self-reporting use of best practice approaches and processes	Community survey Targeted stakeholder survey <p>Initiative lead(s) to note if they have any other existing processes for monitoring adoption of best practice approaches and processes, such as program/administrative reporting or compliance activities</p> <p>some pre-post event participant surveys can be included that can supply some info</p> <p>Ag CCC CBSM project</p> <p>LLS and Ag works contracts and maintenance agreements</p>	Biennial	In line with education events and works contracts	DPI (Initiative 1 lead)  DPI (Initiative 8 lead – community survey, coordinator staff and stakeholder survey)	N	Possibly for some		I1 (agencies and stakeholders) and I8 (community survey only)	Survey is designed to appropriately probe adoption of best practice in accordance with indicator specifications  Survey is designed to support accurate self-reporting  Use of best practice approaches and processes is effective and appropriate	1I, 2E, 8B
LI 1	Water quality supports community values and uses at targeted sites	To be assessed through the three primary uses and values: Protection of Aquatic Ecosystems (PAE), Primary Contact Recreation (swimming, PCR) and Edible Seafood (ES). As a consequence, this indicator will have 3 facets reflecting the 3 primary indices. These will not be combined into a single measurement but used separately.  Targeted sites to be identified	PAE: Estuary Health Grade (A, B, C, D, F) PCR: Beachwatch Grades (A, B, C, D, E) ES: need more time to investigate data, but it will be converted to Grade as well	PAE: will use the current estuary health grade scores ( <a href="https://www.environment.nsw.gov.au/soc/assess-estuary-ecosystem-health-160250.htm">https://www.environment.nsw.gov.au/soc/assess-estuary-ecosystem-health-160250.htm</a> ) and will work on development of additional measures for pH impact to integrate into the same calculation framework. Data collection will focus around the existing Statewide MEMA Cumulative Impact Monitoring being done by DPIE-EES, with additional sites included as necessary. PCR: will use Beachwatch Grades from existing Beachwatch program ES: will use Safe Foods Australia grades for oyster producing estuaries plus results from National Food Standards seafood surveys and any other surveys (pippies, other contaminants) that are	Annual		PAE, PCR – DPIE-EES, ES – DPI, FoodSafe NSW	Y	All YES, >10 years		PAE - Initiative 1.5, PCR – DPIE-EES, ES: Foodsafe and oyster industry, plus some Action 1.5		1G

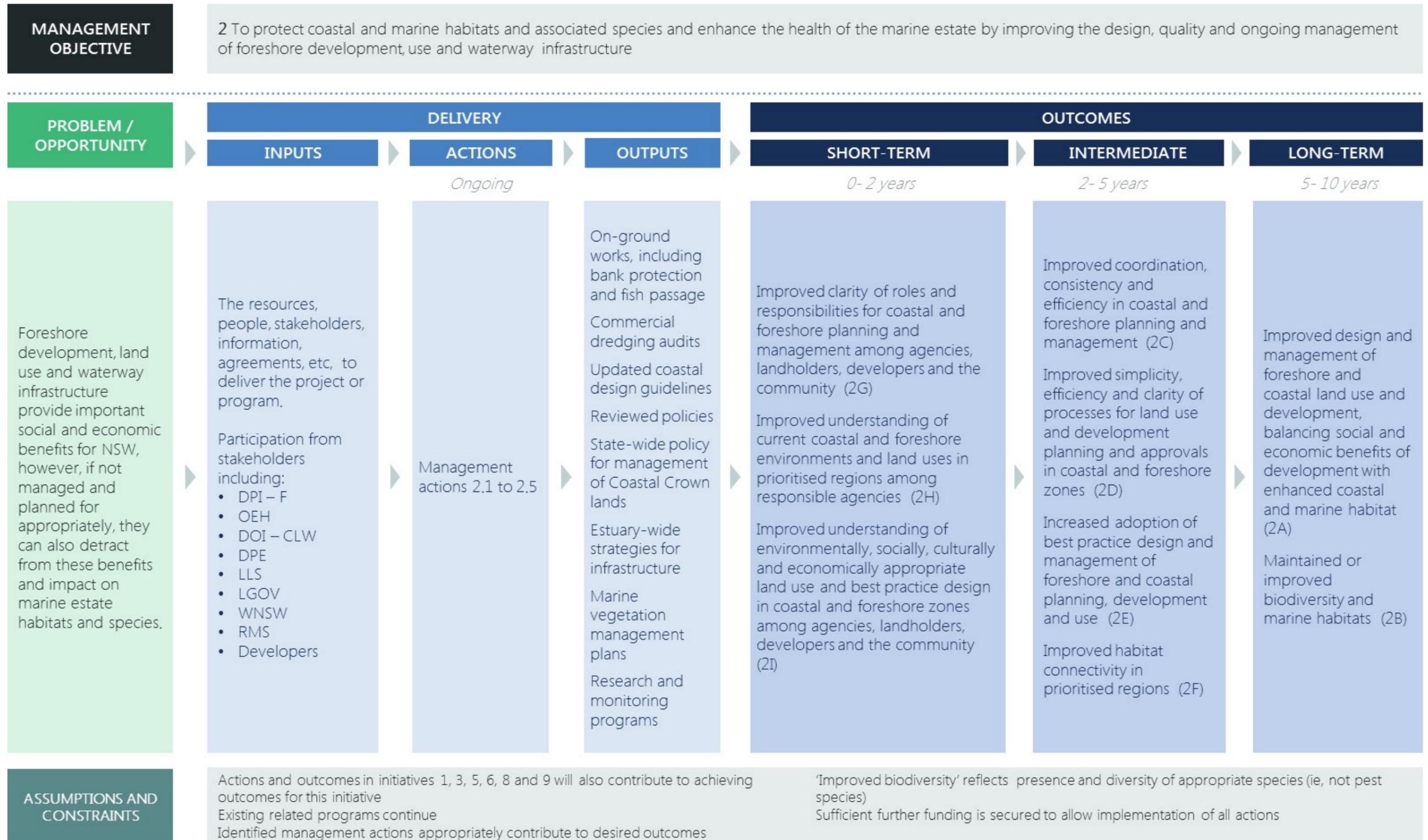
Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
				done in the time period. Supplemented by some additional monitoring as part of Management Action 1.5									
LI 2	Relevant agency staff demonstrate use of the risk-based framework and other relevant frameworks, policies and processes for managing water quality	<p>Relevant agencies include: Local councils DPIE-EES, INSW, EPA, SW, GSC, DPE, DPI, WNSW, TfNSW, LLS</p> <p>Legislation and policies include but is not limited to: legislation and policies that use community values and uses of the marine estate as a benchmark for setting management targets Local and regional plans For 1.2 – will be med term use of outcomes of 1.2.6 (DMP) and 1.2.8 (Offset/PLC) new policies and procedures</p>	<p>Proportion of planning instruments that reflect the risk-based framework for water quality and river flow objectives</p> <p>Proportion of documents demonstrating use of DMPs. Number of 'new' BCA and FMA PLC sites (related to marine estate) and Aquatic Offsets Number of works approvals done under new processes</p>	<p>Program administrative data</p> <p>Agency staff survey</p> <p>All relevant plans, legislation and policy</p>	Biennial	2019 Base line data to be collected now	DPIE-EES for RBF and PLC under BCA DPI for DMP or other approvals and FMA offsets	N	N		TBC	Staff use is effective and appropriate. The projects undertaken during the first phase will develop an understanding of the baseline. Subsequent surveys will need to build on that work	1D, 1E, 1F, 1L
LI 3	Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches	Current identified knowledge gaps include: methods, effectiveness and benefits of investment for managing water quality and litter others identified in the TARA	Number of knowledge gaps with status changing from 'inferred' to 'adequate'. Number of Research / information reports provided (i.e. Coastal Floodplain Prioritisation study in 1.2 7)	<p>Agency staff survey</p> <p>Review against TARA</p> <p>Program administrative data</p>	2, 5 & 10 years		DPI / DPIE-EES ( Research Leader, Marine Ecosystems (DPI) / Senior Team Leader – Estuaries and Catchments Science (DPIE-EES) )		Y	TARA		Knowledge gaps are reviewed through review of the TARA	1F, 2H, 2I, 3B, 3D, 3E, 8F, 8G
LI 4	Aquatic and marine habitat connectivity	Types of habitats include all water dependent ecosystems in coastal catchment draining to marine estate, e.g. Riparian vegetation Ground water dependent ecosystems (surface and sub-surface) Key Fish Habitat Wetlands	Waterway length opened up (km)		Annual		DPI (Initiative 1A lead)						1G, 1J, 2F
LI 5	Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate	<p>Activities include those relating to: general management of the marine estate water quality and litter management</p> <p>For water quality, targeted stakeholders include:</p> <p>For water quality, responsible agencies include: DPIE-EES,</p>	Proportion of survey respondents demonstrating clarity	<p>Responsible agencies staff survey</p> <p>Targeted stakeholder survey</p>	Biennial		DPIE-EES (Initiative 1A lead) DPI (Initiative 8 coordinator staff and stakeholder survey)	N	N	NA	TBC	Survey is designed to appropriately probe clarity of roles and responsibly across aspects of marine estate management reflected in the initiatives	1D, 1E, 1K, 2G, 5F, 5G, 9H

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
		OLG, GSC, DPC, Sydney Water, LLS, DPE, DPI, LLS, Transport, Water NSW  For litter:											
LI 10	Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate	Includes threats relating to: sources and effects of water pollution and litter in the marine estate Targeted stakeholders include: 1.2.9, 1.2.12 Council staff, construction industry, etc. 1.2.11 Specific Ag Industries (Blueberry, Macadamia, GH veggie, cane, dairy) 1.3.1 Oyster farmer survey about ORR Construction industry, recreational waterway users, commercial and recreational fishing users, horticulturalists, graziers	Proportion of survey respondents demonstrating awareness	Community survey Targeted stakeholder surveys <i>Targeted feedback surveys following education or engagement events(TBC)</i>	Biennial		DPIE-EES (Initiative 1A lead – post event surveys)  DPI (Initiative 8 lead – community survey, coordinator stakeholder survey)	N	N		I8 and I1 (some pre-post event participant surveys will be included that can supply some info)	Survey is designed to appropriately probe awareness	1M, 3D, 5F, 6E, 8F, 8G, 8I
LI 11	Responsible agencies report confidence with capacity to fulfil governance roles and responsibilities	Activities include those relating to new approvals arrangements under 1.2, such as DMP or Offsetting – intermediated SI for this	Proportion of survey respondents' confidence	Responsible agencies staff survey	Biennial		DPIE-EES (Initiative 1A lead) DPI (Initiative 8 coordinator staff survey)	N	N		I8	Agency staff survey is designed to appropriately inform indicator	1E, 1F, 1L, 9H
LI 12	Non-compliance among the community and targeted stakeholders with rules, regulations, guidelines and their responsibilities for undertaking activities related to the marine estate	Activities include those relating to: land use and management water pollution and litter  Specific rules, regulations and guidelines include:  For water quality: Conditions of development consent Poor work practices that may affect WQ – from 1.2.9 and Ag Programs Best practice approaches for diffuse source water pollution to be developed through MEMS  Targeted stakeholders include: TBC by initiative lead(s)	Proportion of noncompliant stakeholders per capita	Administrative data Litter fine data – EPA Fisheries Permit breaches  Initiative lead(s) to note if they have any other existing processes for monitoring noncompliance	Biennial		DPIE-EES (Initiative 1A Lead water pollution and EPA (litter)) DPI Initiative 1B lead (Fisheries (permits))	N	Partially	Relevant litter fine data Number of permit breaches, Litter fine data, Possibly Council compliance records	Partially. currently under funded under the Litter Prevention Unit	Information relating to Indicator and Measure is documented through administrative processes  There are a number of factors that can drive records of noncompliance. Indicator will need to be considered in this context to ensure the measurements reflect community behaviour/understanding, not other actions (e.g. increased compliance activities by authorities)	1I, 5D, 7B, 9F
LI 21	Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best	TBC	Proportion of survey respondents reporting awareness and clarity	Community survey  Targeted stakeholder survey  Initiative lead(s) to note any existing surveys that capture this measure in relation to LI specifications	Biennial		DPI (Initiative 8 lead – community survey, coordinator staff and stakeholder					Survey is designed to appropriately capture awareness and clarity	1N, 2I, 6C, 6F, 6G, 6H, 8H

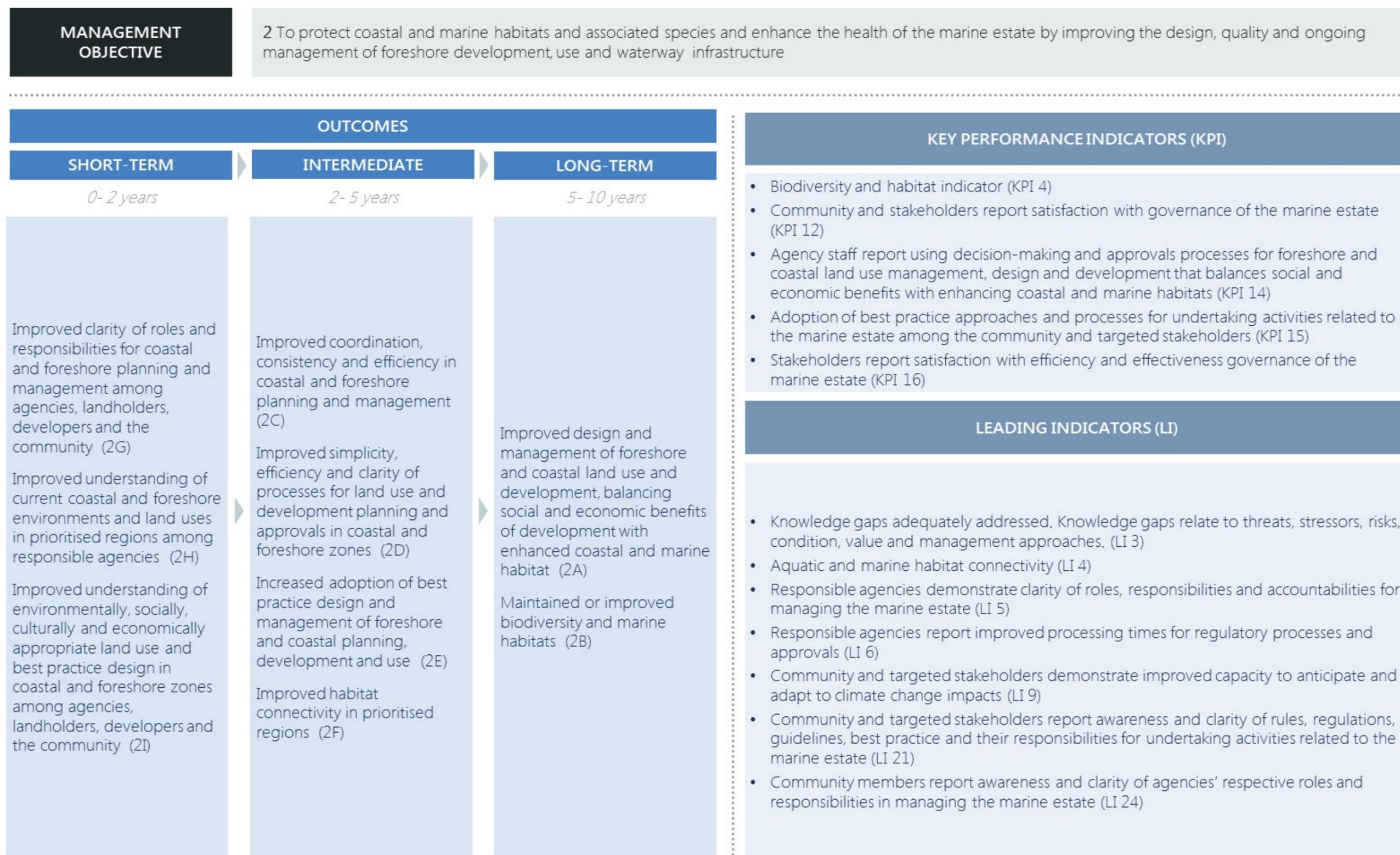
Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
	practice and their responsibilities for undertaking activities related to the marine estate						survey)						
LI 28	Area of coastal landscape managed for habitat or to reduce diffuse source water pollution	The indicator measures the areas directly improved from MEMS on-ground actions only	Area of land (Hectares)	MEMS action reports	Cumulative total of Initiative 1 on-ground work outputs - annual	With on-ground programs	DPI (Initiative 1B lead)	N	Y		I1	On-ground works do provide improved management for habitat and/or diffuse source water pollution	1J
LI 29	National Litter Index results for targeted sites in NSW	Targeted sites to be identified	Volume of litter per 1000 square metres	National Litter Index Keep Australia Beautiful	Quarterly	2005	DPIE-EES Initiative 1A lead sourced from NSW EPA	Y	yes	National Litter Index Keep Australia Beautiful	Yes, currently funded under the Litter Prevention Unit	Land based litter is a suitable proxy for litter inputs to the marine estate  Surveyed sites vary between assessments in terms of location and area  Data excludes illegally dumped materials  NLI is appropriate for measuring trendlines over time for litter in the environment. It does not account for changes in behaviour, or other influencing factors such as population changes, weather or clean-up activities	1H

## Initiative 2 - Delivering healthy coastal habitats with sustainable use and development

### Program logic



Summary of Initiative outcomes and indicators



Alignment of management actions with outcomes, and corresponding indicators

OUTCOME CODE	2I	2H	2G	2F	2E	2D	2C	2B	2A
<b>OUTCOME</b>	Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community	Improved understanding of current coastal and foreshore environments and land uses in prioritised regions among responsible agencies	Improved clarity of roles and responsibilities for coastal and foreshore planning and management among agencies, landholders, developers and the community	Improved habitat connectivity in prioritised regions	Increased adoption of best practice design and management of foreshore and coastal planning, development and use	Improved simplicity, efficiency and clarity of processes for land use and development planning and approvals in coastal and foreshore zones	Improved coordination, consistency and efficiency in coastal and foreshore planning and management	Maintained or improved biodiversity and marine habitats	Improved design and management of foreshore and coastal land use and development, balancing social and economic benefits of development with enhanced coastal and marine habitat
<b>OUTCOME TIMEFRAME</b>	<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>	<i>Long-term</i>
<b>OUTCOME INDICATORS</b>	LI 3, LI 9, LI 21	LI 3	LI 5, LI 24	LI 4	KPI 15	LI 6	KPI 12	KPI 4	KPI 14
<b>MANAGEMENT ACTIONS</b>									
2.1	Assess and manage cumulative and legacy impacts for estuary entrance modification and dredging by:							KPI 4	KPI 14
2.1 (a)	strategically dredging trained entrances to minimise the impact of interruptions to sand movement caused by entrance infrastructure and redeploying sand at erosion and sediment deprived locations					KPI 15		KPI 4	KPI 14
2.1 (b)	developing and incorporating practical design features that maximise marine habitat and recreational values into existing training walls during maintenance and upgrade works					KPI 15		KPI 4	KPI 14
2.1 (c)	auditing commercial dredging in estuaries.		LI 3			KPI 15		KPI 4	KPI 14
2.2	Assess and manage cumulative and legacy impacts on foreshore development and land use change in the coastal zone by:							KPI 4	KPI 14
2.2 (a)	reviewing and updating existing coastal design guidelines to promote best practice designs in coastal urban environments.	LI 3, LI 9, LI 21	LI 3			KPI 15	KPI 12	KPI 4	KPI 14

OUTCOME CODE	2I	2H	2G	2F	2E	2D	2C	2B	2A
OUTCOME	Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community	Improved understanding of current coastal and foreshore environments and land uses in prioritised regions among responsible agencies	Improved clarity of roles and responsibilities for coastal and foreshore planning and management among agencies, landholders, developers and the community	Improved habitat connectivity in prioritised regions	Increased adoption of best practice design and management of foreshore and coastal planning, development and use	Improved simplicity, efficiency and clarity of processes for land use and development planning and approvals in coastal and foreshore zones	Improved coordination, consistency and efficiency in coastal and foreshore planning and management	Maintained or improved biodiversity and marine habitats	Improved design and management of foreshore and coastal land use and development, balancing social and economic benefits of development with enhanced coastal and marine habitat
OUTCOME TIMEFRAME	<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>	<i>Long-term</i>
OUTCOME INDICATORS	LI 3, LI 9, LI 21	LI 3	LI 5, LI 24	LI 4	KPI 15	LI 6	KPI 12	KPI 4	KPI 14

MANAGEMENT ACTIONS										
2.2 (b)	implementing policy changes to enable adequate assessment of and response to the impact of existing infrastructure that modifies freshwater flows or drains wetlands when rezoning or when land use change is considered to remediate the legacy impacts of older infrastructure.	LI 3, LI 9, LI 21				KPI 15			KPI 4	KPI 14
2.3	Develop and implement a statewide policy for the management of coastal Crown lands (including submerged lands) in collaboration with local government Coastal Management Programs in priority areas to:								KPI 4	KPI 14
2.3 (a)	develop estuary-wide strategies that reduce red tape and inform the assessment of foreshore structures strategies for private works spanning the intertidal foreshore (such as pontoons and boat ramps)	LI 3, LI 9, LI 21		LI 5, LI 24		KPI 15	LI 6	KPI 12	KPI 4	KPI 14
2.3 (b)	develop marine vegetation management plans that maximise resilience, accommodate sea level rise (see Initiative 3), address key threats (clearing and drainage, cattle grazing, four-wheel driving on saltmarsh), facilitate rehabilitation opportunities (see Initiative 1), and reduce red tape for low impact works (e.g. mangrove trimming for safety traffic		LI 3	LI 5, LI 24			LI 6	KPI 12	KPI 4	KPI 14

OUTCOME CODE	2I	2H	2G	2F	2E	2D	2C	2B	2A
OUTCOME	Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community	Improved understanding of current coastal and foreshore environments and land uses in prioritised regions among responsible agencies	Improved clarity of roles and responsibilities for coastal and foreshore planning and management among agencies, landholders, developers and the community	Improved habitat connectivity in prioritised regions	Increased adoption of best practice design and management of foreshore and coastal planning, development and use	Improved simplicity, efficiency and clarity of processes for land use and development planning and approvals in coastal and foreshore zones	Improved coordination, consistency and efficiency in coastal and foreshore planning and management	Maintained or improved biodiversity and marine habitats	Improved design and management of foreshore and coastal land use and development, balancing social and economic benefits of development with enhanced coastal and marine habitat
OUTCOME TIMEFRAME	<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>	<i>Long-term</i>
OUTCOME INDICATORS	LI 3, LI 9, LI 21	LI 3	LI 5, LI 24	LI 4	KPI 15	LI 6	KPI 12	KPI 4	KPI 14

#### MANAGEMENT ACTIONS

	sight-lines)									
2.3 (c)	investigate estuary-wide bank protection options to inform the assessment of bank protection work proposals (including beach nourishment and grooming) and facilitate rehabilitation opportunities (see Initiative 1)	LI 3, LI 9, LI 21		LI 5, LI 24		KPI 15	LI 6		KPI 4	KPI 14
2.3 (d)	facilitate greater coordination between State and local government in the assessment of foreshore and intertidal zone development proposals						LI 6	KPI 12	KPI 4	KPI 14
2.3 (e)	maximise State and local government responses for non-compliant development and activities.					KPI 15		KPI 12	KPI 4	KPI 14
2.4	Re-establish resilient coastal floodplains and connectivity within coastal catchments by:								KPI 4	KPI 14
2.4 (a)	better aligning existing government policy and resourcing for floodplain and drainage management	LI 3, LI 9, LI 21	LI 3	LI 5, LI 24		KPI 15	LI 6	KPI 12	KPI 4	KPI 14
2.4 (b)	providing fish passage at priority weir and road crossing barrier sites in coastal catchments.				LI 4				KPI 4	KPI 14
2.5	Undertake research and monitoring to address key knowledge gaps, such as techniques to minimise the impact of trained estuary entrances, and methods for determining marine vegetation	LI 3, LI 9, LI 21	LI 3						KPI 4	KPI 14

OUTCOME CODE	2I	2H	2G	2F	2E	2D	2C	2B	2A
OUTCOME	Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community	Improved understanding of current coastal and foreshore environments and land uses in prioritised regions among responsible agencies	Improved clarity of roles and responsibilities for coastal and foreshore planning and management among agencies, landholders, developers and the community	Improved habitat connectivity in prioritised regions	Increased adoption of best practice design and management of foreshore and coastal planning, development and use	Improved simplicity, efficiency and clarity of processes for land use and development planning and approvals in coastal and foreshore zones	Improved coordination, consistency and efficiency in coastal and foreshore planning and management	Maintained or improved biodiversity and marine habitats	Improved design and management of foreshore and coastal land use and development, balancing social and economic benefits of development with enhanced coastal and marine habitat
OUTCOME TIMEFRAME	<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>	<i>Long-term</i>
OUTCOME INDICATORS	LI 3, LI 9, LI 21	LI 3	LI 5, LI 24	LI 4	KPI 15	LI 6	KPI 12	KPI 4	KPI 14
MANAGEMENT ACTIONS									
	resilience, and assess the effectiveness of the management actions within this initiative. This action is integrated into the Monitoring Program.								

## Indicator details

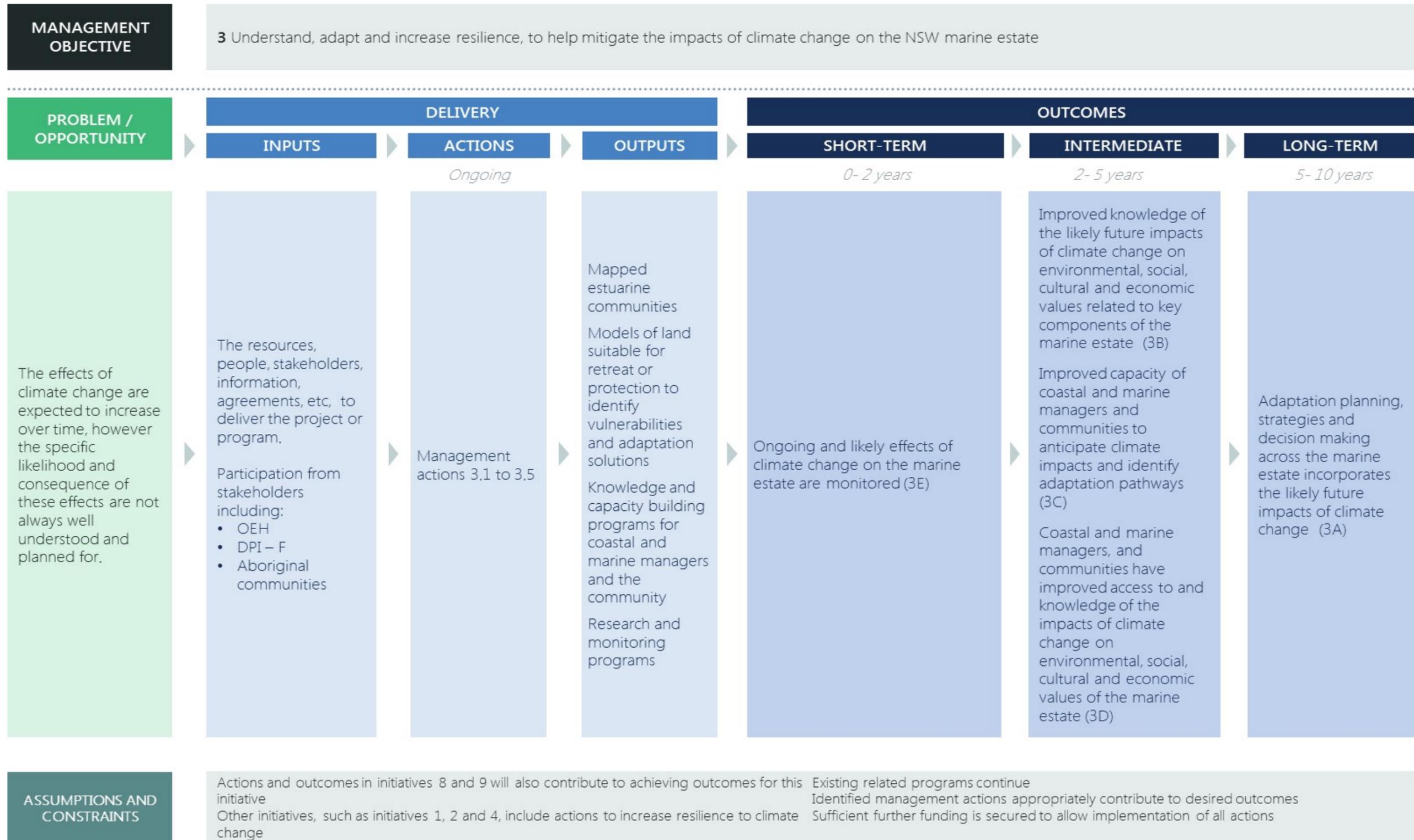
Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 4	Biodiversity and habitat indicator	Responsible agencies, including marine ecosystem researchers. Data collection will be undertaken through analysis of aerial imagery and ground-truthing across priority areas. Includes both broad-scale and some management action monitoring	Condition: Seagrass, mangrove and saltmarsh extent and distribution Seagrass patchiness/fragmentation	DPI	Varies	Based on previous mapping documented in MEMA 2017 and new mapping commencing Sept 2018	DPI	Y	Y	D(O	MEMS and consolidated revenue		1C, 2B
KPI 12	Community and stakeholders report satisfaction with governance of the marine estate	Satisfaction to be assessed through concise measures for each of the following governance themes: coordination, consistency, transparency and inclusiveness. Details for measures are provided separately.  Data collection will be undertaken through a survey of randomly selected individuals within identified stakeholder categories. Unless otherwise specified, all categories will be surveyed. Stakeholder categories are: • Responsible agencies, including marine estate managers from relevant government departments, agencies and statutory authorities; local government; and, researchers. • Targeted stakeholders (engaged community), including Aboriginal people, community interest groups, industry and peak bodies, conservation groups and avid users of the marine estate. • General community, capturing the broader public, who may have some limited interaction with or interest in the marine estate, but have the potential to become more engaged in the future	Average satisfaction rating based on Likert scale for each measure	Responsible agencies staff survey Targeted stakeholder survey	Biennial (ideally), or minimum of three (3) surveys over the life of the MEMS (to collect baseline data, progress at mid-point, end-of-strategy achievement)	Year 2	DPI (Initiative 2 lead)  DPI (Initiative 8 - coordinator staff and stakeholder survey)	N	N	NA	TBC	Sufficient funding is secured to undertaken minimum survey requirements Survey respondents are selected randomly from a within the identified stakeholder categories, rather than targeting specific individuals, groups or organisations	1D, 2C, 9A
KPI 14	Agency staff report using decision-making and approvals processes for foreshore and coastal land use management, design and development that balances social and economic benefits with enhancing coastal and marine habitats	Specific decision-making and approvals processes include: TBC by initiative leads  Targeted stakeholders include: TBC by initiative lead(s)	Proportion of survey respondents self-reporting use of identified processes	Program administrative data  Agency staff survey	Biennial		DPI (Initiative 2 lead – administrative data) DPI (Initiative 8 - coordinator staff survey)	N	N		TBC	Survey is designed to appropriately probe adoption of best practice in accordance with indicator specifications Survey is designed to support accurate self-reporting. Staff use of identified processes is effective and appropriate for balancing social and economic benefits with enhancing coastal and marine habitat	2A
KPI 15	Adoption of best practice approaches and processes for undertaking activities related to the marine estate among the	Activities include those relating to: land use and management water pollution and litter marine pests commercial fishing and aquaculture recreational fishing	Proportion of survey respondents self-reporting use of best practice approaches and processes	Community survey Targeted stakeholder survey  Initiative lead(s) to note if they have any other	Biennial		DPI (Initiative 8 lead – community survey, coordinator stakeholder	N	N		TBC	Survey is designed to appropriately probe adoption of best practice in accordance with indicator	1I, 2E, 8B

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
	community and targeted stakeholders	boating  Best practice approaches and processes include: Specific, documented approaches and processes TBC by initiative lead(s)  Targeted stakeholders include: TBC by initiative lead(s)		existing processes for monitoring adoption of best practice approaches and processes, such as program/administrative reporting or compliance activities			survey)					specifications  Survey is designed to support accurate self-reporting  Use of best practice approaches and processes is effective and appropriate	
KPI 16	Responsible agencies report satisfaction with efficiency and effectiveness governance of the marine estate	Stakeholder satisfaction will be assessed through the following measures (assessed separately for consistency within own organisation and across responsible agencies): • allocation of resources, including staff and funding, across management of the marine estate is clearly directed towards identified outcomes • systems, processes, skills, knowledge and governance and administrative arrangements allow organisations and individuals to efficiently and effectively deliver their responsibilities, with minimal duplication, unreasonable delays or unnecessary activities • responsible agencies are achieving, or on track to achieve, identified outcomes within budget Data collection will be undertaken through a survey of randomly selected individuals from responsible agencies, including marine estate managers from relevant government departments, agencies, statutory authorities and local government	Average satisfaction rating based on Likert scale for each measure	Responsible agencies staff survey	Biennial (ideally), or minimum of three (3) surveys over the life of the MEMS (to collect baseline data, progress at mid-point, end-of-strategy achievement)	Year 2	DPI (Initiative 8 coordinator)	N	N	NA	TBC	Sufficient funding is secured to undertaken minimum survey requirements Survey respondents are selected randomly from a within the identified stakeholder categories, rather than targeting specific individuals, groups or organisations	2C, 9B
LI 3	Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches	Current identified knowledge gaps include: current and appropriate future coastal and foreshore environments and land uses others identified in the TARA	Number of knowledge gaps with status changing from 'inferred' to 'adequate'	Review against TARA	2, 5 & 10 years		DPI / DPIE-EES ( Research Leader, Marine Ecosystems (DPI) / Senior Team Leader – Estuaries and Catchments Science (DPIE-EES) )		Y	TARA		Knowledge gaps are reviewed through review of the TARA	1F, 2H, 2I, 3B, 3D, 3E, 8F, 8G
LI 4	Aquatic and marine habitat connectivity	Types of habitats include all water dependent ecosystems in coastal catchment draining to marine estate, e.g. Riparian vegetation Ground water dependent ecosystems (surface and sub-surface) Key Fish Habitat Wetlands	Waterway length opened up (km)		Annual		DPI (Initiative 2 lead)						1G, 1J, 2F
LI 5	Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate	Activities include those relating to: foreshore development and use	Proportion of survey respondents demonstrating clarity	Responsible agencies staff survey Targeted stakeholder survey	Biennial		DPI (Initiative 2 lead)  DPI (Initiative 8 coordinator staff and	N	N	NA	TBC	Survey is designed to appropriately probe clarity of roles and responsibly across aspects of marine	1D, 1E, 1K, 2G, 5F, 5G, 9H

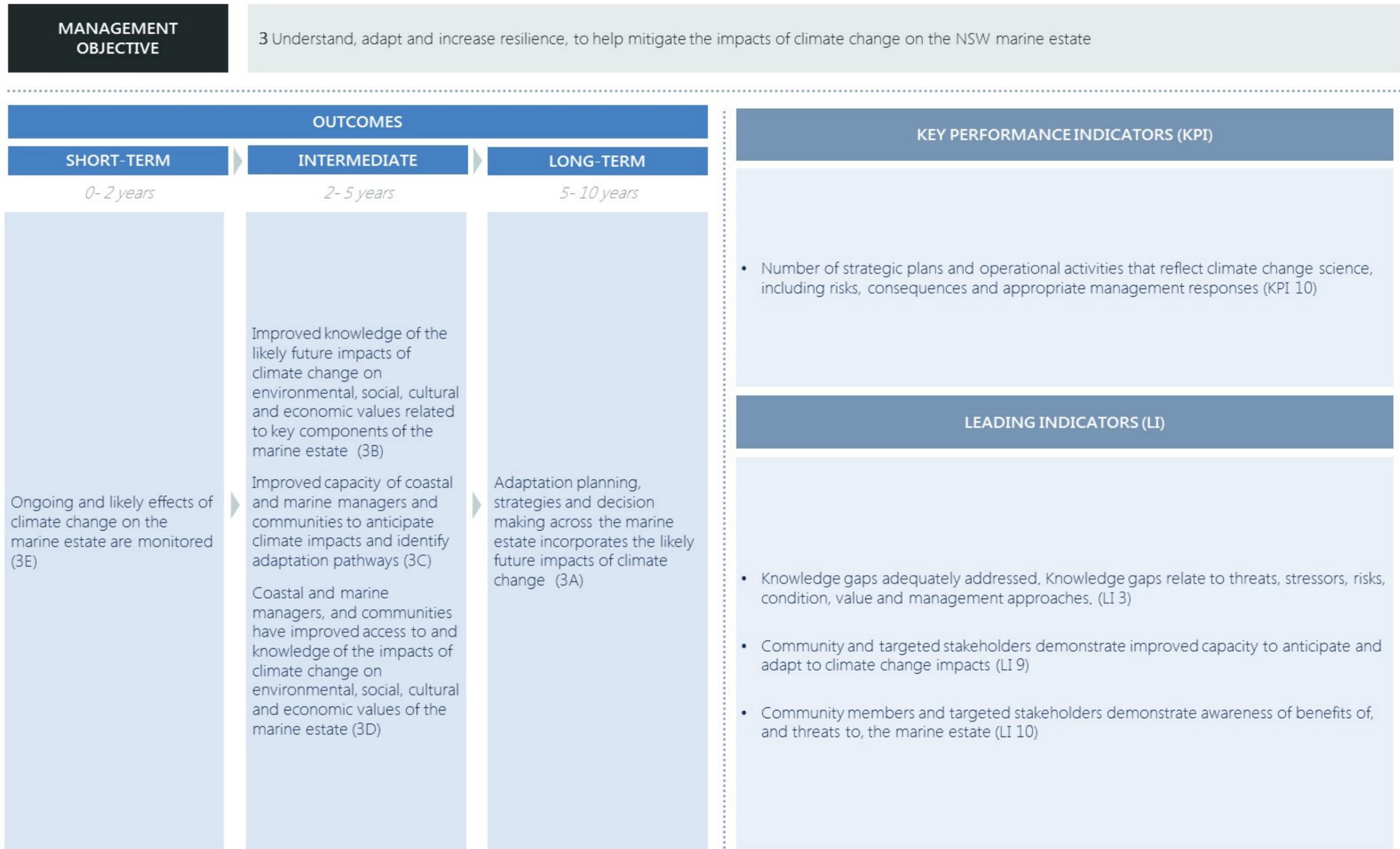
Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
							stakeholder survey)					estate management reflected in the initiatives	
LI 6	Responsible agencies report improved processing times for regulatory processes and approvals	Regulatory processes and approvals such as: land use and development planning and approvals in coastal and foreshore zones Crown land consent for work on crown land Marine park permits DPI s.37 permits Commercial fishing approvals Aquaculture Rec fishing DPIE-EES to confirm Transport to confirm  Responsible agencies include: councils All MEMA agencies and Departments within their cluster	Reported change in processing times	Administrative data Responsible agencies staff survey	Biennial		DPI (Initiative 2 lead - administrative)  DPI (Initiative 8 coordinator staff survey)	N	Some but varied – need all agencies to advise.		Nil	Information relating to Indicator and Measure is documented through administrative processes Survey is appropriately designed to inform indicator	2D, 9C, 9G
LI 9	Community and targeted stakeholders demonstrate improved capacity to anticipate and adapt to climate change impacts	Baseline of capacity and increasing numbers measures to be determined through the climate change engagement actions and sub-actions (3.3) on climate engagement.  Targeted stakeholders include: Floodplain industries and landholders Local Gov (with responsibilities on coastal floodplains)	Number of permit applications for works in floodplains and low-lying areas that give consideration to potential climate change impacts	Details in Floodplain infrastructure works requests	TBD		DPI	N	N		TBC	Survey is designed to appropriately reflect self-assessed capacity	2I, 3C
LI 21	Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate	Activities include those relating to: land use and management  Specific rules, regulations, guidelines and best practice approaches include: Floodplain drainage works approvals)  Targeted stakeholders include: Cane Industry Local Gov Other Gov agencies Drainage Unions Other floodplain landholders and industries	Proportion of survey respondents reporting awareness and clarity	Community survey  Targeted stakeholder survey  Initiative lead(s) to note any existing surveys that capture this measure in relation to LI specifications	Biennial		DPI (Initiative 8 lead – community survey, coordinator stakeholder survey)	N	N			Survey is designed to appropriately capture awareness and clarity	1N, 2I, 6C, 6F, 6G, 6H, 8H
LI 24	Community members report awareness and clarity of agencies' respective roles and responsibilities in managing the marine estate		Proportion of survey respondents reporting awareness and clarity	Community survey	Biennial		DPI (Initiative 8 lead)					Survey is designed to appropriately probe awareness	2G, 8I, 9J

### Initiative 3 - Planning for climate change

Program logic



Summary of Initiative outcomes and indicators



Alignment of management actions with outcomes, and corresponding indicators

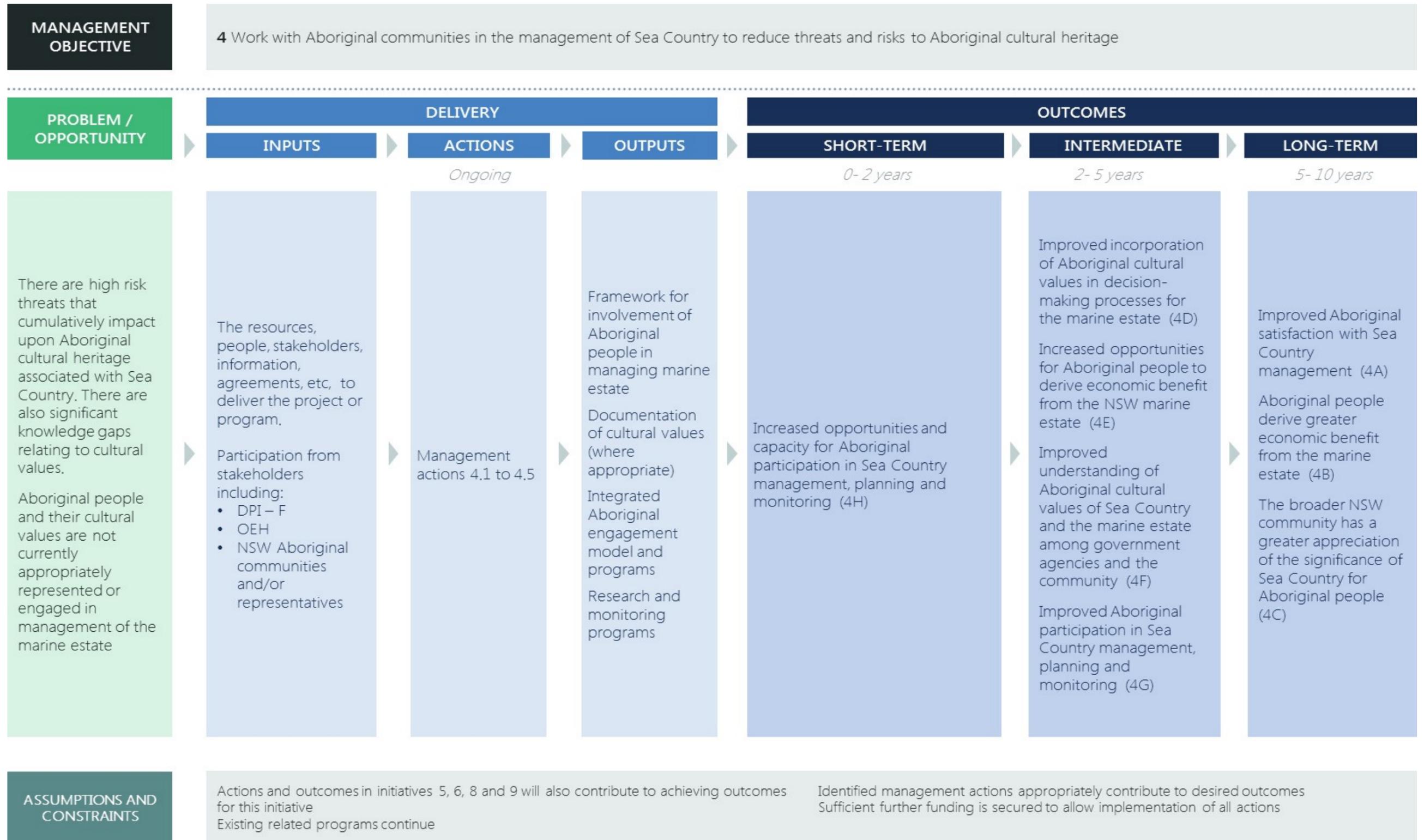
OUTCOME CODE		3E	3D	3C	3B	3A
OUTCOME		Ongoing and likely effects of climate change on the marine estate are monitored	Coastal and marine managers, and communities have improved access to and knowledge of the impacts of climate change on environmental, social, cultural and economic values of the marine estate	Improved capacity of coastal and marine managers and communities to anticipate climate impacts and identify adaptation pathways	Improved knowledge of the likely future impacts of climate change on environmental, social, cultural and economic values related to key components of the marine estate	Adaptation planning, strategies and decision making across the marine estate incorporates the likely future impacts of climate change
OUTCOME TIMEFRAME		<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>
OUTCOME INDICATORS		LI 3	LI 3, LI 10	LI 9	LI 3	KPI 10
MANAGEMENT ACTIONS						
3.1	Enhance mapping of estuarine communities (such as saltmarsh and mangroves) to identify those communities most at threat from sea level rise under expected climate change scenarios and use this information to model areas of land suitable for retreat and those that should be prioritised for protection. Apply this information in decision making.			LI 9	LI 3	KPI 10
3.2	Provide support to coastal and marine managers to facilitate consistent application of the NSW and Australian Capital Territory (ACT) Regional Climate Modelling (NARClM) projections in marine management.	LI 3	LI 3, LI 10	LI 9		KPI 10
3.3	Build the knowledge and capacity of coastal and marine managers and the community to increase resilience to climate change in the marine estate through strategic adaptation planning and management.			LI 9		KPI 10
3.4	Investigate the impacts of climate change on Aboriginal cultural heritage values in the marine estate, and implement strategies to reduce or adapt to this risk. This action is linked to Initiative 4.		LI 3, LI 10		LI 3	KPI 10
3.5	Research and monitor the effects of climate change on the marine estate to fill knowledge gaps and inform future management actions, focusing on marine biodiversity and coastal communities. This action will be integrated into the Monitoring Program.	LI 3			LI 3	KPI 10

## Indicator details

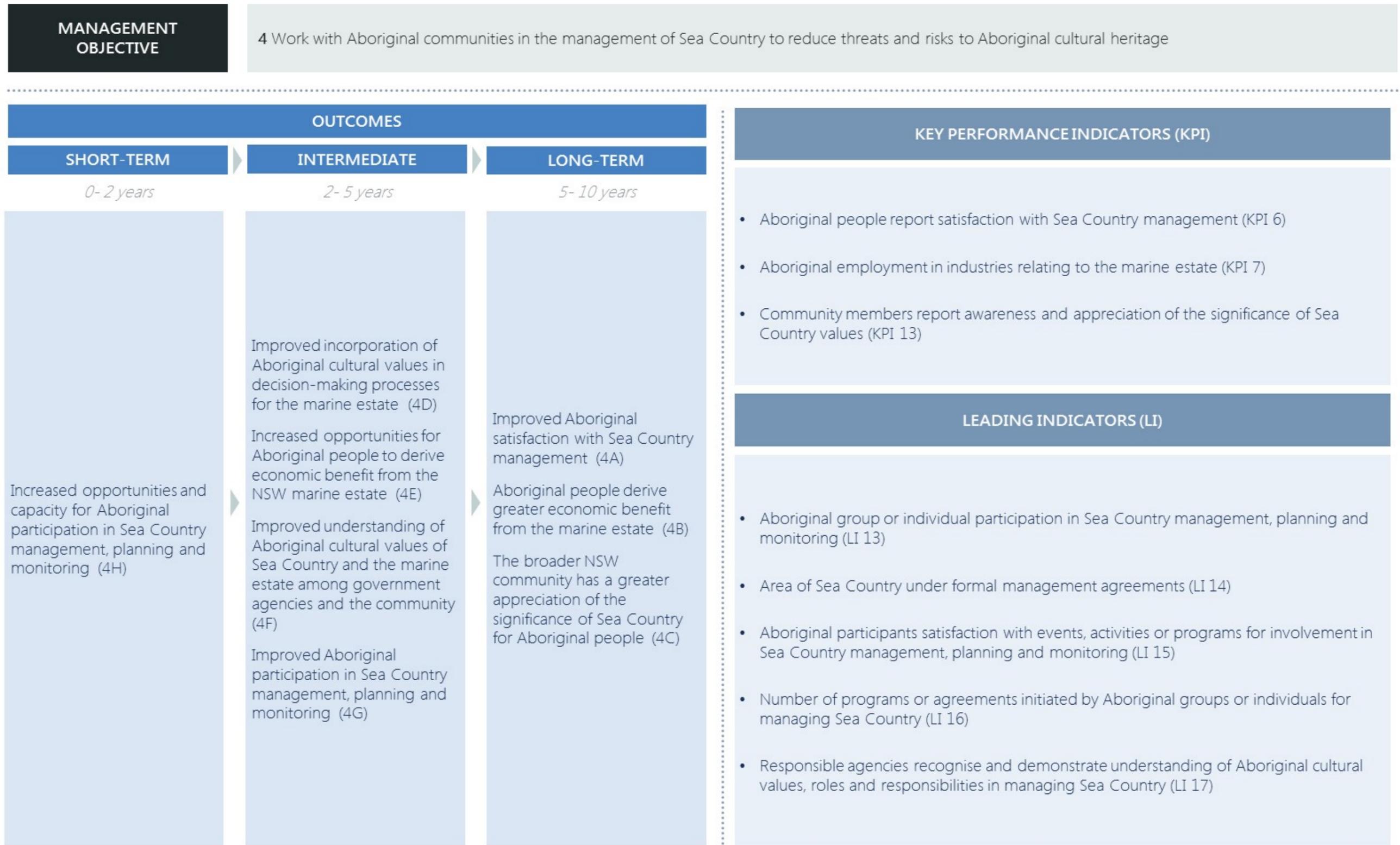
Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 10	Number of strategic plans and operational activities that reflect climate change science, including risks, consequences and appropriate management responses	Strategic plans and operational activities include: Coastal Management Plans Scoping studies TBC by initiative lead(s)	Number of strategies, plans, processes and other activities that reflect likelihood and consequence of climate change risks	Audit of sample of specified strategic plans and operational activities  Initiative lead(s) to note if they have any other existing processes for monitoring content of specified strategic plans or operational activities, such as program/administrative reporting	5 years, 10 years		DPI / DPIE-EES (Senior Team Leader, Cultural and Ecosystem-based Adaptation (DPIE-EES))	N	N	CMP audit? Marine Park POM review		Audit is designed to appropriately inform indicator  That climate change risks considered are relevant to specific strategy, plan, process or activity	3A
LI 3	Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches	Current identified knowledge gaps include: likely future impacts of climate change others identified in the TARA	Number of knowledge gaps with status changing from 'inferred' to 'adequate'	Review against TARA	2, 5 & 10 years	Stage 1	DPI / DPIE-EES ( Research Leader, Marine Ecosystems (DPI) / Senior Team Leader – Estuaries and Catchments Science (DPIE-EES) )		Y	TARA		Knowledge gaps are reviewed through review of the TARA	1F, 2H, 2I, 3B, 3D, 3E, 8F, 8G
LI 9	Community and targeted stakeholders demonstrate improved capacity to anticipate and adapt to climate change impacts	Baseline of capacity and increasing numbers measures to be determined through the climate change engagement actions and sub actions (3.3) on climate engagement.  Targeted stakeholders include: NSW Government agencies, local government	Number of community members and targeted stakeholders demonstrating improved capacity from engagement activities	Targeted stakeholder survey Post event/activity participant feedback survey	Once		DPIE-EES (Senior Team Leader, Cultural and Ecosystem-based Adaptation (DPIE-EES)) and DPI (Initiative 3 lead)	N	N	N		Survey is designed to appropriately reflect self-assessed capacity	2I, 3C
LI 10	Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate	Includes threats identified in the TARA relating to impacts of climate change. Targeted stakeholders include: TBC by initiative lead(s)	Proportion of survey respondents demonstrating awareness	Community survey Targeted stakeholder surveys	Biennial		DPI (Initiative 8 lead – community survey, coordinator stakeholder survey)	N	N		18	Survey is designed to appropriately probe awareness	1M, 3D, 5F, 6E, 8F, 8G, 8I

## Initiative 4 - Protecting the Aboriginal cultural values of the marine estate

### Program logic



Summary of Initiative outcomes and indicators



Alignment of management actions with outcomes, and corresponding indicators

OUTCOME CODE		4H	4G	4F	4E	4D	4C	4B	4A
OUTCOME		Increased opportunities and capacity for Aboriginal participation in Sea Country management, planning and monitoring	Improved Aboriginal participation in Sea Country management, planning and monitoring	Improved understanding of Aboriginal cultural values of Sea Country and the marine estate among government agencies and the community	Increased opportunities for Aboriginal people to derive economic benefit from the NSW marine estate	Improved incorporation of Aboriginal cultural values in decision-making processes for the marine estate	The broader NSW community has a greater appreciation of the significance of Sea Country for Aboriginal people	Aboriginal people derive greater economic benefit from the marine estate	Improved Aboriginal satisfaction with Sea Country management
OUTCOME TIMEFRAME		<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>	<i>Long-term</i>	<i>Long-term</i>
OUTCOME INDICATORS		LI 14, LI 16	LI 13, LI 14, LI 15, LI 16	KPI 13, LI 17	KPI 7	LI 13, LI 14	KPI 13	KPI 7	KPI 6
MANAGEMENT ACTIONS									
4.1	Work with Aboriginal communities to evaluate current arrangements for Aboriginal involvement in Sea Country management and decision-making and establish and implement a framework to ensure the involvement of Aboriginal people is effective and appropriate.	LI 14, LI 16	LI 13, LI 14, LI 15, LI 16		KPI 7		KPI 13	KPI 7	KPI 6
4.2	Work with Aboriginal communities to identify the cultural values of Sea Country to improve the incorporation of values into decision-making on the marine estate.			KPI 13, LI 17		LI 13, LI 14	KPI 13	KPI 7	KPI 6
4.3	Implement an integrated Aboriginal engagement model to increase Aboriginal participation in Sea Country management, planning and monitoring through employment and training of Aboriginal people at a regional and local level.	LI 14, LI 16	LI 13, LI 14, LI 15, LI 16				KPI 13	KPI 7	KPI 6
4.4	Explore and assist Aboriginal communities to implement opportunities for economic development in the NSW marine estate and improved representation of Aboriginal cultural values in NSW marine parks				KPI 7	LI 13, LI 14	KPI 13	KPI 7	KPI 6
4.5	Integrate research and monitoring into the Monitoring Program to address key knowledge gaps and to assess management effectiveness in reducing threats and risks to Aboriginal cultural heritage.			KPI 13, LI 17		LI 13, LI 14	KPI 13	KPI 7	KPI 6

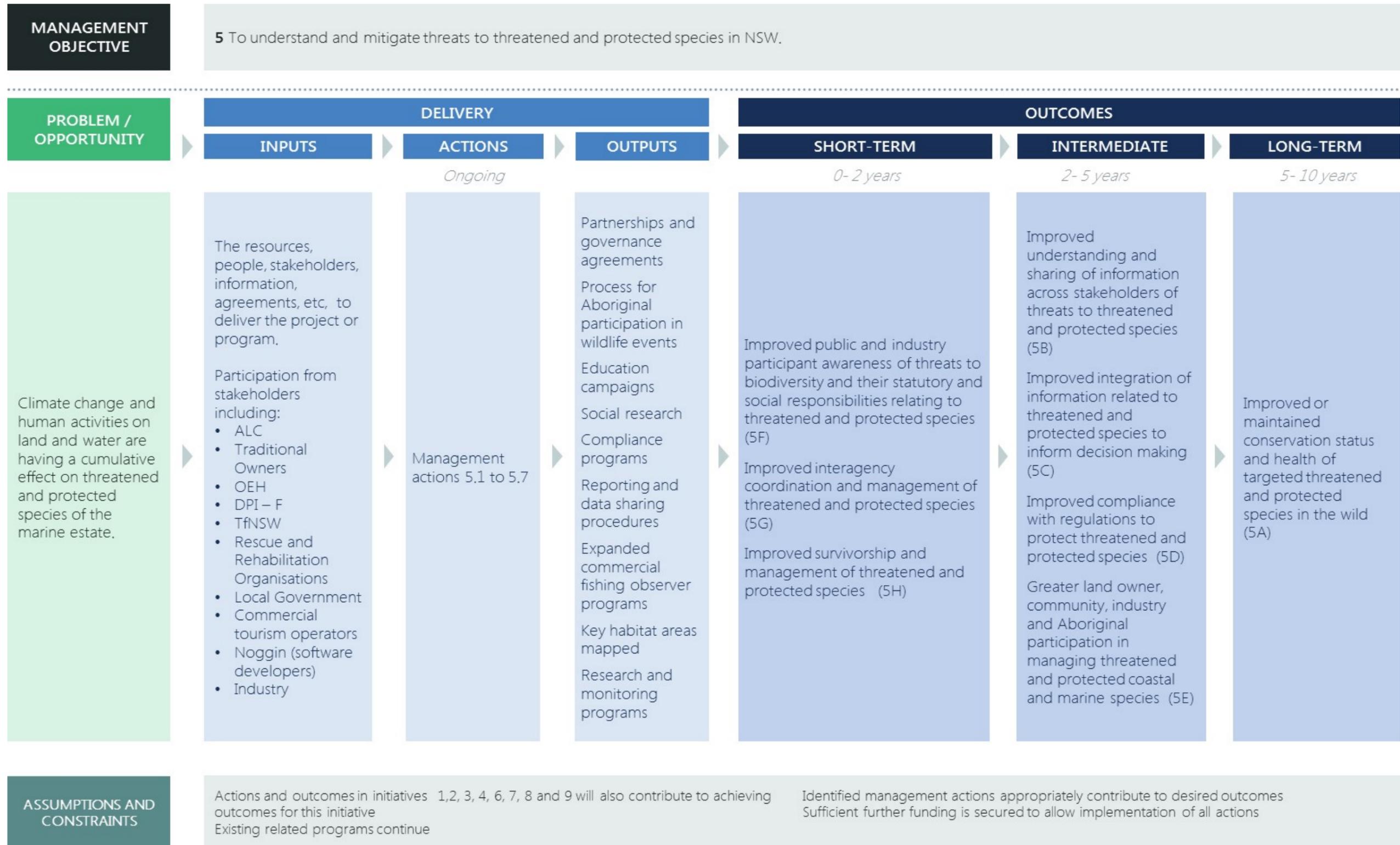
## Indicator details

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 6	Aboriginal people report satisfaction with Sea Country management	KPI to focus on satisfaction with processes  Measurement of this KPI will focus on those involved in programs, initiatives or activities that result from the framework for effective and appropriate Aboriginal involvement in Sea Country management and decision-making, and the integrated Aboriginal engagement model for participation in Sea Country management, planning and monitoring, both to be developed through Initiative 4	Average satisfaction rating based on Likert scale	Targeted stakeholder survey	Biennial		DPI (Initiative 4 lead)	N Survey and evaluation forms based on the Likert scale to be developed	N	NA	Initiative 4	Survey is designed to appropriately probe respondent satisfaction	4A
KPI 7	Aboriginal employment in industries relating to the marine estate	Data to be extracted for selected industries for populations located in coastal LGAs  Industries reflect categories measured through ABS census data and include, but are not limited to: 02 – Aquaculture 041 – Fishing 112 Seafood Processing H Accommodation and Food Services 501 Scenic and Sightseeing Transport 8922 Nature Reserves and Conservation Parks Operation  Indicator also to include employment of Aboriginal people in related roles in the NSW public sector	Number of Aboriginal people employed in industries related to the marine estate  Number of Aboriginal people employed in government roles management of the marine estate	ABS data  NSW public service employment data	Census data is 5-yearly, or alternatively, customised data can be purchased from ABS  Public service data annual		DPI (Initiative 4 lead)	Partial (Aboriginal employment statistics maintained across DPI & public sector)  May need to partner with LALCs, Native Title Prescribed Body Corporates	Y	<a href="http://www.abs.gov.au/websitedbs/D3310114.nsf/Home/Census?OpenDocument&amp;ref=topBar">http://www.abs.gov.au/websitedbs/D3310114.nsf/Home/Census?OpenDocument&amp;ref=topBar</a>  NSW Public Service Workplace Profile reports	Initiative 4	Employment in identified sectors in coastal regions is a suitable proxy for employment in industries relating to the marine estate  Raw data from the NSW public service workforce profile report can be obtained	4B, 4E
KPI 13	Community members report awareness and appreciation of the significance of Sea Country values		Proportion of survey participants reporting awareness and appreciation	Community survey	Biennial		DPI (Initiative 8 lead)	No. May need a community survey to establish a baseline of awareness and appreciation of cultural importance of Sea Country in the non-Aboriginal community	N		Initiative 8	Survey is designed to appropriately probe awareness and appreciation	4C, 4F
LI 13	Aboriginal group or individual participation in Sea Country management, planning and monitoring	Includes participation in relation to:  representation on marine estate advisory committees Aboriginal Advisory Groups related to the marine estate MOUs in relation to the marine estate events, activities or programs	Number of Aboriginal representatives on marine estate advisory committees  Number of Aboriginal Advisory Groups related to the marine estate  Number of MOUs/CRUAs/LMPs relating to the marine estate	Administrative data	Annual		DPI (Initiative 4 lead)	Y number of participants, projects, budget etc. all being recorded during implementation	Baseline has been collected since the initiative commenced		Initiative 4	Information relating to Indicator and Measure is documented through administrative processes	4D, 4G, 5E

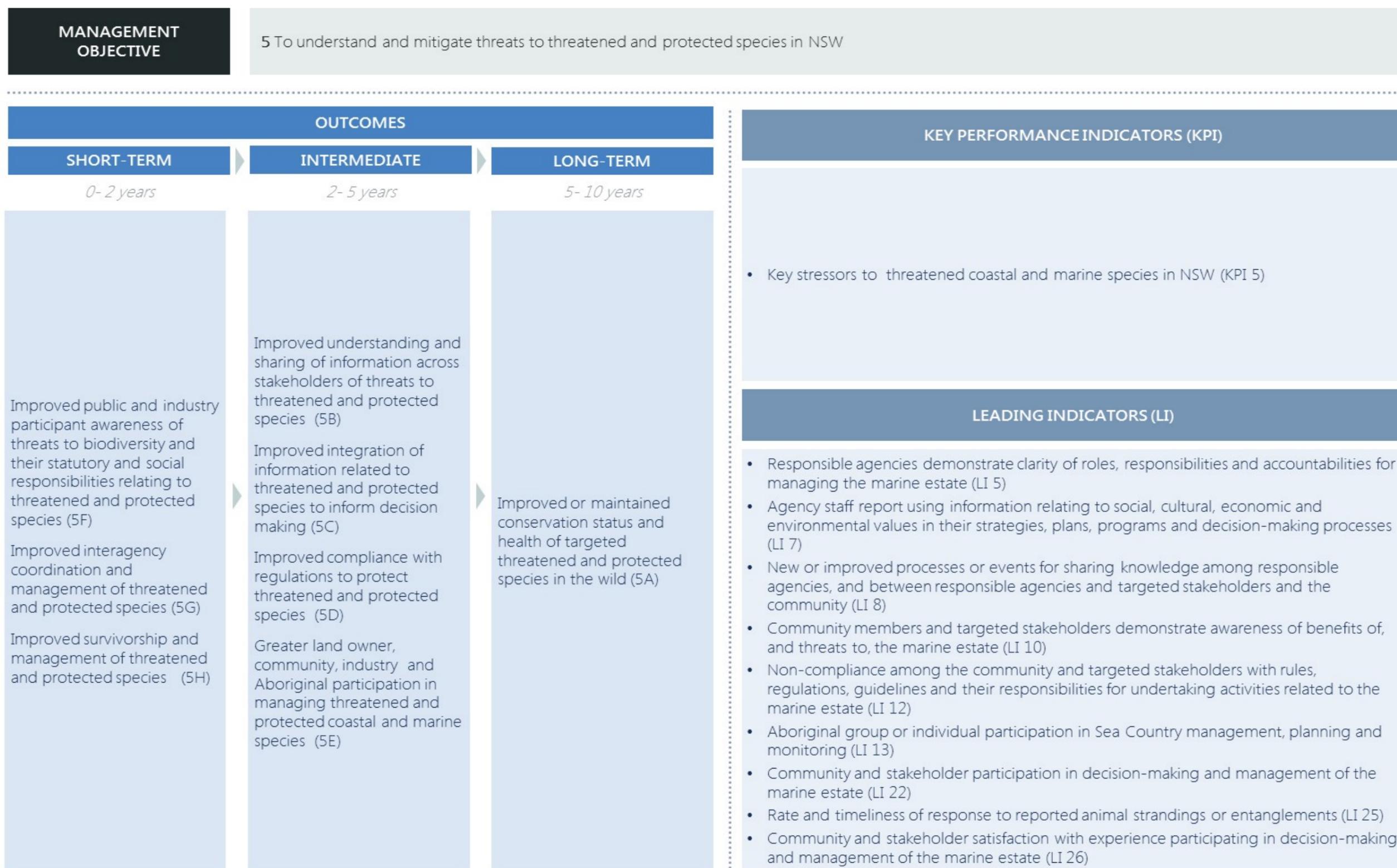
Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
			Number of Aboriginal participants in events, activities or programs  Number of marine mammal strandings responses that include Aboriginal representatives  Number of Future Act referrals										
LI 14	Area of Sea Country under formal management agreements	Agreements include: Memorandums of Understanding (MOUs) Cultural Resource Use Agreements (CRUAs) Local Management Plans (LMPs) Indigenous Land Use Agreements (ILUAs) Native Title Determinations Land and Sea Country Plans	Area and number of land/waters covered by formal agreements	Joint management plans MOUs Cultural Resource Use Agreements  Administrative data	Annual		DPI (Initiative 4 lead)	Y existence of formal agreements recorded over time. ILUAs, MOUs, CRUAs, NT determinations	Yes	Formalised ILUAs, MOUs, National NT Registrar	Initiative 4	Information relating to Indicator and Measure is documented through administrative processes	4D, 4G, 4H
LI 15	Aboriginal participants satisfaction with events, activities or programs for involvement in Sea Country management, planning and monitoring	Measurement of this indicator will focus on those involved in programs or activities directly arising from the initiative	Average satisfaction rating based on Likert scale	Post event/activity participant feedback survey	Ongoing following conclusion of specific events, activities or programs		DPI (Initiative 4 lead)	Video logs of each activity including participant commentary and interviews.  Evaluation form post activity	N		Initiative 4	Survey is designed to appropriately probe satisfaction	4G
LI 16	Number of programs or agreements initiated by Aboriginal groups or individuals for managing Sea Country	Programs or agreements include: Memorandums of Understanding (MOUs) Cultural Resource Use Agreements (CRUAs) Local Management Plans (LMPs) Indigenous Land Use Agreements (ILUAs) Native Title Determinations	Number of programs or agreements initiated	Administrative data	Annual		DPI (Initiative 4 lead)	Links to SI15 (area metric vs numerical metric)	Y	Formalised ILUAs, MOUs, National NT Registrar	Initiative 4	Information relating to Indicator and Measure is documented through administrative processes	4G, 4H
LI 17	Responsible agencies recognise and demonstrate understanding of Aboriginal cultural values, roles and responsibilities in managing Sea Country	Includes: Areas of responsibilities and geographic regions native title status	Proportion of survey respondents demonstrating clarity	Agency staff survey Administrative data	Biennial		DPI (Initiative 4 lead)	N	N		Initiative 4	Survey is designed to appropriately probe clarity	4F

## Initiative 5 - Reducing impacts on threatened and protected species

### Program logic



Summary of Initiative outcomes and indicators



Alignment of management actions with outcomes, and corresponding indicators

OUTCOME CODE		5H	5G	5F	5E	5D	5C	5B	5A
OUTCOME		Improved survivorship and management of threatened and protected species	Improved interagency coordination and management of threatened and protected species	Improved public and industry participant awareness of threats to biodiversity and their statutory and social responsibilities relating to threatened and protected species	Greater land owner, community, industry and Aboriginal participation in managing threatened and protected coastal and marine species	Improved compliance with regulations to protect threatened and protected species	Improved integration of information related to threatened and protected species to inform decision making	Improved understanding and sharing of information across stakeholders of threats to threatened and protected species	Improved or maintained conservation status and health of targeted threatened and protected species in the wild
OUTCOME TIMEFRAME		Short-term	Short-term	Short-term	Intermediate	Intermediate	Intermediate	Intermediate	Long-term
OUTCOME INDICATORS		LI 25	LI 5	LI 5, LI 10	LI 13, LI 22, LI 26	LI 12	LI 7	LI 8	KPI 5
MANAGEMENT ACTIONS									
5.1	Improve strategic planning and coordination for marine threatened and protected species programs across NSW to address priority threats.		LI 5						KPI 5
5.2	Strengthen partnerships for marine threatened and protected species conservation responses to ensure effective management, including:								KPI 5
5.2 (a)	establishing governance arrangements	LI 25	LI 5						KPI 5
5.2 (b)	strengthening interagency capabilities	LI 25	LI 5						KPI 5
5.2 (c)	formalising partnerships for rescue, rehabilitation and notifications	LI 25	LI 5						KPI 5
5.2 (d)	establishing a process for Aboriginal knowledge holders to participate in marine wildlife events with culturally significant species, e.g. marine mammal strandings and carcass management (see Initiative 4).				LI 13, LI 22, LI 26				KPI 5
5.3	Improve the awareness of threats to threatened and protected species and compliance with regulations to reduce impacts through education campaigns, social research (see Initiative 8) and increased compliance.			LI 5, LI 10		LI 12			KPI 5
5.4	Improve reporting and data sharing on threatened and protected species threats to support evidence-based decision-making, including linking and enhancing existing databases, raising awareness of reporting pathways, actively analysing and communicating data more regularly, and integrating research and data into the Monitoring Program.						LI 7	LI 8	KPI 5

OUTCOME CODE		5H	5G	5F	5E	5D	5C	5B	5A
OUTCOME		Improved survivorship and management of threatened and protected species	Improved interagency coordination and management of threatened and protected species	Improved public and industry participant awareness of threats to biodiversity and their statutory and social responsibilities relating to threatened and protected species	Greater land owner, community, industry and Aboriginal participation in managing threatened and protected coastal and marine species	Improved compliance with regulations to protect threatened and protected species	Improved integration of information related to threatened and protected species to inform decision making	Improved understanding and sharing of information across stakeholders of threats to threatened and protected species	Improved or maintained conservation status and health of targeted threatened and protected species in the wild
OUTCOME TIMEFRAME		<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>
OUTCOME INDICATORS		LI 25	LI 5	LI 5, LI 10	LI 13, LI 22, LI 26	LI 12	LI 7	LI 8	KPI 5
MANAGEMENT ACTIONS									
5.5	Expand existing observer programs, including the use of new technologies to high and moderate risk commercial fisheries to better understand threats associated with bycatch and interactions with threatened and protected species.	LI 25		LI 5, LI 10			LI 7		KPI 5
5.6	Understand and reduce the impacts of threatened and protected species habitat modification through mapping of key habitat areas, embedding rehabilitation and conservations actions in planning processes, and collaborating with land owners and the community to protect species and habitats.			LI 5, LI 10	LI 13, LI 22, LI 26				KPI 5
5.7	Develop and implement research programs to address key knowledge gaps associated with cumulative threats to threatened and protected species and the effectiveness of management interventions. This action will be integrated into the Monitoring Program.						LI 7	LI 8	KPI 5

## Indicator details

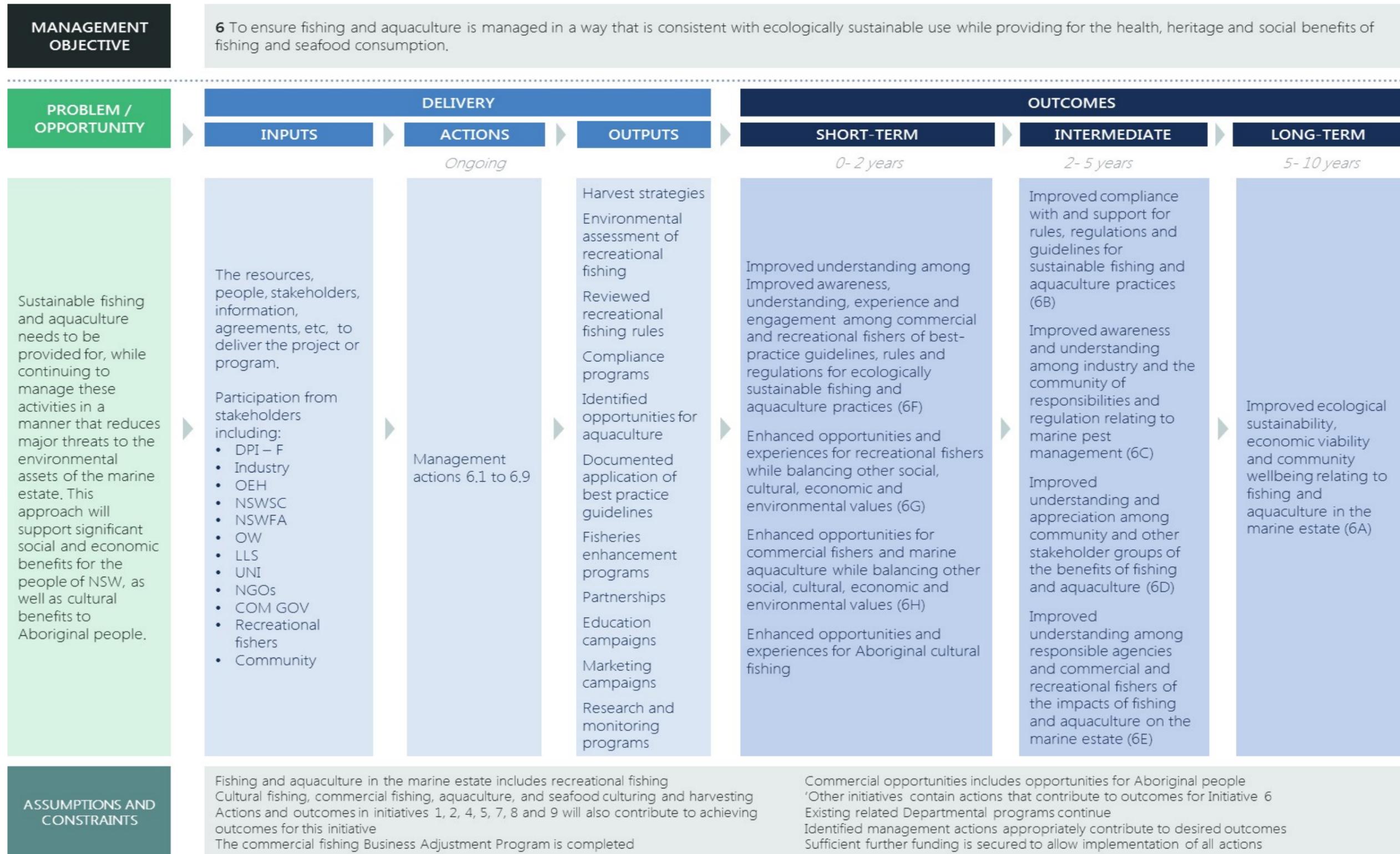
Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 5	Key stressors to threatened coastal and marine species in NSW	Includes coastal and marine species listed as threatened and protected under the Biodiversity Conservation Act 2016 and threatened under the Fisheries Management Act 1994.  Key stressors are identified in the TARA and Strategy.  Monitoring of active threats will be completed across initiatives	Examples include: A reduction in the rate of reported whale entanglements in commercial fishing gear; Proportion of compliant whale and dolphin watching operators per compliance operation; A reduction in the rate of non-compliance (FM Act species)	Elements database, rescue and rehabilitation sector, compliance campaign reports; Nautilus database and information from Fisheries Compliance Officers (FM Act)	Ongoing	Commenced	DPIE-EES (Initiative 5 lead) in collaboration with DPI (for FM Act species)	Y/N – species dependent	Y/N – species dependent	Records of marine wildlife events and incidents (BC Act species) captured in Elements. Annual returns from the NPWS licensed Rescue and Rehabilitation Sector. FM Act threatened species compliance infringement notices in Nautilus	DPIE and MEMS	All entanglements and compliance infringement notices are currently being recorded and will continue to be recorded in Elements, local NPWS area files or Nautilus. Humpback Whale population recovery will continue at 11% p.a. Reduction will be measured from NSW commercial fishing gear	5A
LI 5	Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate	Activities include those relating to: general management of the marine estate water quality and litter management foreshore development and use threatened and protected species  Targeted stakeholders include: Local councils State government agencies	Proportion of survey respondents demonstrating clarity	Responsible agencies staff survey	Biennial	TBC	DPI (Initiative 8 coordinator)	N	N	NA	TBC	Survey is designed to appropriately probe clarity of roles and responsibility across aspects of marine estate management reflected in the initiatives	1D, 1E, 1K, 2G, 5F, 5G, 9H
LI 7	Agency staff report using information relating to social, cultural, economic and environmental values in their strategies, plans, programs and decision-making processes	Includes incorporation throughout planning, implementation and reporting of: community objectives and values Aboriginal objectives, values, rights and interests unintended consequences of programs and plans economic benefits/costs  Relevant strategies, plans, programs and processes include (but not limited to): managing threatened and protected species	Rate of agency staff reporting use of information relating to social, cultural, economic and environmental values	Responsible agencies staff survey	Biennial	TBC	DPI (Initiative 8 coordinator)	N	N	NA	TBC	Survey is designed to appropriately probe decision-making processes used by agency staff to develop agency programs and plans. Survey to also determine staff clarity on social, cultural, economic and environmental evidence	5C, 8C, 8E
LI 8	New or improved processes or events for sharing knowledge among responsible agencies, and between responsible agencies and targeted stakeholders and the community	Includes knowledge sharing in relation to: threatened and protected species impacts of climate change	Number of new or improved processes, networks or events	Agency staff survey Administrative data	TBD	TBC	DPIE-EES (Initiative 5 lead administrative data)  DPI (Initiative 8 coordinator staff survey)	N	N	NA	TBC	Knowledge sharing processes and events are documented through project/program management and administrative systems Networks can be measured	5B, 9D, 9I
LI 10	Community members and targeted stakeholders demonstrate	Includes threats relating to threatened and protected species. Targeted stakeholders include the community, state and local government, rescue and rehabilitation groups, fishers,	Proportion of survey respondents demonstrating awareness	Community survey Targeted stakeholder survey	Biennial	TBC	DPI (Initiative 8 lead – community survey, coordinator)	N	N	NA	I8 community, TBC stakeholders	Survey is designed to appropriately probe awareness	1M, 3D, 5F, 6E, 8F, 8G, 8I

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
	awareness of benefits of, and threats to, the marine estate	land owners, tourism operators, recreational boaters					stakeholder survey)						
LI 12	Non-compliance among the community and targeted stakeholders with rules, regulations, guidelines and their responsibilities for undertaking activities related to the marine estate	<p>Activities include those relating to threatened and protected species under the BC Act and threatened species under the FM Act.</p> <p>Specific rules, regulations and guidelines include: Approach distances to marine mammals.TBC by initiative lead(s)</p> <p>Targeted stakeholders include: Commercial wildlife watching tourism operators, fishers, recreational boaters, general members of the public</p>	Proportion of non-compliant stakeholders per capita	<p>documentation from compliance operations</p> <p>Surveys</p> <p>Administrative data</p>	Biennial		DPIE-EES (Initiative 5 lead)	N	N	NA	Funding required	<p>Information relating to Indicator and Measure is documented through administrative processes</p> <p>There are a number of factors that can drive records of noncompliance. Indicator will need to be considered in this context to ensure the measurements reflect community behaviour/understanding, not other actions (e.g. increased compliance activities by authorities)</p>	1I, 5D, 7B, 9F
LI 13	Aboriginal group or individual participation in Sea Country management, planning and monitoring	Includes participation in relation to: representation on marine estate advisory committees Aboriginal Advisory Groups related to the marine estate MOUs in relation to the marine estate events, activities or programs Number of marine mammal strandings responses that include Aboriginal representatives	<p>Number of Aboriginal representatives on marine estate advisory committees</p> <p>Number of Aboriginal Advisory Groups related to the marine estate</p> <p>Number of MOUs in relation to the marine estate</p> <p>Number of Aboriginal participants in events, activities or programs</p> <p>Extent of coastline with cultural protocols developed and in effect for marine strandings</p>	Administrative data	Annual	TBC	DPI (Initiative 5 lead)				Initiative 4	Information relating to Indicator and Measure is documented through administrative processes	4D, 4G, 5E
LI 22	Community and stakeholder participation in decision-making and management of the marine estate	<p>Includes decision-making and management activities relating to )habitat modification, local Aboriginal community involvement in marine wildlife events, planning approvals.</p> <p>Stakeholders include Aboriginal communities, land owners, community, industry, state and local government</p>	<p>Number of community and stakeholder participants in decision-making processes</p> <p>Number of community and stakeholder participants in marine estate management activities or events</p>	Administrative data	Annual	TBC	DPIE-EES (Initiative 5 lead)	N	Y	Number of community and stakeholder participants in workshops, meetings and preparedness days	Initiative 4 for local Aboriginal involvement in marine wildlife events. Additional funding required for other components	Information relating to Indicator and Measure is documented through administrative processes	5E, 8D, 8H, 9E
LI 25	Rate and timeliness of response to reported animal strandings or entanglements	Includes individuals from identified species that are attended to following an incident	Rate of response to reported animal strandings or entanglements	Administrative data	Annual		DPIE-EES (Initiative 5 lead)					Information relating to Indicator and Measure is documented through administrative processes	5H

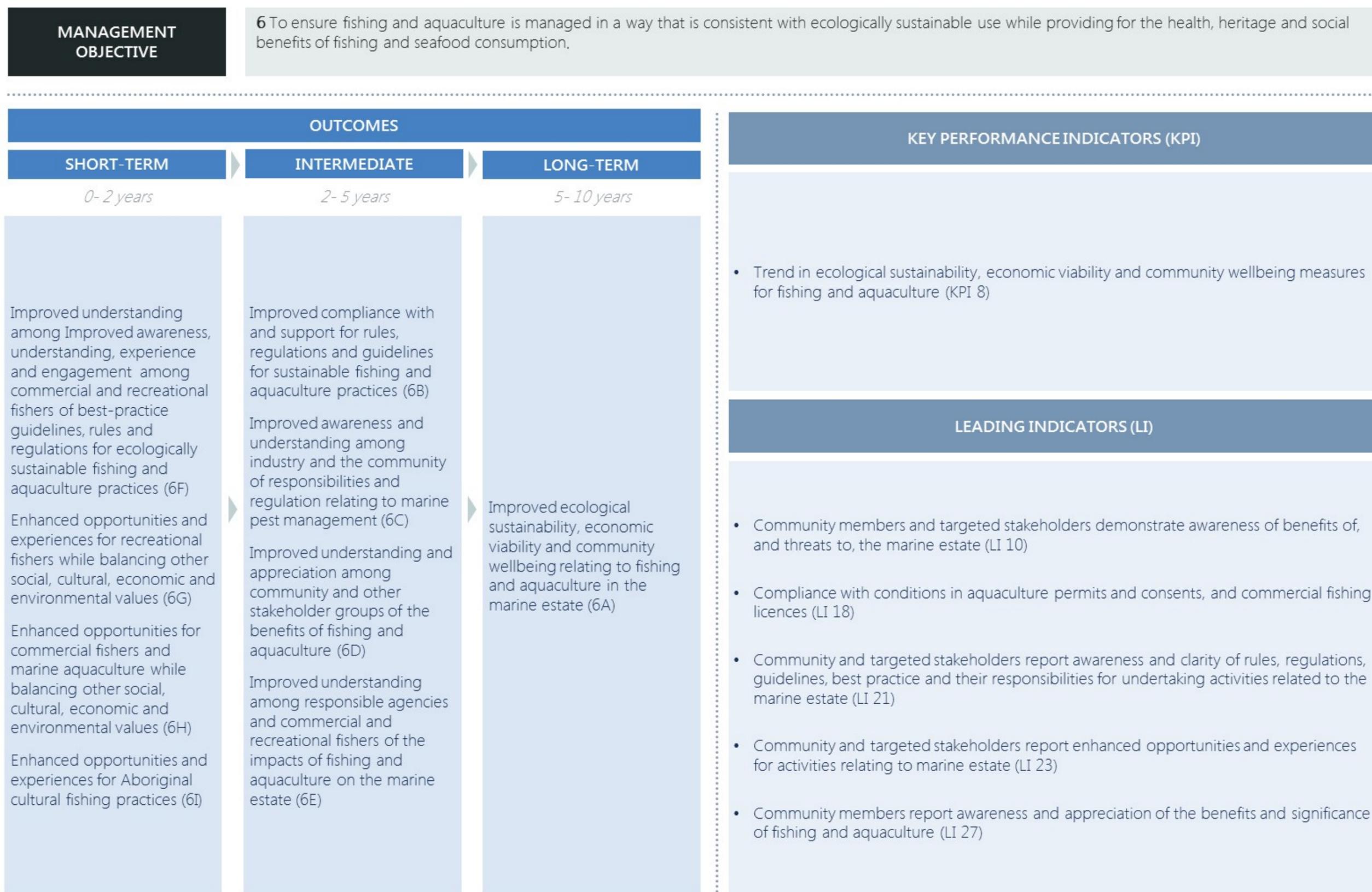
Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
			Average timeliness of response to reported animal strandings or entanglements										
LI 26	Community and stakeholder satisfaction with experience participating in decision-making and management of the marine estate	Stakeholders include Aboriginal communities, land owners, community, industry, state and local government	Average satisfaction rating based on Likert scale	Post event/activity participant survey, documented in administrative data	Surveys post event/activity – frequency varies Data collated annually	TBC	DPI (Initiative 5 lead) DPI (Initiative 8 coordinator stakeholder survey)	N	N	NA		Survey is designed to appropriately probe satisfaction Survey design to focus on capturing aspects of the experience rather than outcome, such as they felt they were sufficiently informed on the issues, the process, how they could contribute and influence decision-making and management, how their contribution was considered; whether they felt the right voices were represented; etc.	5E, 8D, 9E

## Initiative 6 - Ensuring sustainable fishing and aquaculture

### Program logic



Summary of Initiative outcomes and indicators



Alignment of management actions with outcomes, and corresponding indicators

OUTCOME CODE	6I	6H	6G	6F	6E	6D	6C	6B	6A
<b>OUTCOME</b>	Enhanced opportunities and experiences for Aboriginal cultural fishing practices	Enhanced opportunities for commercial fishers and marine aquaculture while balancing other social, cultural, economic and environmental values	Enhanced opportunities and experiences for recreational fishers while balancing other social, cultural, economic and environmental values	Improved awareness, understanding, experience and engagement among commercial and recreational fishers of best practice guidelines, rules and regulations for ecologically sustainable fishing and aquaculture practices	Improved understanding among responsible agencies and commercial and recreational fishers of the impacts of fishing and aquaculture on the marine estate	Improved understanding and appreciation among community and other stakeholder groups of the benefits of fishing and aquaculture	Improved awareness and understanding among industry and the community of responsibilities and regulation relating to marine pest management	Improved compliance with and support for rules, regulations and guidelines for sustainable fishing and aquaculture practices	Improved ecological sustainability, economic viability and community wellbeing relating to fishing and aquaculture in the marine estate
<b>OUTCOME TIMEFRAME</b>	<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>
<b>OUTCOME INDICATORS</b>	LI 23	LI 21, LI 23	LI 21, LI 23	LI 21	LI 10	LI 27	LI 21	LI 18	KPI 8
<b>MANAGEMENT ACTIONS</b>									
6.1	Introduce harvest strategies and evaluate ecological risk in partnership with stakeholders and shareholders to address the priority threats associated with the reduction in abundance of fish species and trophic levels.	LI 23	LI 21, LI 23	LI 21, LI 23	LI 21	LI 10			KPI 8
6.2	Conduct an environmental assessment of recreational fishing, periodically review current rules and take action to improve fish stocks and to address threats associated with harvest, bycatch and illegal sale of fish.				LI 21	LI 10			KPI 8
6.3	Explore opportunities for new marine aquaculture ventures.		LI 21, LI 23						KPI 8
6.4	Apply best practice guidelines for seagrass protection in the NSW Oyster Industry Sustainable Aquaculture Strategy.		LI 21, LI 23						KPI 8
6.5	Integrate various commercial, recreational and cultural fishing data and new research into the Monitoring Program to address key knowledge gaps associated with harvest and bycatch.					LI 10			KPI 8

OUTCOME CODE	6I	6H	6G	6F	6E	6D	6C	6B	6A
OUTCOME	Enhanced opportunities and experiences for Aboriginal cultural fishing practices	Enhanced opportunities for commercial fishers and marine aquaculture while balancing other social, cultural, economic and environmental values	Enhanced opportunities and experiences for recreational fishers while balancing other social, cultural, economic and environmental values	Improved awareness, understanding, experience and engagement among commercial and recreational fishers of best practice guidelines, rules and regulations for ecologically sustainable fishing and aquaculture practices	Improved understanding among responsible agencies and commercial and recreational fishers of the impacts of fishing and aquaculture on the marine estate	Improved understanding and appreciation among community and other stakeholder groups of the benefits of fishing and aquaculture	Improved awareness and understanding among industry and the community of responsibilities and regulation relating to marine pest management	Improved compliance with and support for rules, regulations and guidelines for sustainable fishing and aquaculture practices	Improved ecological sustainability, economic viability and community wellbeing relating to fishing and aquaculture in the marine estate
OUTCOME TIMEFRAME	Short-term	Short-term	Short-term	Short-term	Intermediate	Intermediate	Intermediate	Intermediate	Long-term
OUTCOME INDICATORS	LI 23	LI 21, LI 23	LI 21, LI 23	LI 21	LI 10	LI 27	LI 21	LI 18	KPI 8

**MANAGEMENT ACTIONS**

6.6	Enhance fisheries via targeted fish stocking and other activities to improve fishing opportunities where appropriate.			LI 21, LI 23						KPI 8
6.7	Partner with fishing and aquaculture sectors to deliver information and training to fishers in NSW to improve self-compliance and sustainable fishing practices, and develop economic opportunities.	LI 23	LI 21, LI 23	LI 21, LI 23	LI 21	LI 10			LI 18	KPI 8
6.8	Work with fishing sectors and tourism authorities to investigate and implement opportunities to promote fishing and NSW wild caught seafood and build social licence.		LI 21, LI 23				LI 27			KPI 8
6.9	Deliver advisory programs to the community to reduce the risk of spread of marine pest and diseases and enhance the understanding of everyone's general biosecurity duty so they act to minimise aquatic pest and disease risk.							LI 21		KPI 8

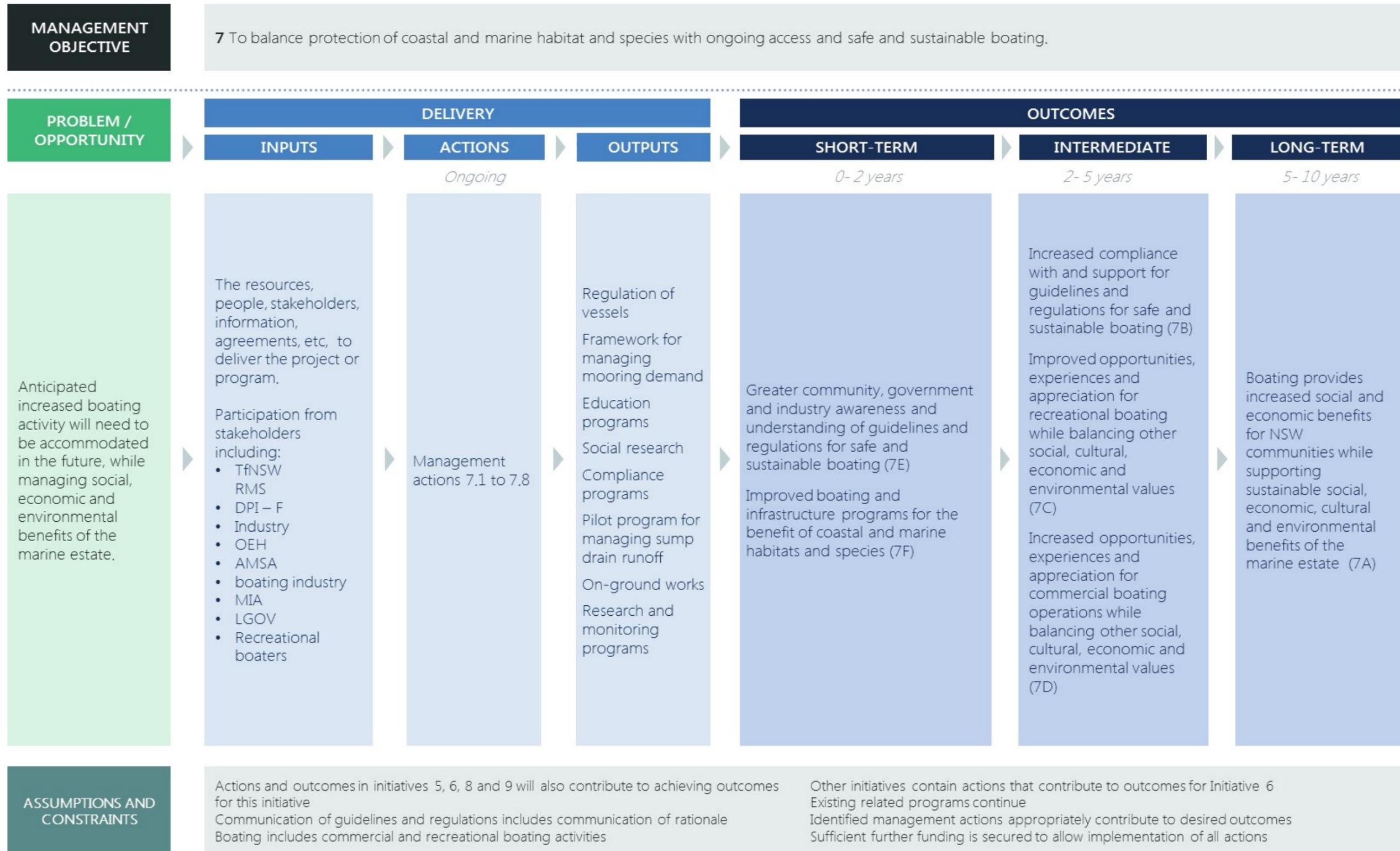
Indicator details

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 8	Trend in ecological sustainability, economic viability and community wellbeing measures for fishing and aquaculture	Measures include: (1) Species stock status (2) Gross Value of Fisheries Production in NSW (3) Recreational fishing participation; Quality of recreational fishing; Expenditure and economic impact of recreational fishing in NSW  Species stock includes species for commercial, recreational and cultural fishing and harvesting. This may include tracking of species that are currently undefined or for which there is not yet data (to be confirmed). Current species include: species to list to be advised  Gross Value of Fisheries Production includes both commercial fishing and aquaculture production	(1) Index of species stock status (no. of stocks assessed vs no. of stocks sustainable/data deficient etc.)  (2) Gross Value of Fisheries Production - Commercial (wild catch) - Aquaculture  (3) Recreational fishing participation; Quality of recreational fishing; Expenditure and economic impact of recreational fishing in NSW	(1) Status of Australian Fish Stocks Reports FRDC  (2) Department of Industry analysis ABARES  (3) Recreational Fishing Integrated Monitoring Program (2K random selected diarists; charter boat data; some observer and creel survey data)  Washup survey	Annual (1,3) Biennial		DPI (Initiative 6 lead)	Y	Y	(1) <a href="http://fish.gov.au/">http://fish.gov.au/</a>  (2) <a href="http://www.agriculture.gov.au/SiteCollectionDocuments/abares/publications/AustFishAquacStats_2017_v1.2.0.pdf">http://www.agriculture.gov.au/SiteCollectionDocuments/abares/publications/AustFishAquacStats_2017_v1.2.0.pdf</a>  (2) <a href="https://www.dpi.nsw.gov.au/fishing/aquaculture/publications/aquaculture-production-reports">https://www.dpi.nsw.gov.au/fishing/aquaculture/publications/aquaculture-production-reports</a>  (3) 'Washup Surveys' ( <a href="https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/598628/West-et-al-Survey-of-rec-fishing-in-NSW-ACT-2013-14-2016_03_02.pdf">https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/598628/West-et-al-Survey-of-rec-fishing-in-NSW-ACT-2013-14-2016_03_02.pdf</a> ) <a href="http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0009/499302/UOW-statewide-economic-survey-final-report.pdf">http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0009/499302/UOW-statewide-economic-survey-final-report.pdf</a>		Fishing and aquaculture in the marine estate includes recreational fishing, cultural fishing, commercial fishing, aquaculture and seafood culturing and harvesting.  Existing monitoring and reporting program continues  Data on participation and quality of recreational fishing is being collected and will continue to be collected through the Integrated Monitoring Program. Expenditure and economic impact of recreational fishing will be updated regularly e.g. UoW methodology	6A
LI 10	Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate	Includes threats and benefits relating to fishing and aquaculture Targeted stakeholders include: TBC by initiative lead(s)	Proportion of survey respondents demonstrating awareness	Community survey Targeted stakeholder survey	Biennial		DPI (Initiative 6 lead agency surveys only) and DPI (Initiative 8 lead for community survey only)	N	N		I8 community only Targeted stakeholders TBC	Survey is designed to appropriately probe awareness	1M, 3D, 5F, 6E, 8F, 8G, 8I
LI 18	Compliance with conditions in aquaculture permits and consents, and commercial fishing licences		Rate of compliance per capita	Annual reports	Annual		DPI (Initiative 6 lead)					Existing monitoring program continues	6B
LI 21	Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate	Activities include those relating to: commercial fishing and aquaculture recreational fishing  Specific rules, regulations, guidelines and best practice approaches include: TBC by initiative lead(s)  Targeted stakeholders include: TBC by initiative lead(s)	Proportion of survey respondents reporting awareness and clarity	Community survey  Targeted stakeholder survey  Initiative lead(s) to note any existing surveys that capture this measure in relation to LI specifications	Biennial		DPI (Initiative 6 lead)  DPI (Initiative 8 lead – community survey, coordinator stakeholder			Could collect rec fishing through washup survey conducted biennially		Survey is designed to appropriately capture awareness and clarity	1N, 2I, 6C, 6F, 6G, 6H, 8H

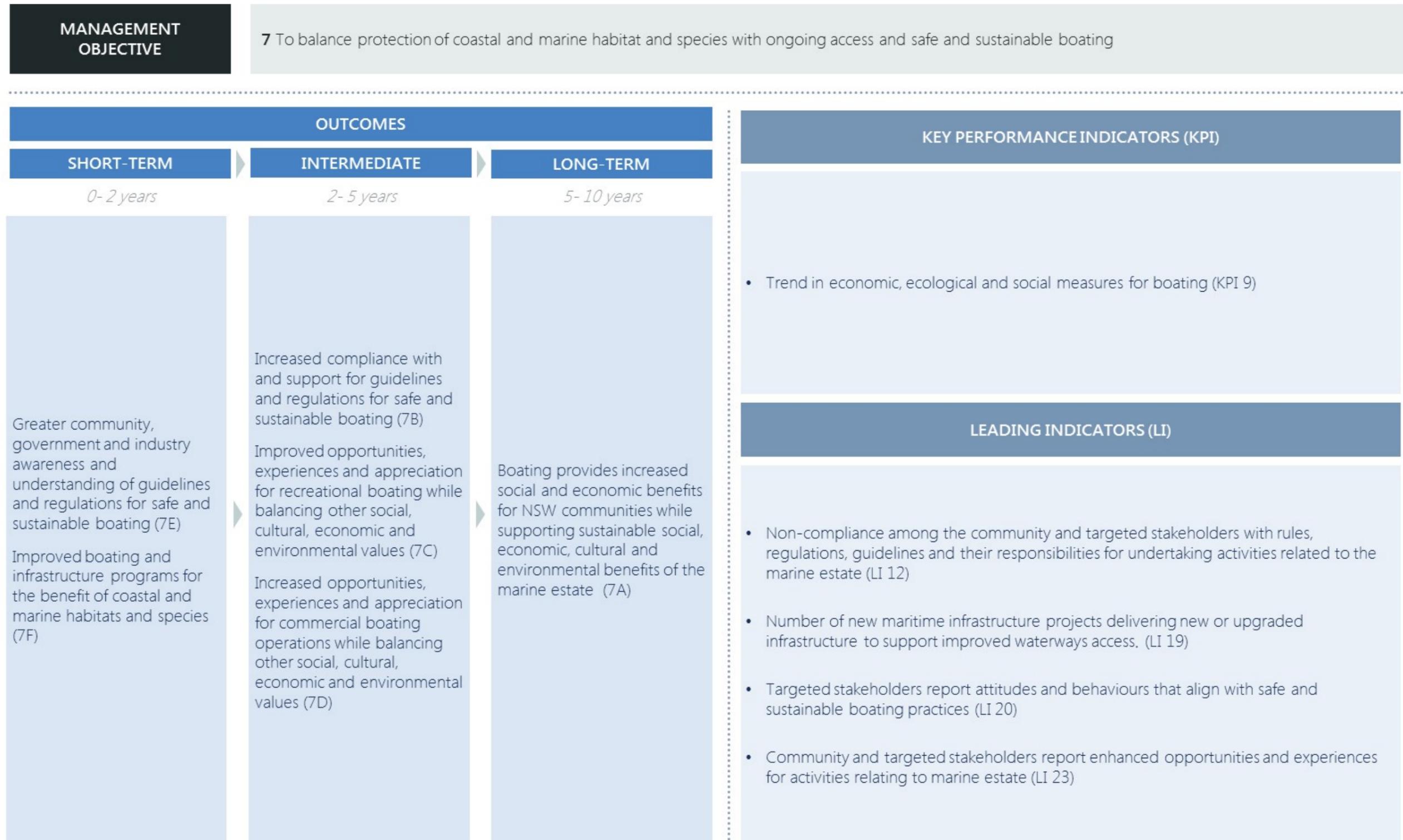
Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
							r survey)						
LI 23	Community and targeted stakeholders report enhanced opportunities and experiences for activities relating to marine estate	Activities include those relating to: recreational fishing commercial fishing and aquaculture cultural fishing Recreational boating Commercial boating  Targeted stakeholders include: TBC by initiative lead(s)	Proportion of survey respondents reporting enhanced opportunities and experiences	Community survey Targeted stakeholder survey	Biennial		DPI (Initiative 6 lead) DPI (Initiative 8 lead – community survey, coordinator stakeholder survey)					Survey is designed to appropriately inform and measure enhanced opportunities and experiences  Changes in this indicator should be considered against changes in other relevant social, cultural, economic and environmental indicators to understand whether improvements in this indicator has come at the expense of other indicators	6G, 6H, 6I, 7C, 7D
LI 27	Community members report awareness and appreciation of the benefits and significance of fishing and aquaculture		Proportion of survey participants reporting awareness and appreciation	Community survey	Biennial		DPI (Initiative 8 lead)				18	Survey is designed to appropriately probe awareness and appreciation	6D

## Initiative 7 - Enabling safe and sustainable boating

### Program logic



Summary of Initiative outcomes and indicators



Alignment of management actions with outcomes, and corresponding indicators

OUTCOME CODE		7F	7E	7D	7C	7B	7A
OUTCOME		Improved boating and infrastructure programs for the benefit of coastal and marine habitats and species	Greater community, government and industry awareness and understanding of guidelines and regulations for safe and sustainable boating	Increased opportunities, experiences and appreciation for commercial boating operations while balancing other social, cultural, economic and environmental values	Improved opportunities, experiences and appreciation for recreational boating while balancing other social, cultural, economic and environmental values	Increased compliance with and support for guidelines and regulations for safe and sustainable boating	Boating provides increased social and economic benefits for NSW communities while supporting sustainable social, economic, cultural and environmental benefits of the marine estate
OUTCOME TIMEFRAME		<i>Short-term</i>	<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>
OUTCOME INDICATORS		LI 19	LI 20	LI 20, LI 23	LI 23	LI 12	KPI 9
MANAGEMENT ACTIONS							
7.1	Reduce the threats to seagrass from vessels through improved regulation, administration, education, new mooring technologies and delivery mechanisms.		LI 20			LI 12	KPI 9
7.2	Establish a framework to manage increased mooring demand through the Moorings Review program.	LI 19		LI 20, LI 23	LI 23		KPI 9
7.3	Manage boat-based contamination through the AMSA national framework and implement an education program in NSW to address the environmental impacts of water pollution from recreational vessel cleaning, antifouling and sewage pump out into waterways.		LI 20			LI 12	KPI 9
7.4	Partner with industry to investigate a pilot program at marinas in NSW to design and install sump drain run-off handling systems with sediment traps.	LI 19	LI 20				KPI 9
7.5	Improve awareness of threats to threatened and protected species, and compliance with regulations, through data sharing, education, social research and compliance planning to reduce impacts of boating. This links to actions in Initiatives 5, 8 and 9.		LI 20	LI 20, LI 23	LI 23	LI 12	KPI 9
7.6	Integrate research and monitoring into the Monitoring Program to address key knowledge gaps associated with shipping movements and interactions with threatened and protected species.			LI 20, LI 23		LI 12	KPI 9
7.7	Continue improving environmentally sustainable boating and resolve conflicting uses and waterway access to the marine estate through the NSW Boating Now Program.	LI 19					KPI 9
7.8	Deliver waterways infrastructure in accordance with the Maritime Safety Plan to enhance social, cultural and economic benefits through an interagency approach (also see Initiative 8).			LI 20, LI 23	LI 23		KPI 9

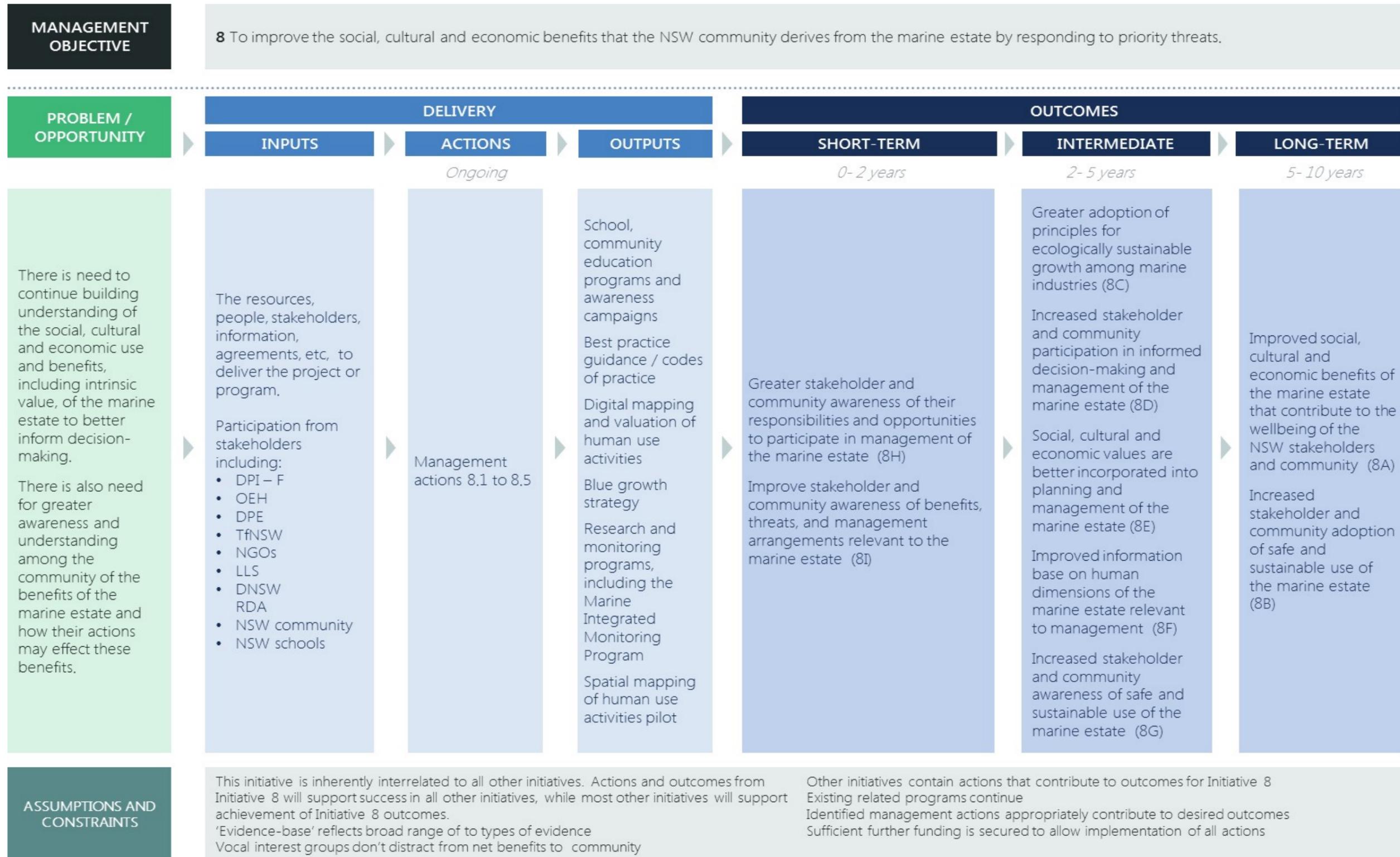
## Indicator details

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 9	Trend in economic, ecological and social measures for boating	<p>TfNSW collects and analyses information on boating incidents across NSW. The analysis looks at a range of attributes including incident location, type, contributing factors, outcome, frequency, vessel and operator details.</p> <p>TfNSW conducts an annual boating survey that looks at a number of criteria relating to boating activity including trip frequency, purpose of trips, types of vessels, exposure rates and a range of satisfactions measures.</p> <p>TfNSW captures complaints about boating behaviour made by phone, mail, email, online capture of public complaints about on water behaviour.</p> <p>Measures include:            (1) Frequency of fatal and serious injury boating incidents            (2) Frequency of boating activities and satisfaction with access and experiences            (3) Complaints relating to boating behaviour</p>	(1) Frequency of fatal and serious injury boating incidents (2) Number and type of trips satisfaction measures (3) Number of complaints by type per year	(1) Boating Incidents in NSW, Centre for Maritime Safety (2) Transport for NSW annual boater survey (3) TfNSW complaints data	Annual	ongoing	TFNSW	Y	Y	(1) Boating Incidents In NSW report <a href="https://maritimemanagement.transport.nsw.gov.au/staying-safe/boating-statistics/index.html">https://maritimemanagement.transport.nsw.gov.au/staying-safe/boating-statistics/index.html</a>  (2) Published and unpublished survey data and reports  (3) TfNSW complaints data	TfNSW	Existing monitoring/reporting program and associated funding continues	7A
LI 12	Non-compliance among the community and targeted stakeholders with rules, regulations, guidelines and their responsibilities for undertaking activities related to the marine estate	<p>Activities include those relating to safe and responsible boating            Specific rules, regulations and guidelines include:            TBC by initiative lead(s)</p> <p>Targeted stakeholders include:            TBC by initiative lead(s)</p>	Boating Safety Compliance Rate (i.e.: inspection of licences/registrations/safety equipment etc.)	TfNSW Boating Safety Officer reports	Ongoing and collated annually	ongoing	TFNSW (boating)	Y	N	TfNSW boating compliance reports	TfNSW	Information relating to Indicator and Measure is documented through administrative processes  There are a number of factors that can drive records of noncompliance. Indicator will need to be considered in this context to ensure the measurements reflect community behaviour/understanding, not other actions (e.g. increased compliance activities by authorities)	1I, 5D, 7B, 9F
LI 19	Number of new maritime infrastructure projects delivering new or upgraded infrastructure to support improved waterways access	Measure of the number of projects delivered under the Boating Now infrastructure grants program	Number and value of projects delivered per annum under the Boating Now Program	Transport for NSW	Annual	ongoing	TFNSW	yes	yes	Boating Now reports	TfNSW	Boating Now receives funding to continue beyond 2019 or an alternate program providing maritime infrastructure replaces Boating Now	7F
LI 20	Targeted stakeholders report attitudes and behaviours that align with safe and sustainable boating	Measure boater's attitudes towards sustainable boating practices as part of the annual boater survey	Proportion of survey respondents reporting appropriate attitudes and behaviours	Transport for NSW	Annual	Ongoing with refinement to capture sustainability attitudes	TfNSW	Yes with modifications	no	TfNSW Annual boater survey	TfNSW	Survey is designed to appropriately probe attitudes and behaviour	7D, 7E

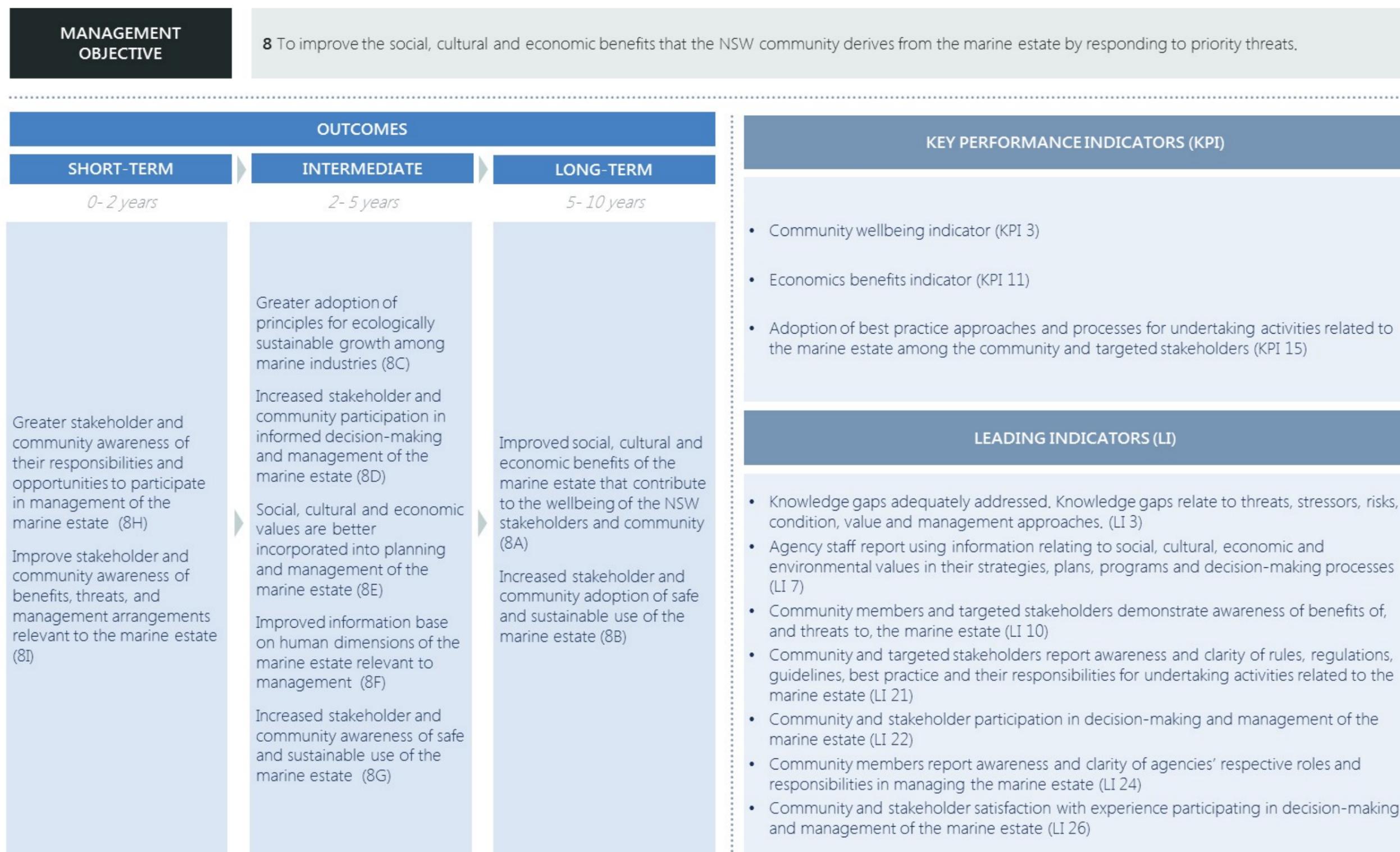
Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
	practices												
LI 23	Community and targeted stakeholders report enhanced opportunities and experiences for activities relating to marine estate	<p>Activities include those relating to commercial boating, and will draw on data captured through the existing Boating Now survey</p> <p>Targeted stakeholders include: TBC by initiative lead(s)</p>	Proportion of survey respondents reporting enhanced opportunities and experiences	Community survey Targeted stakeholder survey	Biennial		TfNSW lead for stakeholder survey  DPI (Initiative 8 lead community survey)				18 and TfNSW	<p>Survey is designed to appropriately inform and measure enhanced opportunities and experiences</p> <p>Changes in this indicator should be considered against changes in other relevant social, cultural, economic and environmental indicators to understand whether improvements in this indicator has come at the expense of other indicators</p>	6G, 6H, 6I, 7C, 7D

## Initiative 8 - Enhancing social, cultural and economic benefits

### Program logic



Summary of Initiative outcomes and indicators



Alignment of management actions with outcomes, and corresponding indicators

OUTCOME CODE	8I	8H	8G	8F	8E	8D	8C	8B	8A
OUTCOME	Improve stakeholder and community awareness of benefits, threats, and management arrangements relevant to the marine estate	Greater stakeholder and community awareness of their responsibilities and opportunities to participate in management of the marine estate	Increased stakeholder and community awareness of safe and sustainable use of the marine estate	Improved information base on human dimensions of the marine estate relevant to management	Social, cultural and economic values are better incorporated into planning and management of the marine estate	Increased stakeholder and community participation in informed decision-making and management of the marine estate	Greater adoption of principles for ecologically sustainable growth among marine industries	Increased stakeholder and community adoption of safe and sustainable use of the marine estate	Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community
OUTCOME TIMEFRAME	Short-term	Short-term	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Long-term	Long-term
OUTCOME INDICATORS	LI 10, LI 24	LI 21, LI 22	LI 3, LI 10	LI 3, LI 10	LI 7	LI 22, LI 26	LI 7	KPI 15	KPI 3, KPI 11

MANAGEMENT ACTIONS										
8.1	Increase stakeholder and community awareness of marine estate values, management arrangements and promote safe and ecologically sustainable use of the marine estate by:								KPI 15	KPI 3, KPI 11
8.1 (a)	building on existing school and community education programs to encourage environmental stewardship, enhance self-compliance and promote physical and mental health benefits associated with nature	LI 10, LI 24	LI 21, LI 22	LI 3, LI 10			LI 22, LI 26		KPI 15	KPI 3, KPI 11
8.1 (b)	developing and promoting best practice guidance / codes of practice to reduce resource use conflicts (also see action 8.4)		LI 21, LI 22	LI 3, LI 10				LI 7	KPI 15	KPI 3, KPI 11
8.1 (c)	developing online information resources and expansion of digital technologies.						LI 22, LI 26		KPI 15	KPI 3, KPI 11
8.2	Improve awareness of, promote and identify threats to marine historic and non-Aboriginal cultural heritage to inform future management in the marine estate. This action is linked to Initiative 4.				LI 3, LI 10	LI 7			KPI 15	KPI 3, KPI 11
8.3	Establish and deliver the Marine Integrated Monitoring Programs social, cultural and economic components, to:								KPI 15	KPI 3, KPI 11
8.3 (a)	develop a shared understanding of the NSW community's attitudes, values, perceptions, experiences, knowledge, aspirations, patterns of use to support evidence-based decision-making and adaptive management	LI 10, LI 24			LI 3, LI 10	LI 7	LI 22, LI 26		KPI 15	KPI 3, KPI 11
8.3 (b)	communicate data / results publicly through appropriate information portals.				LI 3, LI 10				KPI 15	KPI 3, KPI 11

OUTCOME CODE	8I	8H	8G	8F	8E	8D	8C	8B	8A
OUTCOME	Improve stakeholder and community awareness of benefits, threats, and management arrangements relevant to the marine estate	Greater stakeholder and community awareness of their responsibilities and opportunities to participate in management of the marine estate	Increased stakeholder and community awareness of safe and sustainable use of the marine estate	Improved information base on human dimensions of the marine estate relevant to management	Social, cultural and economic values are better incorporated into planning and management of the marine estate	Increased stakeholder and community participation in informed decision-making and management of the marine estate	Greater adoption of principles for ecologically sustainable growth among marine industries	Increased stakeholder and community adoption of safe and sustainable use of the marine estate	Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community
OUTCOME TIMEFRAME	<i>Short-term</i>	<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>	<i>Long-term</i>
OUTCOME INDICATORS	LI 10, LI 24	LI 21, LI 22	LI 3, LI 10	LI 3, LI 10	LI 7	LI 22, LI 26	LI 7	KPI 15	KPI 3, KPI 11

MANAGEMENT ACTIONS										
8.4	Develop a baseline of current and future use of the marine estate, initially at a pilot scale, to support effective management, address resource use conflicts and access to the marine estate by:								KPI 15	KPI 3, KPI 11
8.4 (a)	carrying out a comprehensive analysis of human use activities, supporting infrastructure and facilities, activity trends, management issues				LI 3, LI 10	LI 7			KPI 15	KPI 3, KPI 11
8.4 (b)	spatially mapping on a public facing digital platform				LI 3, LI 10				KPI 15	KPI 3, KPI 11
8.4 (c)	identifying hotspots and developing specific management responses to address issues in partnership with agencies and stakeholders				LI 3, LI 10	LI 7			KPI 15	KPI 3, KPI 11
8.4 (d)	linking outcomes to education and awareness programs to promote best practice (also see action 8.1).						LI 22, LI 26	LI 7	KPI 15	KPI 3, KPI 11
8.5	Explore opportunities for innovative ecologically sustainable activities in the marine estate, based on the results of activity mapping in action 8.4, by developing a blue growth strategy.			LI 3, LI 10		LI 7		LI 7	KPI 15	KPI 3, KPI 11

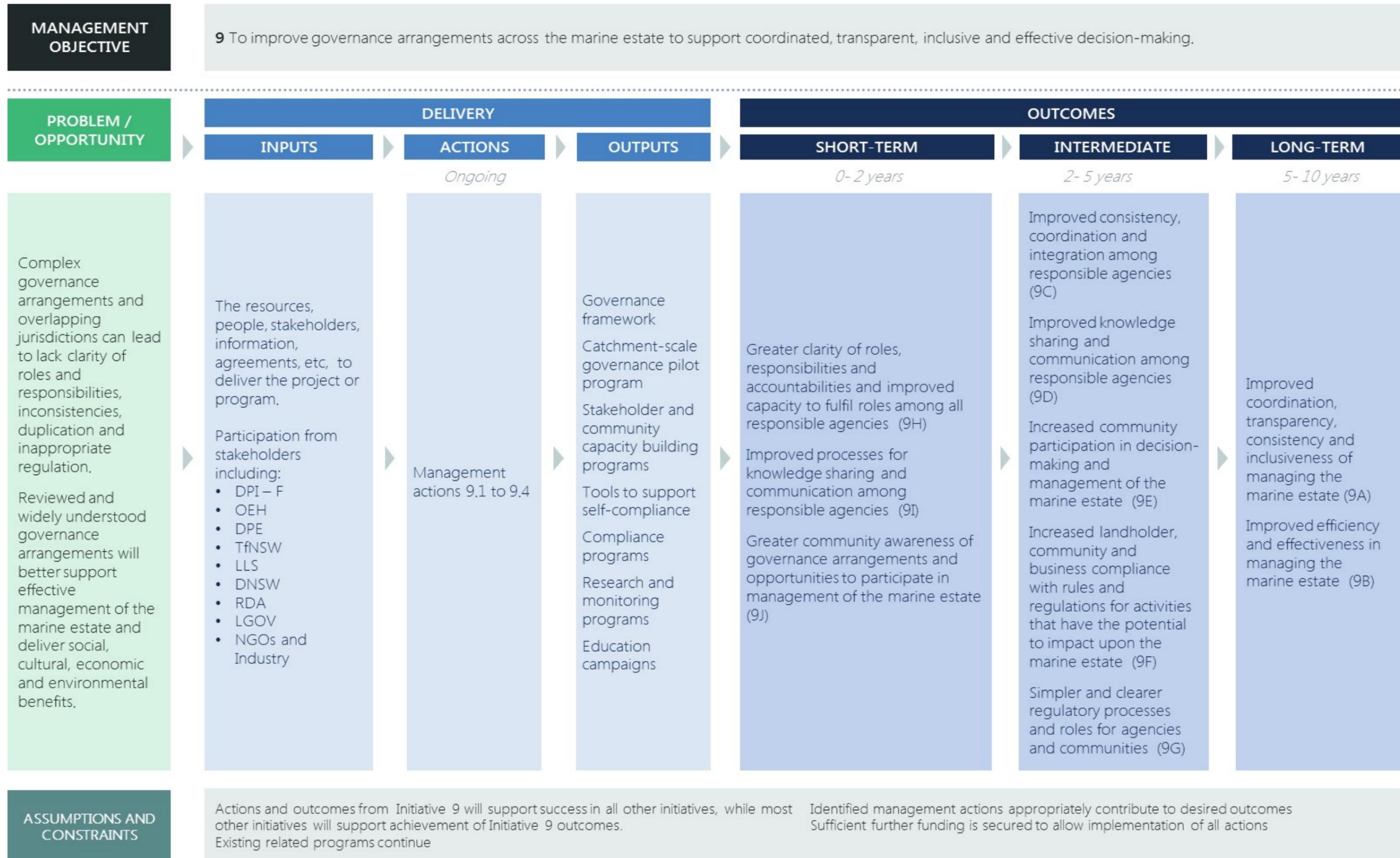
## Indicator details

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 3	Community wellbeing indicator	This indicator focuses on the perceptions of the marine estates contribution to a person's overall quality of life.  Details for this indicator are currently in development	TBC as part of the development of the community wellbeing framework	Community survey Stakeholder survey	Biennial		DPI (Initiative 8 lead)	N	N		I8	Survey is designed to appropriately capture aspects of quality of life relevant to the marine estate	8A
KPI 11	Economics benefits indicator	Details for this indicator are currently in development					DPI (BS & E lead)				TBC		8A
KPI 15	Adoption of best practice approaches and processes for undertaking activities related to the marine estate among the community and targeted stakeholders	Activities include those relating to: land use and management water pollution and litter marine pests commercial fishing and aquaculture recreational fishing boating  Best practice approaches and processes include: Specific, documented approaches and processes TBC by initiative lead(s)  Targeted stakeholders include: TBC by initiative lead(s)	Proportion of survey respondents self-reporting use of best practice approaches and processes	Community survey Targeted stakeholder survey  Initiative lead(s) to note if they have any other existing processes for monitoring adoption of best practice approaches and processes, such as program/administrative reporting or compliance activities	Biennial		DPI (Initiative 8 lead)	N	N		I8	Survey is designed to appropriately probe adoption of best practice in accordance with indicator specifications  Survey is designed to support accurate self-reporting  Use of best practice approaches and processes is effective and appropriate	1I, 2E, 8B
LI 3	Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches	Current identified knowledge gaps include: inadequate social, cultural and economic data	TBC as part of the development of the community wellbeing framework	Community survey Targeted stakeholder surveys	Biennial		DPI (Initiative 8 lead)		Y	TARA	I8	Knowledge gaps are reviewed through review of the TARA	1F, 2H, 2I, 3B, 3D, 3E, 8F, 8G
LI 7	Agency staff report using information relating to social, cultural, economic and environmental values in their strategies, plans, programs and decision-making processes	Includes incorporation throughout planning, implementation and reporting of: community objectives and values Aboriginal objectives, values, rights and interests unintended consequences of programs and plans economic benefits/costs  Relevant strategies, plans, programs and processes include (but not limited to): managing threatened and protected species TBC by initiative lead(s)	Rate of agency staff reporting use of information relating to social, cultural, economic and environmental values	Agency staff survey	Biennial		DPI (Initiative 8 coordinator staff survey)	N	N		TBC		5C, 8C, 8E
LI 10	Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate	Includes relating to: sources and effects of water pollution and litter threats to biodiversity impacts of climate change threatened and protected species potential impacts of fishing and	Proportion of survey respondents demonstrating awareness	Community survey Targeted stakeholder survey	Biennial		DPI (Initiative 8 lead – community survey, coordinator stakeholder)	N	N		I8	Survey is designed to appropriately probe awareness	1M, 3D, 5F, 6E, 8F, 8G, 8I

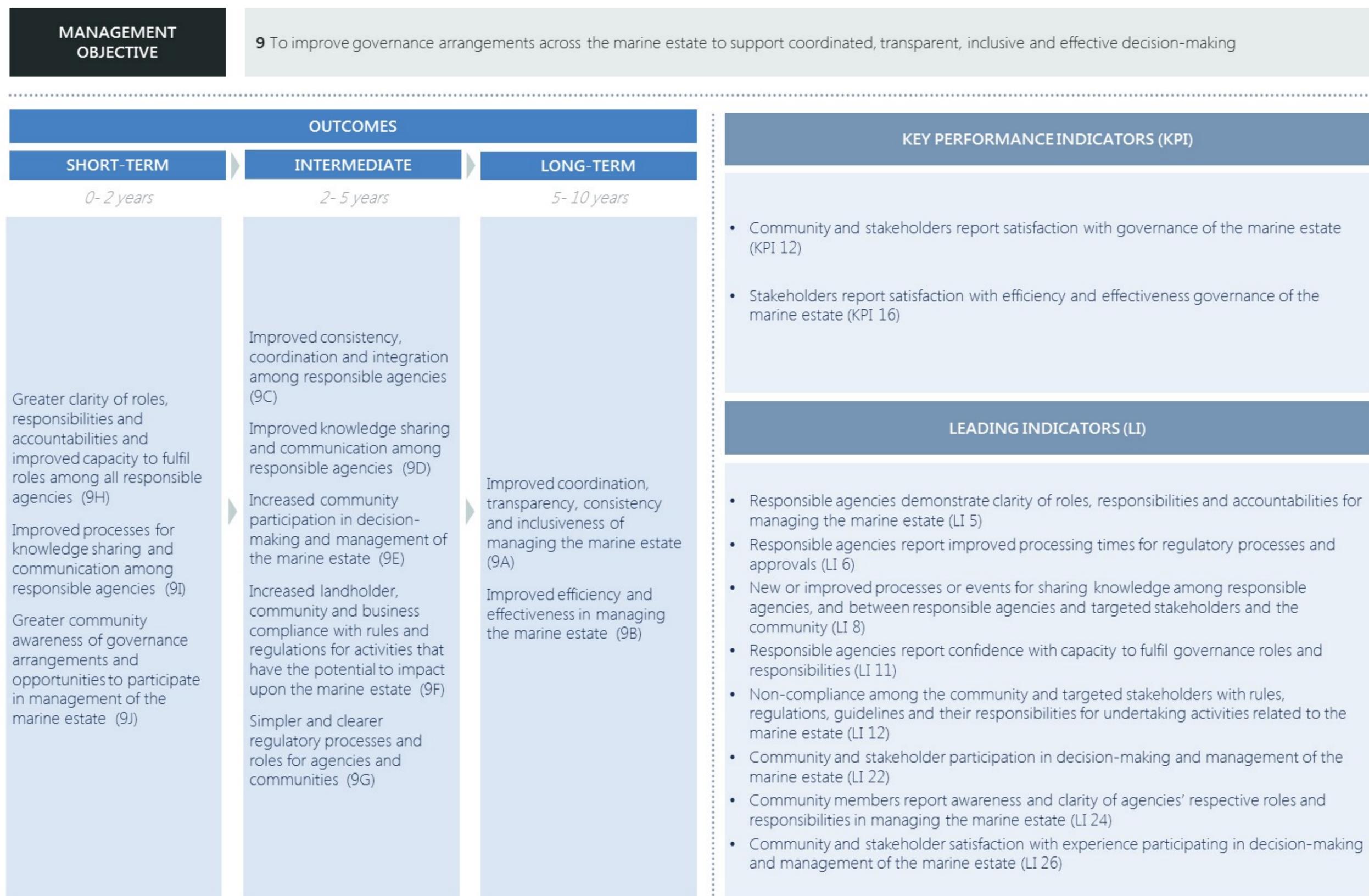
Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
		aquaculture Targeted stakeholders include: TBC by initiative lead(s)					survey)						
LI 21	Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate	Activities include those relating to: land use and management water pollution and litter marine pests commercial fishing and aquaculture recreational fishing Recreational and commercial boating  Specific rules, regulations, guidelines and best practice approaches include: TBC by initiative lead(s)  Targeted stakeholders include: TBC by initiative lead(s)	Proportion of survey respondents reporting awareness and clarity	Community survey  Targeted stakeholder survey  Initiative lead(s) to note any existing surveys that capture this measure in relation to LI specifications	Biennial		DPI (Initiative 8 lead – community survey, coordinator stakeholder survey)	N	N	Could collect rec fishing through washup survey conducted biennially	I8	Survey is designed to appropriately capture awareness and clarity	1N, 2I, 6C, 6F, 6G, 6H, 8H
LI 22	Community and stakeholder participation in decision-making and management of the marine estate	Includes decision-making and management activities relating to: TBC by initiative lead(s)  Stakeholders include: TBC by initiative lead(s)	Number of community and stakeholder participants in decision-making processes Number of community and stakeholder participants in marine estate management activities or events	Administrative data	Annual		DPI (Initiative 8 lead)				TBC	Information relating to Indicator and Measure is documented through administrative processes	5E, 8D, 8H, 9E
LI 24	Community members report awareness and clarity of agencies' respective roles and responsibilities in managing the marine estate		Proportion of survey respondents reporting awareness and clarity	Community survey	Biennial		DPI (Initiative 8 lead)	N	N		I8: DPI (community component)	Survey is designed to appropriately probe awareness	2G, 8I, 9J
LI 26	Community and stakeholder satisfaction with experience participating in decision-making and management of the marine estate	Stakeholders include: TBC by initiative lead(s)	Average satisfaction rating based on Likert scale	Post event/activity participant survey, documented in administrative data	Surveys post event/activity – frequency varies Data collated annually		DPI (Initiative 8 lead)	N	N		I8: DPI	Survey is designed to appropriately probe satisfaction Survey design to focus on capturing aspects of the experience rather than outcome, such as they felt they were sufficiently informed on the issues, the process, how they could contribute & influence decision-making & management, how their contribution was considered; whether they felt the right voices were represented; etc.	5E, 8D, 9E

## Initiative 9 - Delivering effective governance

### Program logic



Summary of Initiative outcomes and indicators



Alignment of management actions with outcomes, and corresponding indicators

OUTCOME CODE		9J	9I	9H	9G	9F	9E	9D	9C	9B	9A	
OUTCOME		Greater community awareness of governance arrangements and opportunities to participate in management of the marine estate	Improved processes for knowledge sharing and communication among responsible agencies	Greater clarity of roles, responsibilities and accountabilities and improved capacity to fulfil roles among all responsible agencies	Simpler and clearer regulatory processes and roles for agencies and communities	Increased landholder, community and business compliance with rules and regulations for activities that have the potential to impact upon the marine estate	Increased community participation in decision-making and management of the marine estate	Improved knowledge sharing and communication among responsible agencies	Improved consistency, coordination and integration among responsible agencies	Improved efficiency and effectiveness in managing the marine estate	Improved coordination, transparency, consistency and inclusiveness of managing the marine estate	
OUTCOME TIMEFRAME		Short-term	Short-term	Short-term	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Long-term	Long-term	
OUTCOME INDICATORS		LI 24	LI 8	LI 5, LI 11	LI 6	LI 12	LI 22, LI 26	LI 8	LI 6	KPI 12	KPI 12	
MANAGEMENT ACTIONS												
9.1	Improved coordination and integration across all levels of government (including cross-border and the land-sea interface) by developing a governance framework piloted at a catchment scale (see Initiative 1) to:										KPI 12	KPI 12
9.1 (a)	identify overlapping jurisdictional boundaries	LI 24		LI 5, LI 11	LI 6				LI 6		KPI 12	KPI 12
9.1 (b)	clarify roles and responsibilities	LI 24		LI 5, LI 11					LI 6		KPI 12	KPI 12
9.1 (c)	align policies and programs								LI 6		KPI 12	KPI 12
9.1 (d)	Identify opportunities for: data management and sharing research, monitoring and mapping compliance and reporting communication and engagement.	LI 24	LI 8					LI 8	LI 6		KPI 12	KPI 12
9.2	Increased stakeholder and community participation by building capacity and awareness of coastal and marine management, piloted at a catchment scale (see Initiative 1) and locally via marine park management planning pilots.	LI 24				LI 12	LI 22, LI 26				KPI 12	KPI 12
9.3	Identify opportunities through the marine park management planning pilots projects to streamline regulatory instruments to:										KPI 12	KPI 12
9.3 (a)	address inconsistencies, reduce duplication of effort and reduce regulatory burden where				LI 6				LI 6		KPI 12	KPI 12

OUTCOME CODE	9J	9I	9H	9G	9F	9E	9D	9C	9B	9A
OUTCOME	Greater community awareness of governance arrangements and opportunities to participate in management of the marine estate	Improved processes for knowledge sharing and communication among responsible agencies	Greater clarity of roles, responsibilities and accountabilities and improved capacity to fulfil roles among all responsible agencies	Simpler and clearer regulatory processes and roles for agencies and communities	Increased landholder, community and business compliance with rules and regulations for activities that have the potential to impact upon the marine estate	Increased community participation in decision-making and management of the marine estate	Improved knowledge sharing and communication among responsible agencies	Improved consistency, coordination and integration among responsible agencies	Improved efficiency and effectiveness in managing the marine estate	Improved coordination, transparency, consistency and inclusiveness of managing the marine estate
OUTCOME TIMEFRAME	<i>Short-term</i>	<i>Short-term</i>	<i>Short-term</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Intermediate</i>	<i>Long-term</i>	<i>Long-term</i>
OUTCOME INDICATORS	LI 24	LI 8	LI 5, LI 11	LI 6	LI 12	LI 22, LI 26	LI 8	LI 6	KPI 12	KPI 12

#### MANAGEMENT ACTIONS

	appropriate										
9.3 (b)	ensure these instruments are efficient, effective, transparent and proportionate				LI 6					KPI 12	KPI 12
9.3 (c)	increase awareness of the authorisation process and requirements for the end user through education and online tools.	LI 24				LI 12	LI 22, LI 26			KPI 12	KPI 12
9.4	Improve coordination and effectiveness of compliance across government by:									KPI 12	KPI 12
9.4 (a)	investigating tools to support proactive compliance by users through use of new technologies and education programs (see Initiative 8)					LI 12	LI 22, LI 26			KPI 12	KPI 12
9.4 (b)	collaborate across multiple government agencies to coordinate enforcement, education and data sharing.		LI 8					LI 8	LI 6	KPI 12	KPI 12

## Indicator details

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 12	Community and stakeholders report satisfaction with governance of the marine estate	<p>Satisfaction to be assessed through concise measures for each of the following governance themes: coordination, consistency, transparency and inclusiveness. Details for measures are provided separately.</p> <p>Data collection will be undertaken through a survey of randomly selected individuals within identified stakeholder categories. Unless otherwise specified, all categories will be surveyed. Stakeholder categories are:</p> <ul style="list-style-type: none"> <li>Responsible agencies, including marine estate managers from relevant government departments, agencies and statutory authorities; local government; and, researchers.</li> <li>Targeted stakeholders (engaged community), including Aboriginal people, community interest groups, industry and peak bodies, conservation groups and avid users of the marine estate.</li> <li>General community, capturing the broader public, who may have some limited interaction with or interest in the marine estate, but have the potential to become more engaged in the future</li> </ul>	Average satisfaction rating based on Likert scale for each measure	Responsible agencies staff survey Targeted stakeholder survey	Biennial (ideally), or minimum of three (3) surveys over the life of the MEMS (to collect baseline data, progress at mid-point, end-of-strategy achievement)	Year 2	DPI (Initiative 8 coordinator staff and stakeholder survey)	N	N	NA	TBC	Sufficient funding is secured to undertake minimum survey requirements Survey respondents are selected randomly from a within the identified stakeholder categories, rather than targeting specific individuals, groups or organisations	1D, 2C, 9A
KPI 16	Responsible agencies report satisfaction with efficiency and effectiveness governance of the marine estate	<p>Stakeholder satisfaction will be assessed through the following measures (assessed separately for consistency within own organisation and across responsible agencies):</p> <ul style="list-style-type: none"> <li>allocation of resources, including staff and funding, across management of the marine estate is clearly directed towards identified outcomes</li> <li>systems, processes, skills, knowledge and governance and administrative arrangements allow organisations and individuals to efficiently and effectively deliver their responsibilities, with minimal duplication, unreasonable delays or unnecessary activities</li> <li>responsible agencies are achieving, or on track to achieve, identified outcomes within budget</li> </ul> <p>Data collection will be undertaken through a survey of randomly selected individuals from responsible agencies, including marine estate managers from relevant government departments, agencies, statutory authorities and local government</p>	Average satisfaction rating based on Likert scale for each measure	Agency staff survey	Biennial (ideally), or minimum of three (3) surveys over the life of the MEMS (to collect baseline data, progress at mid-point, end-of-strategy achievement)	Year 2	DPI (Initiative 8 coordinator)	N	N	NA	TBC	Sufficient funding is secured to undertake minimum survey requirements Survey respondents are selected randomly from a within the identified stakeholder categories, rather than targeting specific individuals, groups or organisations	2C, 9B
LI 5	Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate	Activities include those relating to: general management of the marine estate	Proportion of survey respondents demonstrating clarity	Responsible agencies staff survey	Biennial		DPI (Initiative 8 coordinator)	N	N	NA	TBC	Survey is designed to appropriately probe clarity of roles and responsibly across aspects of marine estate management reflected in the initiatives	1D, 1E, 1K, 2G, 5F, 5G, 9H
LI 6	Responsible agencies report improved processing times for regulatory processes and	Regulatory processes and approvals such as: land use and development planning and approvals in coastal and foreshore zones Crown land consent for work on crown land Marine park permits	Reported change in processing times	Administrative data Responsible agencies staff survey	Biennial		DPI (Initiative 8 coordinator) Administrative data TBC	N	Some but varied – need all agencies to advise		Nil	Information relating to Indicator and Measure is documented through administrative processes Survey is appropriately	2D, 9C, 9G

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
	approvals	DPI s.37 permits Commercial fishing approvals Aquaculture Rec fishing DPIE-EES to confirm Transport to confirm  Responsible agencies include: councils All MEMA agencies and Departments within their cluster										designed to inform indicator	
LI 8	New or improved processes or events for sharing knowledge among responsible agencies, and between responsible agencies and targeted stakeholders and the community	Includes knowledge sharing in relation to: threatened and protected species impacts of climate change TBC by initiative lead(s)	Number of new or improved processes, networks, data sharing platforms or events	Agency staff survey Administrative data	TBD		DPI (Initiative 9 coordinator)					Knowledge sharing processes and events are documented through project/program management and administrative systems Networks can be measured	5B, 9D, 9I
LI 11	Responsible agencies report confidence with capacity to fulfil governance roles and responsibilities		Proportion of survey respondents' confident	Responsible agencies staff survey	Biennial		DPI (Initiative 8 coordinator)	N	N		TBC	Agency staff survey is designed to appropriately inform indicator	1E, 1F, 1L, 9H
LI 12	Non-compliance among the community and targeted stakeholders with rules, regulations, guidelines and their responsibilities for undertaking activities related to the marine estate	Activities include those relating to: land use and management water pollution and litter marine pests recreational and commercial fishing safe and sustainable boating threatened and protected species  Specific rules, regulations and guidelines include: Fisheries Management Act MEM Act POEO Act Transport DPIE-EES Planning  Targeted stakeholders include: TBC by initiative lead(s)	Proportion of noncompliant stakeholders per capita	Administrative data Litter fine data – EPA Fisheries compliance records of infringements  Initiative lead(s) to note if they have any other existing processes for monitoring noncompliance	Biennial		DPIE-EES (water pollution) EPA (litter) DPI Fisheries (permits) DPI (land use & management) DPIE-EES (threatened and protected species) DPI (fishing) TFNSW (boating) DPI (land use & management) DPI (marine pests, fishing, aquaculture) DPI (Landholders & business)	Partially	Partly	DPI Fisheries compliance data	Nil	Information relating to Indicator and Measure is documented through administrative processes  There are a number of factors that can drive records of noncompliance. Indicator will need to be considered in this context to ensure the measurements reflect community behaviour/understanding, not other actions (e.g. increased compliance activities by authorities)	1I, 5D, 7B, 9F
LI 22	Community and stakeholder participation in decision-making and management of the marine estate	Includes decision-making and management activities relating to: TBC by initiative lead(s) MEMS stages / projects Marine parks  Stakeholders include:	Number of community and stakeholder participants in decision-making processes Number of	Administrative data	Annual		DPI (Initiative 9 coordinator)					Information relating to Indicator and Measure is documented through administrative processes	5E, 8D, 8H, 9E

Code	KPI / LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Lead	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
		All	community and stakeholder participants in marine estate management activities or events										
LI 24	Community members report awareness and clarity of agencies' respective roles and responsibilities in managing the marine estate	All	Proportion of survey respondents reporting awareness and clarity	Community survey	Biennial		DPI (Initiative 8 lead)				I8	Survey is designed to appropriately probe awareness	2G, 8I, 9J
LI 26	Community and stakeholder satisfaction with experience participating in decision-making and management of the marine estate	Stakeholders include: TBC by initiative lead(s) All	Average satisfaction rating based on Likert scale	Post event/activity participant survey, documented in administrative data	Surveys post event/activity – frequency varies Data collated annually		DPI (Initiative 8 coordinator)					Survey is designed to appropriately probe satisfaction Survey design to focus on capturing aspects of the experience rather than outcome, such as they felt they were sufficiently informed on the issues, the process, how they could contribute and influence decision-making and management, how their contribution was considered; whether they felt the right voices were represented; etc.	5E, 8D, 9E

## All key performance indicators (KPIs)

KPI code	KPI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 1	Water quality supports community values and uses	To be assessed through the three primary uses and values: Protection of Aquatic Ecosystems (PAE), Primary Contact Recreation (PCR, swimming) and Edible Seafood (ES). As a consequence, this indicator will have 3 facets reflecting the 3 primary indices. These will not be combined into a single measurement but used separately.	PAE: Estuary Health Grade (A, B, C, D, F) PCR: Beachwatch Grades (A, B, C, D, E) ES: need more time to investigate data, but it will be converted to Grade as well	PAE: will use the current estuary health grade scores ( <a href="https://www.environment.nsw.gov.au/soc/assess-estuary-ecosystem-health-160250.htm">https://www.environment.nsw.gov.au/soc/assess-estuary-ecosystem-health-160250.htm</a> ) and will work on development of additional measures for pH impact to integrate into the same calculation framework. Data collection will focus around the existing Statewide MEMA Cumulative Impact Monitoring being done by DPIE-EES, with additional sites included as necessary. PCR: will use Beachwatch Grades from existing Beachwatch program ES: will use Safe Foods Australia grades for oyster producing estuaries plus results from National Food Standards seafood surveys and any other surveys (pippies, other contaminants) that are done in the time period. Supplemented by some additional monitoring as part of Management Action 1.5	Annual		Y	All YES, >10 years		PAE - Initiative 1.5, PCR – DPIE-EES, ES: Foodsafe and oyster industry, plus some Action 1.5		1A
KPI 2	National Litter Index results for NSW		Volume of litter per 1000 square metres	National Litter Index Keep Australia Beautiful	Quarterly	2005	Y	yes	National Litter Index Keep Australia Beautiful	Yes, currently funded under the Litter Prevention Unit	Land based litter is a suitable proxy for litter inputs to the marine estate  Surveyed sites vary between assessments in terms of location and area  Data excludes illegally dumped materials  NLI is appropriate for measuring trendlines over time for litter in the environment. It does not account for changes in behaviour, or other influencing factors such as population changes, weather or clean-up activities	1B
KPI 3	Community wellbeing indicator	This indicator focuses on the perceptions of the marine estates contribution to a person's overall quality of life.  Details for this indicator are currently in development.	TBC as part of the development of the community wellbeing framework	Community survey Stakeholder surveys	Biennial		N	N		18 Community survey	Survey is designed to appropriately capture aspects of quality of life relevant to the marine estate	8A

KPI code	KPI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 4	Biodiversity and habitat indicator	Varies. Refer to indicator details for relevant initiatives.	Estuarine fish abundance and diversity	Targeted surveys	Biannual	2022	N	N		MEMS and consolidated revenue	Funding is made available in stage 3	1C, 2B
KPI 5	Key stressors to threatened coastal and marine species in NSW	Includes coastal and marine species listed as threatened and protected under the Biodiversity Conservation Act 2016 and threatened under the Fisheries Management Act 1994.  Key stressors are identified in the TARA and Strategy.  Monitoring of active threats will be completed across initiatives.	Examples include: A reduction in the rate of reported whale entanglements in commercial fishing gear; Proportion of compliant whale and dolphin watching operators per compliance operation; A reduction in the rate of non-compliance (FM Act species)	Elements database, rescue and rehabilitation sector, compliance campaign reports; Nautilus database and information from Fisheries Compliance Officers (FM Act)	Ongoing	Commenced	Y/N – species dependent	Y/N – species dependent	Records of marine wildlife events and incidents (BC Act species) captured in Elements. Annual returns from the NPWS licensed Rescue and Rehabilitation Sector. FM Act threatened species compliance infringement notices in Nautilus	DPIE and MEMS	All entanglements and compliance infringement notices are currently being recorded and will continue to be recorded in Elements, local NPWS area files or Nautilus. Humpback Whale population recovery will continue at 11% p.a. Reduction will be measured from NSW commercial fishing gear	5A
KPI 6	Aboriginal people report satisfaction with Sea Country management	KPI to focus on satisfaction with processes  Measurement of this KPI will focus on those involved in programs, initiatives or activities that result from the framework for effective and appropriate Aboriginal involvement in Sea Country management and decision-making, and the integrated Aboriginal engagement model for participation in Sea Country management, planning and monitoring, both to be developed through Initiative 4.	Average satisfaction rating based on Likert scale	Targeted stakeholder survey	Biennial		N Survey and evaluation forms based on the Likert scale to be developed	N	NA	Initiative 4	Survey is designed to appropriately probe respondent satisfaction	4A

KPI code	KPI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 7	Aboriginal employment in industries relating to the marine estate	<p>Data to be extracted for selected industries for populations located in coastal LGAs</p> <p>Industries reflect categories measured through ABS census data and include, but are not limited to:            02 – Aquaculture            041 – Fishing            112 Seafood Processing            H Accommodation and Food Services            501 Scenic and Sightseeing Transport            8922 Nature Reserves and Conservation Parks Operation</p> <p>Indicator also to include employment of Aboriginal people in related roles in the NSW public sector.</p>	<p>Number of Aboriginal people employed in industries related to the marine estate</p> <p>Number of Aboriginal people employed in government roles management of the marine estate</p>	<p>ABS data</p> <p>NSW public service employment data</p>	<p>Census data is 5-yearly, or alternatively, customised data can be purchased from ABS</p> <p>Public service data annual</p>		<p>Partial (Aboriginal employment statistics maintained across DPI &amp; public sector)</p> <p>May need to partner with LALCs, Native Title Prescribed Body Corporates</p>	Y	<p><a href="http://www.abs.gov.au/websitedbs/D3310114.nsf/Home/Census?OpenDocument&amp;ref=topBar">http://www.abs.gov.au/websitedbs/D3310114.nsf/Home/Census?OpenDocument&amp;ref=topBar</a></p> <p>NSW Public Service Workplace Profile reports</p>	Initiative 4	<p>Employment in identified sectors in coastal regions is a suitable proxy for employment in industries relating to the marine estate</p> <p>Raw data from the NSW public service workforce profile report can be obtained</p>	4B, 4E
KPI 8	Trend in ecological sustainability, economic viability and community wellbeing measures for fishing and aquaculture	<p>Measures include:</p> <p>(1) Species stock status            (2) Gross Value of Fisheries Production in NSW            (3) Recreational fishing participation; Quality of recreational fishing; Expenditure and economic impact of recreational fishing in NSW</p> <p>Species stock stock includes species for commercial, recreational and cultural fishing and harvesting. This may include tracking of species that are currently undefined or for which there is not yet data (to be confirmed). Current species include: species to list to be advised</p> <p>Gross Value of Fisheries Production includes both</p>	<p>(1) Index of species stock status (no. of stocks assessed vs no. of stocks sustainable/data deficient etc.)</p> <p>(2) Gross Value of Fisheries Production - Commercial (wild catch) - Aquaculture</p> <p>(3) Recreational fishing participation; Quality of recreational fishing; Expenditure and economic impact of recreational fishing in NSW</p>	<p>(1) Status of Australian Fish Stocks Reports FRDC</p> <p>(2) Department of Industry analysis ABARES</p> <p>(3) Recreational Fishing Integrated Monitoring Program (2K random selected diarists; charter boat data; some observer and creel survey data)</p> <p>Washup survey</p>	<p>Annual (1,3)            Biennial</p>		Y	Y	<p>(1) <a href="http://fish.gov.au/">http://fish.gov.au/</a></p> <p>(2) <a href="http://www.agriculture.gov.au/SiteCollectionDocuments/abares/publications/AustFishAquacStats_2017_v1.2.0.pdf">http://www.agriculture.gov.au/SiteCollectionDocuments/abares/publications/AustFishAquacStats_2017_v1.2.0.pdf</a></p> <p>(2) <a href="https://www.dpi.nsw.gov.au/fishing/aquaculture/publications/aquaculture-production-reports">https://www.dpi.nsw.gov.au/fishing/aquaculture/publications/aquaculture-production-reports</a></p> <p>(3) 'Washup Surveys' (<a href="https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0011/598628/West-et-al-Survey-of-recreational-fishing-in-NSW-ACT-2013-14-2016_03_02.pdf">https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0011/598628/West-et-al-Survey-of-recreational-fishing-in-NSW-ACT-2013-14-2016_03_02.pdf</a>)  <a href="http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0009/499302/UOW-statewide-">http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0009/499302/UOW-statewide-</a></p>		<p>Fishing and aquaculture in the marine estate includes recreational fishing cultural fishing, commercial fishing, aquaculture and seafood culturing and harvesting.</p> <p>Existing monitoring and reporting program continues</p> <p>Data on participation and quality of recreational fishing is being collected and will continue to be collected through the Integrated Monitoring Program. Expenditure and economic impact of recreational fishing will be updated regularly e.g. UoW methodology</p>	6A

KPI code	KPI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
		commercial fishing and aquaculture production.							economic-survey-final-report.pdf			
KPI 9	Trend in economic, ecological and social measures for boating	<p>TfNSW collects and analyses information on boating incidents across NSW. The analysis looks at a range of attributes including incident location, type, contributing factors, outcome, frequency, vessel and operator details.</p> <p>TfNSW conducts an annual boating survey that looks at a number of criteria relating to boating activity including trip frequency, purpose of trips, types of vessels, exposure rates and a range of satisfactions measures.</p> <p>TfNSW captures complaints about boating behaviour made by phone, mail, email, online capture of public complaints about on water behaviour.</p> <p>Measures include:  (1) Frequency of fatal and serious injury boating incidents  (2) Frequency of boating activities and satisfaction with access and experiences  (3) Complaints relating to boating behaviour.</p>	(1) Frequency of fatal and serious injury boating incidents (2) Number and type of trips satisfaction measures (3) Number of complaints by type per year	(1) Boating Incidents in NSW, Centre for Maritime Safety (2) Transport for NSW annual boater survey (3) TfNSW complaints data	Annual	ongoing	Y	Y	(1) Boating Incidents In NSW report <a href="https://maritimemanagement.transport.nsw.gov.au/staying-safe/boating-statistics/index.html">https://maritimemanagement.transport.nsw.gov.au/staying-safe/boating-statistics/index.html</a> (2) Published and unpublished survey data and reports (3) TfNSW complaints data	TfNSW	Existing monitoring/reporting program and associated funding continues	7A
KPI 10	Number of strategic plans and operational activities that reflect climate change science, including risks, consequences and appropriate management responses	Strategic plans and operational activities include: Coastal Management Plans Scoping studies TBC by initiative lead(s).	Number of strategies, plans, processes and other activities that reflect likelihood and consequence of climate change risks	Audit of sample of specified strategic plans and operational activities  Initiative lead(s) to note if they have any other existing processes for monitoring content of specified strategic plans or operational activities, such as program/administrative reporting	5 years, 10 years		N	N	CMP audit Marine Park POM review		Audit is designed to appropriately inform indicator  That climate change risks considered are relevant to specific strategy, plan, process or activity	3A

KPI code	KPI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
KPI 11	Economics benefits indicator	Details for this indicator are currently in development.										8A
KPI 12	Community and stakeholders report satisfaction with governance of the marine estate	Satisfaction to be assessed through concise measures for each of the following governance themes: coordination, consistency, transparency and inclusiveness.  Specifications provided in table for complex KPIs.	Average satisfaction rating based on Likert scale for each measure	Responsible agencies staff survey Targeted stakeholder survey Community survey	Biennial (ideally), or minimum of three (3) surveys over the life of the MEMS (to collect baseline data, progress at mid-point, end-of-strategy achievement)	Year 2	N	N	NA	TBC	Sufficient funding is secured to undertaken minimum survey requirements Survey respondents are selected randomly from a within the identified stakeholder categories, rather than targeting specific individuals, groups or organisations	1D, 2C, 9A
KPI 13	Community members report awareness and appreciation of the significance of Sea Country values		Proportion of survey participants reporting awareness and appreciation	Community survey	Biennial		No. May need a community survey to establish a baseline of awareness and appreciation of cultural importance of Sea Country in the non-Aboriginal community	N		Initiative 8	Survey is designed to appropriately probe awareness and appreciation	4C, 4F
KPI 14	Agency staff report using decision-making and approvals processes for foreshore and coastal land use management, design and development that balances social and economic benefits with enhancing coastal and marine habitats	Specific decision-making and approvals processes include: TBC by initiative leads  Targeted stakeholders include: TBC by initiative lead(s).	Proportion of survey respondents self-reporting use of identified processes	Program administrative data  Agency staff survey	Biennial		N	N		Initiative 8 for agency staff survey	Survey is designed to appropriately probe adoption of best practice in accordance with indicator specifications Survey is designed to support accurate self-reporting. Staff use of identified processes is effective and appropriate for balancing social and economic benefits with enhancing coastal and marine habitat	2A
KPI 15	Adoption of best practice approaches and processes for undertaking activities related to the marine estate among the community and targeted stakeholders	Varies. Refer to indicator details for relevant initiatives.	Proportion of survey respondents self-reporting use of best practice approaches and processes	Community survey Targeted stakeholder survey  Initiative lead(s) to note if they have any other existing processes for monitoring adoption of best practice approaches and processes, such as program/administrative reporting or compliance activities some pre-post event participant surveys can be included that can	Biennial	In line with education events and works contracts	N	Possibly for some		I1 (agencies and stakeholders) and I8 (community survey only)	Survey is designed to appropriately probe adoption of best practice in accordance with indicator specifications Survey is designed to support accurate self-reporting  Use of best practice approaches and processes is effective and appropriate	1I, 2E, 8B

KPI code	KPI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to indicator
				supply some info Ag CCC CBSM project LLS and Ag works contracts and maintenance agreements								
KPI 16	Responsible agencies report satisfaction with efficiency and effectiveness governance of the marine estate	Stakeholder satisfaction will be assessed through the following measures (assessed separately for consistency within own organisation and across responsible agencies): <ul style="list-style-type: none"> <li>• allocation of resources, including staff and funding, across management of the marine estate is clearly directed towards identified outcomes</li> <li>• systems, processes, skills, knowledge and governance and administrative arrangements allow organisations and individuals to efficiently and effectively deliver their responsibilities, with minimal duplication, unreasonable delays or unnecessary activities</li> <li>• responsible agencies are achieving, or on track to achieve, identified outcomes within budget</li> </ul> Data collection will be undertaken through a survey of randomly selected individuals from responsible agencies, including marine estate managers from relevant government departments, agencies, statutory authorities and local government.	Average satisfaction rating based on Likert scale for each measure	Agency staff survey	Biennial (ideally), or minimum of three (3) surveys over the life of the MEMS (to collect baseline data, progress at mid-point, end-of-strategy achievement)	Year 2	N	N	NA	Initiative 8	Sufficient funding is secured to undertake minimum survey requirements Survey respondents are selected randomly from a within the identified stakeholder categories, rather than targeting specific individuals, groups or organisations	2C, 9B

## Detailed specifications for complex KPIs

KPI code	KPI	Specifications	Measure and unit	Data source	Collection frequency	Commencement
KPI 1	Water quality supports community values and uses	To be assessed through the three primary uses and values: Protection of Aquatic Ecosystems (PAE), Primary Contact Recreation (swimming, PCR) and Edible Seafood (ES). As a consequence, this indicator will have 3 facets reflecting the 3 primary indices. These will not be combined into a single measurement but used separately.	PAE: Estuary Health Grade (A, B, C, D, F) PCR: Beachwatch Grades (A, B, C, D, E) ES: need more time to investigate data, but it will be converted to Grade as well	PAE: will use the current estuary health grade scores ( <a href="https://www.environment.nsw.gov.au/soc/assess-estuary-ecosystem-health-160250.htm">https://www.environment.nsw.gov.au/soc/assess-estuary-ecosystem-health-160250.htm</a> ) and will work on development of additional measures for pH impact to integrate into the same calculation framework. Data collection will focus around the existing Statewide MEMA Cumulative Impact Monitoring being done by DPIE-EES, with additional sites included as necessary. PCR: will use Beachwatch Grades from existing Beachwatch program ES: will use Safe Foods Australia grades for oyster producing estuaries plus results from National Food Standards seafood surveys and any other surveys (pippies, other contaminants) that are done in the time period. Supplemented by some additional monitoring as part of Management Action 1.5	Annual	
KPI 3	Community wellbeing indicator	This indicator focuses on the perceptions of the marine estates contribution to a person's overall quality of life.  Details for this indicator are currently in development.	TBC as part of the development of the community wellbeing framework	Community survey Stakeholder survey	Biennial	
KPI 4	Biodiversity and habitat indicator	Responsible agencies, including marine ecosystem researchers. Data collection will be undertaken through targeted surveys.	Estuarine fish abundance and diversity	Targeted surveys	Biannual	2022
KPI 5	Key stressors to populations across threatened coastal and marine species in NSW	Includes coastal and marine species listed as threatened and protected under the Biodiversity Conservation Act 2016 and threatened under the Fisheries Management Act 1994.  Key stressors are identified in the TARA and Strategy.  Monitoring of active threats will be completed across initiatives.	Examples include: A reduction in the rate of reported whale entanglements in commercial fishing gear; Proportion of compliant whale and dolphin watching operators per compliance operation; A reduction in the rate of non-compliance (FM Act species).	Elements database, rescue and rehabilitation sector, compliance campaign reports; Nautilus database and information from Fisheries Compliance Officers (FM Act)	Ongoing	Commenced
KPI 11	Economics benefits indicator	Details for this indicator are currently in development.				

KPI code	KPI	Specifications	Measure and unit	Data source	Collection frequency	Commencement
KPI 12	Community and stakeholders report satisfaction with governance of the marine estate	<p>Satisfaction to be assessed through concise measures for each of the following governance themes: coordination, consistency, transparency, inclusiveness and efficiency and effectiveness. Measures are provided below.</p> <p>Responsible agency staff satisfaction with <b>coordination</b> across and within responsible agencies in relation to the marine estate (assess separately for coordination within own organisation and across responsible agencies):</p> <ul style="list-style-type: none"> <li>• Coordination is embedded in business as usual practice</li> <li>• Coordination is generally purposeful and productive</li> <li>• The scale and nature of coordination is generally appropriate to the project, task, issue, etc., and desired outcomes, without creating unnecessary administrative burden</li> </ul> <p>Responsible agency staff satisfaction with <b>consistency</b> of decision-making and actions in relation to the marine estate (assess separately for consistency within own organisation and across responsible agencies):</p> <ul style="list-style-type: none"> <li>• relevant plans, priorities, projects, activities, etc., are aligned with the MEMS</li> <li>• the same or similar decision is likely to be reached regardless of which individual or agency is responsible for making the decision</li> </ul> <p>Responsible agency staff, targeted stakeholder and community satisfaction with <b>transparency</b> of decision-making in relation to the marine estate:</p> <ul style="list-style-type: none"> <li>• decision-making processes and responsibilities are documented and accessible (including being clear and easily understood) by a general audience</li> <li>• decisions, and the reasons for decisions, are clearly communicated to interested or affected stakeholders</li> <li>• information relating to performance (including fulfilment of responsibilities and achievement of outcomes) is communicated clearly and in a timely manner</li> </ul> <p>Responsible agency staff, targeted stakeholder and community satisfaction with <b>inclusiveness</b> of decision-making and actions in relation to the marine estate:</p> <ul style="list-style-type: none"> <li>• There are opportunities for all relevant stakeholders to participate and equally engage in decision-making processes and outcomes</li> <li>• Stakeholders have clear understanding of the extent to which they can contribute to or influence decision-making</li> <li>• Engagement activities and information provided allows informed and meaningful participation for all relevant stakeholders</li> <li>• Stakeholders' views are respected and considered</li> </ul> <p>Data collection will be undertaken through a survey of randomly selected individuals within identified stakeholder categories. Unless otherwise specified, all categories will be surveyed. Stakeholder categories are:</p> <ul style="list-style-type: none"> <li>• Responsible agencies, including relevant government departments, agencies and statutory authorities, and local government</li> <li>• Targeted stakeholders, including Aboriginal stakeholder groups, - Industry and peak bodies, including tourism, recreational, and conservation groups</li> <li>• The engaged community, focusing on community interest groups, including recreational fishing, diving and boating groups, and local community conservation groups</li> </ul>	Average satisfaction rating based on Likert scale for each measure	Agency staff survey Targeted stakeholder survey Community survey	Biennial (ideally), or minimum of three (3) surveys over the life of the MEMS (to collect baseline data, progress at mid-point, end-of-strategy achievement)	Year 2

## All leading indicators (LIs)

LI code	LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to LI
LI 1	Water quality supports community values and uses at targeted sites	To be assessed through the three primary uses and values: Protection of Aquatic Ecosystems (PAE), Primary Contact Recreation (swimming, PCR) and Edible Seafood (ES). As a consequence, this indicator will have 3 facets reflecting the 3 primary indices. These will not be combined into a single measurement but used separately.  Targeted sites to be identified.	PAE: Estuary Health Grade (A, B, C, D, F) PCR: Beachwatch Grades (A, B, C, D, E) ES: need more time to investigate data, but it will be converted to Grade as well	PAE: will use the current estuary health grade scores ( <a href="https://www.environment.nsw.gov.au/soc/assess-estuary-ecosystem-health-160250.htm">https://www.environment.nsw.gov.au/soc/assess-estuary-ecosystem-health-160250.htm</a> ) and will work on development of additional measures for pH impact to integrate into the same calculation framework. Data collection will focus around the existing Statewide MEMA Cumulative Impact Monitoring being done by DPIE-EES, with additional sites included as necessary. PCR: will use Beachwatch Grades from existing Beachwatch program ES: will use Safe Foods Australia grades for oyster producing estuaries plus results from National Food Standards seafood surveys and any other surveys (pippies, other contaminants) that are done in the time period. Supplemented by some additional monitoring as part of Management Action 1.5	Annual		Y	All YES, >10 years		PAE - Initiative 1.5, PCR – DPIE-EES, ES: Foodsafe and oyster industry, plus some Action 1.5		1G
LI 2	Relevant agency staff demonstrate use of the risk-based framework and other relevant frameworks, policies and processes for managing water quality	Relevant agencies include: Local councils DPIE-EES, INSW, EPA, SW, GSC, DPE, DPI, WNSW, TfNSW, LLS  Legislation and policies include but is not limited to: legislation and policies that use community values and uses of the marine estate as a benchmark for setting management targets Local and regional plans For 1.2 – will be med term use of outcomes of 1.2.6 (DMP) and 1.2.8 (Offset/PLC) new policies and procedures	Proportion of planning instruments that reflect the risk-based framework for water quality and river flow objectives  Proportion of documents demonstrating use of DMPs. Number of 'new' BCA and FMA PLC sites (related to marine estate) and Aquatic Offsets Number of works approvals done under new processes	Program administrative data  Agency staff survey  All relevant plans, legislation and policy	Biennial	2019 Base line data to be collected now	N	N		TBC	Staff use is effective and appropriate. The projects undertaken during the first phase will develop an understanding of the baseline. Subsequent surveys will need to build on that work	1D, 1E, 1F, 1L
LI 3	Knowledge gaps adequately addressed. Knowledge gaps relate to threats, stressors, risks, condition, value and management approaches	Varies. Refer to indicator details for relevant initiatives.	Number of knowledge gaps with status changing from 'inferred' to 'adequate'. Number of Research / information reports provided (i.e. Coastal Floodplain Prioritisation study in 1.2.7)	Agency staff survey Review against TARA Program administrative data	2, 5 & 10 years			Y	TARA		Knowledge gaps are reviewed through review of the TARA	1F, 2H, 2I, 3B, 3D, 3E, 8F, 8G
LI 4	Aquatic and marine habitat connectivity	Varies. Refer to indicator details for relevant initiatives.	Waterway length opened up (km)		Annual							1G, 1J, 2F

LI code	LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to LI
LI 5	Responsible agencies demonstrate clarity of roles, responsibilities and accountabilities for managing the marine estate	Varies. Refer to indicator details for relevant initiatives. For litter:	Proportion of survey respondents demonstrating clarity	Responsible agencies- staff survey	Biennial		N	N	NA	Nil in Stage 1 for I9. Potential to collaborate with I8 surveys	Survey is designed to appropriately probe clarity of roles and responsibilities across aspects of marine estate management reflected in the initiatives	1D, 1E, 1K, 2G, 5F, 5G, 9H
LI 6	Responsible agencies report improved processing times for regulatory processes and approvals	Regulatory processes and approvals such as: land use and development planning and approvals in coastal and foreshore zones Crown land consent for work on crown land Marine park permits DPI s.37 permits Commercial fishing approvals Aquaculture Rec fishing DPIE-EES to confirm Transport to confirm  Responsible agencies include: councils All MEMA agencies and Departments within their cluster	Reported change in processing times	Administrative data Responsible agencies staff survey	Biennial		N	Some but varied – need all agencies to advise		Nil	Information relating to Indicator and Measure is documented through administrative processes Survey is appropriately designed to inform indicator	2D, 9C, 9G
LI 7	Agency staff report using information relating to social, cultural, economic and environmental values in their strategies, plans, programs and decision-making processes	Includes incorporation throughout planning, implementation and reporting of: community objectives and values Aboriginal objectives, values, rights and interests unintended consequences of programs and plans economic benefits/costs  Relevant strategies, plans, programs and processes include (but not limited to): managing threatened and protected species	Rate of agency staff reporting use of information relating to social, cultural, economic and environmental values	Agency staff survey	Biennial	TBC	N	N	NA	TBC	Survey is designed to appropriately probe decision-making processes used by agency staff to develop agency programs and plans. Survey to also determine staff clarity on social, cultural, economic and environmental evidence	5C, 8C, 8E
LI 8	New or improved processes or events for sharing knowledge among responsible agencies, and between responsible agencies and targeted stakeholders and the community	Includes knowledge sharing in relation to: threatened and protected species impacts of climate change	Number of new or improved processes, networks or events	Agency staff survey Administrative data	TBD	TBC	N	N	NA	TBC	Knowledge sharing processes and events are documented through project/program management and administrative systems Networks can be measured	5B, 9D, 9I
LI 9	Community and targeted stakeholders demonstrate improved capacity to anticipate and adapt	Varies. Refer to indicator details for relevant initiatives.	Number of permit applications for works in floodplains and low-lying areas that give consideration to potential climate change impacts	Details in Floodplain infrastructure works requests	TBD		N	N		TBC	Survey is designed to appropriately reflect self-assessed capacity	2I, 3C

LI code	LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to LI
	to climate change impacts											
LI 10	Community members and targeted stakeholders demonstrate awareness of benefits of, and threats to, the marine estate	Varies. Refer to indicator details for relevant initiatives.	Proportion of survey respondents demonstrating awareness	Community survey Targeted stakeholder surveys	Biennial		N	N		I8 and I1 (some pre-post event participant surveys will be included that can supply some info)	Survey is designed to appropriately probe awareness	1M, 3D, 5F, 6E, 8F, 8G, 8I
LI 11	Responsible agencies report confidence with capacity to fulfil governance roles and responsibilities	Varies. Refer to indicator details for relevant initiatives.	Proportion of survey respondents' confidence	Agency staff survey	Biennial		N	N		TBC	Agency staff survey is designed to appropriately inform indicator	1E, 1F, 1L, 9H
LI 12	Non-compliance among the community and targeted stakeholders with rules, regulations, guidelines and their responsibilities for undertaking activities related to the marine estate	Activities include those relating to: land use and management water pollution and litter  Varies. Refer to indicator details for relevant initiatives.  Targeted stakeholders include: TBC by initiative lead(s)	Proportion of noncompliant stakeholders per capita	Administrative data Litter fine data – EPA Fisheries Permit breaches  Initiative lead(s) to note if they have any other existing processes for monitoring noncompliance	Biennial		N	Partially	Relevant litter fine data Number of permit breaches, Litter fine data, Possibly Council compliance records	Partially. currently under funded under the Litter Prevention Unit	Information relating to Indicator and Measure is documented through administrative processes  There are a number of factors that can drive records of noncompliance. Indicator will need to be considered in this context to ensure the measurements reflect community behaviour/understanding, not other actions (e.g. increased compliance activities by authorities)	1I, 5D, 7B, 9F
LI 13	Aboriginal group or individual participation in Sea Country management, planning and monitoring	Varies. Refer to indicator details for relevant initiatives.	Number of Aboriginal representatives on marine estate advisory committees  Number of Aboriginal Advisory Groups related to the marine estate  Number of MOUs/CRUAs/LMPs relating to the marine estate  Number of Aboriginal participants in events, activities or programs  Number of marine mammal strandings responses that include Aboriginal representatives  Number of Future Act referrals	Administrative data	Annual		Y number of participants, projects, budget etc. all being recorded during implementation	Baseline has been collected since the initiative commenced		Initiative 4	Information relating to Indicator and Measure is documented through administrative processes	4D, 4G, 5E

LI code	LI	Specifications	Measure and unit	Data source	Collection frequency	Commence ment	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to LI
LI 14	Area of Sea Country under formal management agreements	Agreements include:  Memorandums of Understanding (MOUs) Cultural Resource Use Agreements (CRUAs) Local Management Plans (LMPs) Indigenous Land Use Agreements (ILUAs) Native Title Determinations Land and Sea Country Plans	Area and number of land/waters covered by formal agreements	Joint management plans MOUs Cultural Resource Use Agreements  Administrative data	Annual		Y existence of formal agreements recorded over time. ILUAs, MOUs, CRUAs, NT determinations	Yes	Formalised ILUAs, MOUs, National NT Registrar	Initiative 4	Information relating to Indicator and Measure is documented through administrative processes	4D, 4G, 4H
LI 15	Aboriginal participants satisfaction with events, activities or programs for involvement in Sea Country management, planning and monitoring	Measurement of this indicator will focus on those involved in programs or activities directly arising from the initiative.	Average satisfaction rating based on Likert scale	Post event/activity participant feedback survey	Ongoing following conclusion of specific events, activities or programs		Video logs of each activity including participant commentary and interviews.  Evaluation form post activity	N		Initiative 4	Survey is designed to appropriately probe satisfaction	4G
LI 16	Number of programs or agreements initiated by Aboriginal groups or individuals for managing Sea Country	Programs or agreements include:  Memorandums of Understanding (MOUs) Cultural Resource Use Agreements (CRUAs) Local Management Plans (LMPs) Indigenous Land Use Agreements (ILUAs) Native Title Determinations	Number of programs or agreements initiated	Administrative data	Annual		Links to SI15 (area metric vs numerical metric)	Y	Formalised ILUAs, MOUs, National NT Registrar	Initiative 4	Information relating to Indicator and Measure is documented through administrative processes	4G, 4H
LI 17	Responsible agencies recognise and demonstrate understanding of Aboriginal cultural values, roles and responsibilities in managing Sea Country	Includes:  Areas of responsibilities and geographic regions native title status	Proportion of survey respondents demonstrating clarity	Agency staff survey Administrative data	Biennial		N	N		Initiative 4	Survey is designed to appropriately probe clarity	4F
LI 18	Compliance with conditions in aquaculture permits and consents, and commercial fishing licences		Rate of compliance per capita	Annual reports	Annual						Existing monitoring program continues	6B
LI 19	Number of new maritime infrastructure projects delivering new or upgraded infrastructure to support improved waterways access	Measure of the number of projects delivered under the Boating Now infrastructure grants program	Number and value of projects delivered per annum under the Boating Now Program	Transport for NSW	Annual	ongoing	yes	yes	Boating Now reports	TfNSW	Boating Now receives funding to continue beyond 2019 or an alternate program providing maritime infrastructure replaces Boating Now	7F
LI 20	Targeted stakeholders report attitudes and behaviours that align with safe and sustainable boating	Measure boater's attitudes towards sustainable boating practices as part of the annual boater survey.	Proportion of survey respondents reporting appropriate attitudes and behaviours	Transport for NSW	Annual	Ongoing with refinement to capture sustainability attitudes	Yes with modifications	no	TfNSW Annual boater survey	TfNSW	Survey is designed to appropriately probe attitudes and behaviour	7D, 7E

LI code	LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to LI
	practices											
LI 21	Community and targeted stakeholders report awareness and clarity of rules, regulations, guidelines, best practice and their responsibilities for undertaking activities related to the marine estate	Varies. Refer to indicator details for relevant initiatives.	Proportion of survey respondents reporting awareness and clarity							18	Survey is designed to appropriately capture awareness and clarity	1N, 2I, 6C, 6F, 6G, 6H, 8H
LI 22	Community and stakeholder participation in decision-making and management of the marine estate	Varies. Refer to indicator details for relevant initiatives.	Number of community and stakeholder participants in decision-making processes Number of community and stakeholder participants in marine estate management activities or events	Administrative data	Annual	TBC	N	Y	Number of community and stakeholder participants in workshops, meetings and preparedness days	Initiative 4 for local Aboriginal involvement in marine wildlife events. Additional funding required for other components	Information relating to Indicator and Measure is documented through administrative processes	5E, 8D, 8H, 9E
LI 23	Community and targeted stakeholders report enhanced opportunities and experiences for activities relating to marine estate	Varies. Refer to indicator details for relevant initiatives.	Proportion of survey respondents reporting enhanced opportunities and experiences	Community survey Targeted stakeholder survey	Biennial						Survey is designed to appropriately inform and measure enhanced opportunities and experiences  Changes in this indicator should be considered against changes in other relevant social, cultural, economic and environmental indicators to understand whether improvements in this indicator has come at the expense of other indicators	6G, 6H, 6I, 7C, 7D
LI 24	Community members report awareness and clarity of agencies' respective roles and responsibilities in managing the marine estate		Proportion of survey respondents reporting awareness and clarity	Community survey	Biennial					18	Survey is designed to appropriately probe awareness	2G, 8I, 9J
LI 25	Cross agency collaboration for marine wildlife strandings and entanglements	Stakeholders include: rehabilitation groups, veterinarians, local councils and other State agencies.	Consistency of cross agency collaboration and use of the Marine Wildlife Management Manual	Administrative data	Annual	Currently occurring	N	Y	Elements database	15. Additional funds required for analysis	Information relating to Indicator and Measure is documented through administrative processes	5H

LI code	LI	Specifications	Measure and unit	Data source	Collection frequency	Commencement	Current monitoring program?	Is existing baseline data available?	If baseline data exists, what is the dataset?	Funding source for monitoring	Assumptions	All outcomes related to LI
LI 26	Community and stakeholder satisfaction with experience participating in decision-making and management of the marine estate	Stakeholders include Aboriginal communities, land owners, community, industry, state and local government  TBC for I8 and I9.	Average satisfaction rating based on Likert scale	Post event/activity participant survey, documented in administrative data	Surveys post event/activity – frequency varies Data collated annually	TBC	N	N	NA	I8 for community survey only. Additional funding required for other components	Survey is designed to appropriately probe satisfaction Survey design to focus on capturing aspects of the experience rather than outcome, such as they felt they were sufficiently informed on the issues, the process, how they could contribute and influence decision-making and management, how their contribution was considered; whether they felt the right voices were represented; etc.	5E, 8D, 9E
LI 27	Community members report awareness and appreciation of the benefits and significance of fishing and aquaculture		Proportion of survey participants reporting awareness and appreciation	Community survey	Biennial					I8	Survey is designed to appropriately probe awareness and appreciation	6D
LI 28	Area of coastal landscape managed for habitat or to reduce diffuse source water pollution	The indicator measures the areas directly improved from MEMS on-ground actions only	Area of land (Hectares)	MEMS action reports	Cumulative total of Initiative 1 on-ground work outputs - annual	With on-ground programs	N	Y		I1	On-ground works do provide improved management for habitat and/or diffuse source water pollution	1J
LI 29	National Litter Index results for targeted sites in NSW	Targeted sites to be identified	Volume of litter per 1000 square metres	National Litter Index Keep Australia Beautiful	Quarterly	2005	Y	yes	National Litter Index Keep Australia Beautiful	Yes, currently funded under the Litter Prevention Unit	Land based litter is a suitable proxy for litter inputs to the marine estate  Surveyed sites vary between assessments in terms of location and area  Data excludes illegally dumped materials  NLI is appropriate for measuring trendlines over time for litter in the environment. It does not account for changes in behaviour, or other influencing factors such as population changes, weather or clean-up activities	1H

# Appendix C – Data collection and management plan

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Data will be collected, collated and analysed as part of monitoring and evaluation activities. Detailed data requirements for individual monitoring indicators are provided in Appendix B, and are broadly discussed below.

## Data collection and sources for monitoring management action status

Program managers, initiative and management action leads will collect and document data relating to the status of inputs, management actions and outputs under each initiative to provide snapshots on program delivery. This will draw on project management data that is collected and reported for the individual management actions quarterly and annually through the MEMS governance and project management framework. Status reports based on a traffic light system will report on progress of each management action, initiative and ultimately the MEMS program through three tiers of governance against key project management parameters of scope, schedule, budget, issues and risk. This will ensure that the MEMS is implemented consistently and effectively across the entire program.

## Data collection and sources for monitoring indicators

Data requirements, collection, sources and collection frequency for each indicator are provided in the detailed indicator table in Appendix B. Monitoring for most indicators is to be undertaken either annually or biennially (every two years). Agencies will be assigned lead responsibility for ensuring data is collected according to requirements (quality and timeliness) but may delegate responsibility to third parties.

There will be common data collection processes across a number of indicators and initiatives. These should be undertaken in a coordinated manner. For example, data for a number of indicators will be collected through a community survey. For efficiency, this should be approached through a single community survey that captures data across all relevant indicators.

Similarly, there are indicators that are relevant for more than one initiative. Data will be collected on an indicator basis in the first instance. In some cases, an indicator may have some data requirements specific to a particular initiative. Where applicable, these requirements are specified in Appendix B and will be the responsibility of the lead agency for that particular initiative.

An overview of the main data sources is provided below.

### Existing data sources

Monitoring of indicators draws on existing data sources and collection processes wherever possible. Existing data sources include environmental monitoring programs, stakeholder attitudes and behaviour surveys relating to specific existing programs, tourism data, employment data and compliance data. Existing data may be collected by agencies responsible for managing the marine estate, or by external agencies, such as the Australian Bureau of Statistic (ABS).

## Administrative data

Administrative data includes data collected by responsible agencies as part of their internal systems for tracking and reporting. This includes but is not limited to project/program management documentation; expenditure; customer service activities; internal and external compliance activities; policy development, planning and other processes. Many of these systems will already exist, although some may be reviewed or created to support the MIMP.

## Community, targeted stakeholder and agency staff surveys

A number of indicators require data to be collected through survey questions of relevant stakeholders. It is intended that data collection through this method will be coordinated across all relevant management initiatives and indicators, such that data is collected through the minimum number of surveys. The survey designer will consider the most efficient approach to undertake the survey, however, it is expected that a separate, although overlapping, survey may be required for each stakeholder category (see below).

### Data collection

Data collection will be undertaken through a survey of randomly selected individuals from within identified stakeholder categories. Stakeholder categories are:

- responsible agencies, including marine estate managers from relevant government departments, agencies and statutory authorities; local government; and, researchers.
- targeted stakeholders (engaged community), including Aboriginal people, community interest groups, industry and peak bodies, conservation groups and avid users of the marine estate.
- general community, capturing the broader public, who may have some limited interaction with or interest in the marine estate, but have the potential to become more engaged in the future.

Where appropriate, specific stakeholder sub-categories are identified for individual indicators in Appendix B.

### Collection frequency

Ideally, surveys will be undertaken biennially to track changes over time. However, this may be constrained by availability of funding and other resources. In this case, a minimum of three (3) surveys may be undertaken over the life of the MEMS at the following stages:

- in the initial stage to collect baseline data
- midway through the MEMS to check progress
- near the end of the life of the MEMS to assess end-of-strategy achievement.

### Data analysis

A Likert scale will be used to capture survey respondents' agreement, awareness or satisfaction. An example of a Likert scale to assess satisfaction is provided below (Table 11).

Average ratings will be derived for each measure and indicator. Responsible agencies may also choose to interrogate data in other ways, such as by stakeholder category.

**Table 11 Likert scale to be used in surveys to assess satisfaction**

Rating	Description
1	Very unsatisfied
2	Unsatisfied
3	Neither satisfied nor unsatisfied
4	Satisfied
5	Very Satisfied

## Data collection and sources for evaluation

Data for the evaluation will be gathered through the following methods:

- literature review
- targeted interviews with stakeholders
- interviews with relevant experts
- collating and reviewing administrative data
- data collected through monitoring of indicators.

Data requirements, collection and sources for each KEQ are provided in Table 7.

**Table 12 Data requirements, collection and sources for evaluation questions**

Evaluation question	Data requirements	Data collection and source(s)
Context and basis		
What was the rationale and intent of the initiative?	Documented evidence of rationale and intent of the MEMS	Literature review: <ul style="list-style-type: none"> <li>NSW Marine Estate Management Strategy 2018-2028</li> </ul>
How has the policy context changed since the initiative was developed? <i>Consider:</i> <ul style="list-style-type: none"> <li><i>policy and management context</i></li> <li><i>community expectations</i></li> </ul>	Documentation of relevant changes to policy context	Literature review: <ul style="list-style-type: none"> <li>Legislation</li> <li>Any revised MEMS documentation</li> </ul>
How has understanding of marine estate environments and issues evolved since the initiative commenced?	Documentation of relevant changes to body of knowledge	Interviews with marine and coastal science experts and managers
Process evaluation		
Were management actions completed and outputs achieved, within budget, scope and timeframes? Why or why not?  <i>Consider:</i> <ul style="list-style-type: none"> <li><i>were budget, scope and timeframes appropriate for the intended management actions and outputs?</i></li> <li><i>are management actions and outputs still considered the right areas for investment?</i></li> <li><i>what could be done differently?</i></li> <li><i>has implementation been influenced by external factors?</i></li> <li><i>to what extent have completed management actions and outputs contributed towards outcomes?</i></li> </ul>	Program delivery monitoring data relating to: <ul style="list-style-type: none"> <li>Documentation of management actions and outputs achieved or progressed</li> <li>Budget and delivery timeframe reporting for management actions and outputs</li> <li>Documentation of scope changes for management actions and outputs, where relevant</li> </ul> Qualitative insights from stakeholders in relation to sub-questions	Program delivery monitoring data Responsible agency staff interviews Administrative data from responsible agencies
Was implementation constrained in any way by inputs?	Responsible agency staff reflections on	Responsible agency staff interviews

<p>Why or why not?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li>• <i>funding</i></li> <li>• <i>resources</i></li> <li>• <i>involvement of stakeholders</i></li> <li>• <i>partnerships or agreements</i></li> </ul>	<p>whether inputs were a constraint in achieving outcomes</p> <p>Qualitative insights from stakeholders in relation to sub-questions</p>	<p>Administrative data from responsible agencies</p>
<p>Outcome evaluation</p>		
<p>To what extent have outcomes been achieved?</p> <p>Why / why not?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li>• <i>what trends have been identified through indicators?</i></li> <li>• <i>were management actions/outputs targeted effectively towards achieving outcomes?</i></li> <li>• <i>was achievement of outcomes influenced by external factors?</i></li> </ul>	<p>Responsible agency staff reflections on achievement of outcomes</p> <p>Qualitative insights from stakeholders in relation to sub-questions</p> <p>Trends in KPIs and LIs over time</p>	<p>Responsible agency staff interviews</p> <p>Targeted stakeholder interviews</p> <p>Indicator monitoring data (see Appendix B)</p>
<p>Has the initiative produced any positive or negative unintended or unexpected outcomes?</p> <p>Why/why not?</p> <p><i>Consider (for example):</i></p> <ul style="list-style-type: none"> <li>• <i>community and cultural: safety, access, relationships and interactions, employment, attitudes and behaviour, physical and mental health</i></li> <li>• <i>economic: industry structure, industry expansion/contraction, business/industry practices, goods/services prices</i></li> <li>• <i>environment: species population growth/decline, species/individual health and safety, greenhouse gas emissions, soil/water/air pollution, ecosystem disruption</i></li> </ul>	<p>Responsible agency staff reflections on unintended or unexpected outcomes</p> <p>Qualitative insights from stakeholders</p> <p>Trends in KPIs and LIs over time</p>	<p>Responsible agency staff interviews</p> <p>Targeted stakeholder interviews</p> <p>Stakeholder interviews</p>

<ul style="list-style-type: none"> <li><i>responsible agencies: administrative burden, indicator fixation, restricted focus, misinterpretation, gaming the system</i></li> </ul>		
<p>Are outcomes and indicators appropriate to the identified need? Why/why not?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li><i>were outcomes and indicators effectively aligned with the original identified need?</i></li> <li><i>are outcomes and indicators still relevant given any changes in the broader context?</i></li> <li><i>do / did indicators provide sufficient and appropriate signal for progress towards outcomes and/or any emerging risks?</i></li> <li><i>is / was data collection against indicators achievable?</i></li> </ul>	<p>Responsible agency staff reflections on appropriateness of outcomes</p> <p>Responsible agency staff reflections on appropriateness of indicators</p> <p>Qualitative insights from stakeholders in relation to sub-questions</p>	<p>Responsible agency staff interviews</p> <p>Stakeholder interviews</p>
<p>What insights are there for ensuring achieved outcomes are maintained in the future?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li><i>are impacts likely to endure through subsequent planning timeframes?</i></li> <li><i>how should management responsibilities be assigned?</i></li> </ul>	<p>Responsible agency staff reflections on maintaining outcomes</p> <p>Qualitative insights from stakeholders in relation to sub-questions</p>	<p>Responsible agency staff interviews</p> <p>Stakeholder interviews</p>
<p>Economic evaluation</p>		
<p>Have outcomes been achieved efficiently? Why/why not?</p> <p><i>Consider:</i></p> <ul style="list-style-type: none"> <li><i>what were the initiative's implementation costs?</i></li> <li><i>what are, or were, the initiative's expected or achieved, net benefits in monetary terms? (Note: a cost benefit analysis (CBA) is required to answer this question. Undertaking CBA for</i></li> </ul>	<p>MEMS implementation costs</p> <p>Non-market values</p> <p>Budget and delivery timeframe reporting for management actions and outputs</p> <p>Responsible agency staff reflections on efficiency of outcome delivery</p> <p>Qualitative insights from stakeholders in relation to sub-questions</p>	<p>Relevant information and data from stakeholders to understand nature and scale of change for quantification in monetary terms</p> <p>Program delivery monitoring data</p> <p>Monitoring data for economic and community benefits indicators</p> <p>Responsible agency staff interviews</p>

<p><i>a program of this scale would be a significant task and should be carefully considered.)</i></p> <ul style="list-style-type: none"> <li>• <i>what are the key drivers of costs/benefits?</i> <i>how do the costs compare with other programs targeting the same need or issue?</i></li> <li>• <i>could similar or greater benefits have been achieved through different actions?</i></li> <li>• <i>what is, or was, the most effective approach?</i></li> <li>• <i>can resources be allocated more efficiently?</i></li> <li>• <i>is the return on expenditure adequate to justify ongoing investment in the program?</i></li> </ul>		<p>Administrative data from responsible agencies</p>
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## Data management

Accurate and reliable data and information sources and collection processes are essential for monitoring and evaluation. Good data management is underpinned by clear and robust standards and processes for collecting, recording, storing and backing-up data; and cleaning, modifying and analysing data. It also includes consideration of issues relating to privacy and ethics.

Data management arrangements will be established to ensure data and information collected for the MIMP is managed in a secure, structured and consistent manner. It will also support appropriate sharing and reuse of data and information by MEMA and MEMS partner agencies. Data management arrangements will be developed in accordance with guidance provided in relevant NSW and Commonwealth policies and frameworks, as outlined in this section.

### NSW Information Management Framework

Agencies responsible for collecting data and information through the MIMP will comply with the policies, guidelines and standards outlined in the overarching NSW [Information Management Framework](#) (IMF) (NSW Department of Finance, Services and Innovation, 2018). The IMF establishes a common approach to managing government data and information consistently across the NSW public sector.

Agencies should adopt an approach to data and information management that is consistent with the principles outlined in the [Information Management: a common approach](#) policy (Table 13). The policy outlines seven principles that NSW agencies are encouraged to implement as business as usual data and information management practices (NSW Department of Finance, Services and Innovation, 2013):

**Table 13 NSW Information Management principles**

Principle	Description
Governed	Data shall be <i>governed</i> : <ul style="list-style-type: none"> <li>as assets of strategic, operational and administrative value to NSW Government agencies</li> <li>in a manner that is transparent and accountable to NSW citizens and organisations.</li> </ul>
Collected	Data shall be <i>collected</i> : <ul style="list-style-type: none"> <li>to document or facilitate delivery of services and the functions of NSW Government agencies</li> <li>with respect for the privacy of NSW citizens and the confidentiality of NSW organisations</li> <li>once, according to agreed standards that support relevance, accuracy and consistency so they are fit for purpose reliable, and can be, where appropriate, re-used by NSW Government agencies to improve service delivery or management reporting.</li> </ul>
Organised	Data shall be: <ul style="list-style-type: none"> <li>described and linked to related data or information, so they are easy for NSW Government agencies to search, retrieve, use and compare</li> <li>identified and integrated into systems that allow NSW Government agencies to routinely track and manage them according to their value.</li> </ul>
Secured	Data shall be <i>secured</i> :

Principle	Description
	<ul style="list-style-type: none"> <li>• against unauthorised access, alteration, loss or deletion, to ensure their integrity and ongoing value to NSW Government agencies</li> <li>• using controlled and auditable processes that demonstrate to NSW citizens and organisation the protection of sensitive data and information.</li> </ul>
Used	<p>Data shall be <i>used</i>:</p> <ul style="list-style-type: none"> <li>• to support planning, decision making, resource allocation, reporting, communications and transactions by NSW Government agencies</li> <li>• processed and analysed by NSW Government agencies to develop evidence-based policy and deliver targeted services to NSW citizens and organisations</li> <li>• and re-used, so NSW Government agencies derive maximum benefit from their investment in these assets.</li> </ul>
Shared	<p>Data shall be <i>shared</i>:</p> <ul style="list-style-type: none"> <li>• with respect for the privacy of NSW citizens and the confidentiality of NSW organisations</li> <li>• with other NSW Government agencies to reduce duplication of effort, streamline service delivery and provide a consolidated view of customer needs or public sector performance</li> <li>• published and made available for discovery, where appropriate, by NSW citizens and organisations, providing opportunities to communicate, consult and collaborate or to engage in value-added processing, analysis and development.</li> </ul>
Maintained	<p>Data shall be <i>maintained</i>:</p> <ul style="list-style-type: none"> <li>• using cost-effective, risk-based measures that facilitate business continuity for NSW Government agencies</li> <li>• to ensure their availability and reliability, for as long as they support service delivery and accountability by NSW Government agencies; and then systematically destroyed when their use and value has ceased, to minimise the costs and risks to NSW Government agencies of over-retention</li> <li>• or systematically archived to protect the enduring rights and interests of NSW citizens and organisations.</li> </ul>

Source: NSW Department of Finance, Services and Innovation 2013.

### Making data available to the NSW public

Open data is an important resource that can provide significant value to members of the public, industry and government. Access to the data and information captured through evaluation and monitoring activities will adhere to the NSW Government's Open Data Policy, a subsidiary policy the IMF. The [Open Data Policy](#) directs NSW Government agencies to proactively make data publicly available, ensure it is made safe for public release and to engage with stakeholders.

The policy focuses on datasets as an aspect of information defined in the *Government Information (Public Access) Act 2009* (NSW) (GIPA Act) (NSW Department of Finance, Services and Innovation, 2016). A dataset, as defined by the policy, is an 'identifiable collection of government held information or data' (NSW Department of Finance, Services and Innovation, 2016).

The policy outlines six open data principles and associated responsibilities for managing open data. These are summarised below (Table 1).

**Table 14 Open data principles**

Principle	Description
Open by default, protected where required	Agencies will start from a position of data openness, favouring the release of data, unless there is an overriding public interest against disclosure GIPA Act.
Prioritised, discoverable and usable	High-value datasets will be prioritised for release. Data will be in a format that makes it easy to use, transform and reuse. When procuring or upgrading systems agencies will consider the use of technologies that enable data to be consumed by other systems. Metadata allows datasets to be found, understood, controlled and managed.
Primary and timely	Data will be released as collected at the source, with a high level of granularity, and not in aggregate or modified forms unless required to safeguard confidential or personal data.
Well managed, trusted and authoritative	Users will be alerted to the quality and limitations of the data to ensure confidence that it is trustworthy and authoritative. Data governance arrangements will be established and maintained in accordance with NSW Government's information management principles and the Data and Information Custodianship Policy.
Free where appropriate	Access to open data will be free by default.
Subject to public input	Agencies will engage with and are informed by the community, research sector and industry on the design of new datasets and data portals, and in deciding what data to publish and about publication practices.

Source: NSW Department of Finance, Services and Innovation 2016.

### Other relevant policies, guidelines and processes

In addition to the IMP and Open Data Policy, responsible agencies will also give consideration to the policies outlined below (Table 15) when undertaking data collection and sharing through the MIMP.

**Table 15 Other relevant data management policies**

Policy	Description
NSW Data and Information Custodianship Policy, 2013	The <a href="#">NSW Data and Information Custodianship Policy</a> (NSW Department of Finance, Services and Innovation, 2013) defines a set of principles for the management and maintenance of NSW's core data and information assets in line with the NSW IMF. The policy directs the development, implementation and management of data and information custodianship roles and responsibilities, and the formal arrangements that create those roles and responsibilities for the NSW public sector. The policy promotes a clear understanding and acceptance of data and information custodianship responsibilities in order to maximise the benefits and minimise the costs associated with information management.
NSW Government Information	The <a href="#">NSW Government Information Classification, Handling and Labelling Guidelines</a> (NSW Department of Finance, Services and Innovation, 2015)

Policy	Description
Classification, Handling and Labelling Guidelines, 2015	<p>help agencies to identify the confidentiality requirements of their information assets and apply suitable protective markings in a manner consistent with the Australian Government security classification system.</p> <p>The Guidelines apply to the classification, labelling and handling of sensitive information in any format. It is intended that the guidelines will inform agency-specific information classification and handling policy and guidance for use by non-information management professionals.</p>
NSW Government processes for requesting data and responding to requests for data	<p>NSW Government processes for requesting data and responding to requests for data from other NSW agencies and the general public are outlined on the <a href="#">digital.nsw website</a> (NSW Department of Finance, Services and Innovation, 2016).</p> <p>It sets out <a href="#">four main steps</a> that should be followed by public sector staff who would like to access data from another NSW Government agency:</p> <ul style="list-style-type: none"> <li>• know your purpose</li> <li>• check whether data is already available</li> <li>• outline the specific types of data that are required</li> <li>• request data.</li> </ul> <p>There are also <a href="#">three key steps</a> to follow when responding to data requests from another NSW Government agency or the public:</p> <ul style="list-style-type: none"> <li>• assess whether the data can be shared safely</li> <li>• negotiate how to provide data</li> <li>• determine whether the data or aspects of it can also be made publicly available.</li> </ul>
Guidelines for Ethical Research in Australian Indigenous Studies, 2012	<p>The Australian Institute of Aboriginal and Torres Strait Islander Studies' (AIATSIS) <a href="#">Guidelines for Ethical Research in Australian Indigenous Studies</a> (GERAIS) (AIATSIS, 2017) provides guidance for meaningful and ethical engagement and research involving Aboriginal and Torres Strait Islander peoples.</p> <p>The Guidelines comprise 14 principles that agency staff should follow., These are grouped under the broad categories of:</p> <ul style="list-style-type: none"> <li>• rights, respect and recognition</li> <li>• negotiation, consultation, agreement and mutual understanding</li> <li>• participation, collaboration and partnership</li> <li>• benefits, outcomes and giving back</li> <li>• managing research: use, storage and access</li> <li>• reporting and compliance.</li> </ul>
Access and Use Policy for the AIATSIS Collection	<p>The <a href="#">Access and Use Policy for the AIATSIS</a> (AIATSIS) sets out the conditions under which materials in the AIATSIS can be accessed and used. It has a particular focus on unpublished research materials.</p> <p>It includes an overview of the AIATSIS Collection and outlines measures governing access and use and negotiating access and use of the AIATSIS Collection.</p>

## Appendix D – Alignment of outcomes and benefits

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The MEMS business case (NSW Department of Primary Industries, 2018) identified a number of benefits across six types of stakeholder categories that can be expected to be delivered through implementation of the strategy initiatives. These categories are:

- communities
- Aboriginal people
- landowners: rural and urban
- fisheries and aquaculturalists
- tourists and tourist operators
- boat users.

The benefits are mixed in terms of likely timeframes, alignment with management initiatives and whether they reflect an outcome or an output. As such, they were considered in development of the outcomes articulated in the program logics but the alignment between outcomes and benefits may be characterised by one of the following relationships:

- outcome(s) directly align with or capture the benefit
- outcome(s) *contribute towards* achieving the benefit
- outcome(s) may *result from* the identified benefit.

Benefits were considered in the context of their stakeholder category and the outcomes mapped to reflect the focus of the category. The benefits and their aligned outcomes are provided by stakeholder category in the following sub-sections.

## Communities

The outcomes aligned with benefits for communities, as identified in the business case, are shown below.

BENEFIT	OUTCOMES
Abundant and diverse marine life for current and future generations	(2B) Maintained or improved biodiversity and marine habitats (1C) Maintained or improved biodiversity and marine habitats (2B) Improved habitat connectivity in prioritised regions (2F) Improved or maintained conservation status and health of targeted threatened and protected species in the wild (5A) Improved ecological sustainability, economic viability and community wellbeing relating to fishing and aquaculture in the marine estate (6A)
Improved water quality, healthier habitats and less litter	Improved water quality* and waterway health in the marine estate in alignment with community values (1A) Reduction in input litter to the marine estate in alignment with community values (1B) (2B) Maintained or improved biodiversity and marine habitats (1C) Maintained or improved water quality* and waterway health in pilot areas (1G) Reduction in input litter in target regions (1H) Increased area of coastal landscape managed for biodiversity, habitat or to reduce diffuse source water pollution (1J) Maintained or improved biodiversity and marine habitats (2B)
Improved outcomes for threatened and protected species	Improved or maintained conservation status and health of targeted threatened and protected species in the wild (5A) Greater land owner, community, industry and Aboriginal participation in managing threatened and protected coastal and marine species (5E) Improved public and industry participant awareness of threats to biodiversity and their statutory and social responsibilities relating to threatened and protected species (5F) Improved survivorship and management of threatened and protected species (5H)
Improved commercial and recreational opportunities	Improved ecological sustainability, economic viability and community wellbeing relating to fishing and aquaculture in the marine estate (6A) Enhanced opportunities and experiences for recreational fishers while balancing other social, cultural, economic and environmental values (6G) Enhanced opportunities for commercial fishers and marine aquaculture while balancing other social, cultural, economic and environmental values (6H) Improved opportunities, experiences and appreciation for recreational boating while balancing other social, cultural, economic and environmental values (7C) Increased opportunities, experiences and appreciation for commercial boating operations while balancing other social, cultural, economic and environmental values (7D) Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community (8A)
Increased consumer confidence in NSW seafood	Improved water quality* and waterway health in the marine estate in alignment with community values (1A) Improved ecological sustainability, economic viability and community wellbeing relating to fishing and aquaculture in the marine estate (6A) Improved understanding and appreciation among community and other stakeholder groups of the benefits of fishing and aquaculture (6D) Improved awareness, understanding, experience and engagement among commercial and recreational fishers of best practice guidelines, rules and regulations for ecologically sustainable fishing and aquaculture practices (6F)

BENEFIT	OUTCOMES
Improved climate resilience	<p>Adaptation planning, strategies and decision making across the marine estate incorporates the likely future impacts of climate change (3A)</p> <p>Improved knowledge of the likely future impacts of climate change on environmental, social, cultural and economic values related to key components of the marine estate (3B)</p> <p>Improved capacity of coastal and marine managers and communities to anticipate climate impacts and identify adaptation pathways (3C)</p> <p>Coastal and marine managers, and communities have improved access to and knowledge of the impacts of climate change on environmental, social, cultural and economic values of the marine estate (3D)</p> <p>Ongoing and likely effects of climate change on the marine estate are monitored (3E)</p>
Improved health and wellbeing from positive marine interactions	<p>Improved opportunities, experiences and appreciation for recreational boating while balancing other social, cultural, economic and environmental values (7C)</p> <p>Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community (8A)</p> <p>Increased stakeholder and community adoption of safe and sustainable use of the marine estate (8B)</p> <p>Improved information base on human dimensions of the marine estate relevant to management (8F)</p>
Coordinated and inclusive approach to management	<p>Improved consistency, coordination and integration among responsible agencies (1D)</p> <p>Frameworks, policies and processes for managing water quality are embedded in responsible agencies' business- as usual operations (1E)</p> <p>Greater clarity of roles, responsibilities and accountabilities among all agencies responsible for water quality and litter management (1K)</p> <p>Improved access to, use, coordination and efficiency of frameworks, policies and processes by responsible agencies for managing water quality and litter (1L)</p> <p>Improved coordination, consistency and efficiency in coastal and foreshore planning and management (2C)</p> <p>Improved clarity of roles and responsibilities for coastal and foreshore planning and management among agencies, landholders, developers and the community (2G)</p> <p>Increased stakeholder and community participation in informed decision-making and management of the marine estate (8D)</p> <p>Improved coordination, transparency, consistency and inclusiveness of managing the marine estate (9A)</p> <p>Improved consistency, coordination and integration among responsible agencies (9C)</p> <p>Increased community participation in decision-making and management of the marine estate (9E)</p>
Improved communication and education	<p>Improved understanding among responsible agencies of methods, associated effectiveness and benefit of investment for managing water quality and litter (1F)</p> <p>Greater community awareness of the sources and effects of water pollution and litter on the marine estate (1M)</p> <p>Improved community, landholder, urban planner and developer understanding of best practice land management, rules and regulations for managing water pollution and litter (1N)</p> <p>Improved understanding of current coastal and foreshore environments and land uses in prioritised regions among responsible agencies (2H)</p> <p>Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community (2I)</p> <p>Improved understanding of Aboriginal cultural values of Sea Country and the marine estate among government agencies and the community (4F)</p> <p>Improved understanding and sharing of information across stakeholders of threats to threatened and protected species (5B)</p> <p>Improved public and industry participant awareness of threats to biodiversity and their statutory and social responsibilities relating to threatened and protected species (5F)</p> <p>Improved awareness and understanding among industry and the community of responsibilities and regulation relating to marine pest management (6C)</p>

BENEFIT	OUTCOMES
	<p>Improved understanding and appreciation among community and other stakeholder groups of the benefits of fishing and aquaculture (6D)</p> <p>Improved understanding among responsible agencies and commercial and recreational fishers of the impacts of fishing and aquaculture on the marine estate (6E)</p> <p>Improved awareness, understanding, experience and engagement among commercial and recreational fishers of best practice guidelines, rules and regulations for ecologically sustainable fishing and aquaculture practices (6F)</p> <p>Greater community, government and industry awareness and understanding of guidelines and regulations for safe and sustainable boating (7E)</p> <p>Increased stakeholder and community awareness of safe and sustainable use of the marine estate (8G)</p> <p>Greater stakeholder and community awareness of their responsibilities and opportunities to participate in management of the marine estate (8H)</p> <p>Improve stakeholder and community awareness of benefits, threats, and management arrangements relevant to the marine estate (8I)</p> <p>Greater community awareness of governance arrangements and opportunities to participate in management of the marine estate (9J)</p>
Reduced conflict between marine users	Improved opportunities, experiences and appreciation for recreational boating while balancing other social, cultural, economic and environmental values (7C)

## Aboriginal People

The outcomes aligned with benefits for Aboriginal people, as identified in the business case, are shown below.

BENEFIT	OUTCOMES
Abundant and diverse marine life for current and future generations	(2B) Maintained or improved biodiversity and marine habitats (1C) Increased area of coastal landscape managed for biodiversity, habitat or to reduce diffuse source water pollution (1J) Maintained or improved biodiversity and marine habitats (2B) Improved habitat connectivity in prioritised regions (2F) Improved or maintained conservation status and health of targeted threatened and protected species in the wild (5A) Improved ecological sustainability, economic viability and community wellbeing relating to fishing and aquaculture in the marine estate (6A)
Improved water quality, healthier habitats and less litter	Improved water quality* and waterway health in the marine estate in alignment with community values (1A) Reduction in input litter to the marine estate in alignment with community values (1B) (2B) Maintained or improved biodiversity and marine habitats (1C) Maintained or improved water quality* and waterway health in pilot areas (1G) Increased area of coastal landscape managed for biodiversity, habitat or to reduce diffuse source water pollution (1J) Maintained or improved biodiversity and marine habitats (2B)
More participation in events effecting culturally significant species	Improved Aboriginal participation in Sea Country management, planning and monitoring (4G) Increased opportunities and capacity for Aboriginal participation in Sea Country management, planning and monitoring (4H) Greater land owner, community, industry and Aboriginal participation in managing threatened and protected coastal and marine species (5E)
Co-management of Sea Country	Improved Aboriginal satisfaction with Sea Country management (4A) Improved incorporation of Aboriginal cultural values in decision-making processes for the marine estate (4D) Improved Aboriginal participation in Sea Country management, planning and monitoring (4G) Increased opportunities and capacity for Aboriginal participation in Sea Country management, planning and monitoring (4H)
Greater support for Aboriginal cultural fishing practices	The broader NSW community has a greater appreciation of the significance of Sea Country for Aboriginal people (4C) Improved understanding of Aboriginal cultural values of Sea Country and the marine estate among government agencies and the community (4F) Improved understanding and appreciation among community and other stakeholder groups of the benefits of fishing and aquaculture (6D) Enhanced opportunities and experiences for Aboriginal cultural fishing practices (6I)
Training and job opportunities	Aboriginal people derive greater economic benefit from the marine estate (4B) Increased opportunities for Aboriginal people to derive economic benefit from the NSW marine estate (4E) Increased opportunities and capacity for Aboriginal participation in Sea Country management, planning and monitoring (4H)
Enhanced opportunities to share cultural knowledge	The broader NSW community has a greater appreciation of the significance of Sea Country for Aboriginal people (4C) Improved incorporation of Aboriginal cultural values in decision-making processes for the marine estate (4D) Improved Aboriginal participation in Sea Country management, planning and monitoring (4G)

BENEFIT	OUTCOMES
Improved health and wellbeing from positive marine interactions	<p>Aboriginal people derive greater economic benefit from the marine estate (4B)</p> <p>Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community (8A)</p> <p>Increased stakeholder and community adoption of safe and sustainable use of the marine estate (8B)</p> <p>Improved information base on human dimensions of the marine estate relevant to management (8F)</p>
Coordinated and inclusive approach to management	<p>Frameworks, policies and processes for managing water quality are embedded in responsible agencies' business- as usual operations (1E)</p> <p>Greater clarity of roles, responsibilities and accountabilities among all agencies responsible for water quality and litter management (1K)</p> <p>Improved access to, use, coordination and efficiency of frameworks, policies and processes by responsible agencies for managing water quality and litter (1L)</p> <p>Improved coordination, consistency and efficiency in coastal and foreshore planning and management (2C)</p> <p>Improved Aboriginal satisfaction with Sea Country management (4A)</p> <p>Improved incorporation of Aboriginal cultural values in decision-making processes for the marine estate (4D)</p> <p>Improved Aboriginal participation in Sea Country management, planning and monitoring (4G)</p> <p>Improved coordination, transparency, consistency and inclusiveness of managing the marine estate (9A)</p>
Research and monitoring to inform adaptive management	<p>Ongoing and likely effects of climate change on the marine estate are monitored (3E)</p> <p>Improved understanding of Aboriginal cultural values of Sea Country and the marine estate among government agencies and the community (4F)</p> <p>Improved information base on human dimensions of the marine estate relevant to management (8F)</p> <p>Improved knowledge sharing and communication among responsible agencies (9D)</p>

## Landowners: Rural and Urban

The outcomes aligned with benefits for landowners (rural and urban), as identified in the business case, are shown below.

BENEFIT	OUTCOMES
Clearer guidelines and better land use management	<p>Improved community, landholder, urban planner and developer understanding of best practice land management, rules and regulations for managing water pollution and litter (1N)</p> <p>Improved design and management of foreshore and coastal land use and development, balancing social and economic benefits of development with enhanced coastal and marine habitat (2A)</p> <p>Improved simplicity, efficiency and clarity of processes for land use and development planning and approvals in coastal and foreshore zones (2D)</p> <p>Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community (2I)</p> <p>Improved integration of information related to threatened and protected species to inform decision making (5C)</p> <p>Improved interagency coordination and management of threatened and protected species (5G)</p> <p>Simpler and clearer regulatory processes and roles for agencies and communities (9G)</p>
Reduced loss of topsoil and erosion events	<p>Improved adoption of best practice land management and compliance with rules and regulations for managing water pollution and litter (1I)</p> <p>Improved community, landholder, urban planner and developer understanding of best practice land management, rules and regulations for managing water pollution and litter (1N)</p> <p>Increased adoption of best practice design and management of foreshore and coastal planning, development and use (2E)</p>
Clearer guidelines on appropriate location for development and access infrastructure	<p>(2B) Maintained or improved biodiversity and marine habitats (1C)</p> <p>Improved design and management of foreshore and coastal land use and development, balancing social and economic benefits of development with enhanced coastal and marine habitat (2A)</p> <p>Maintained or improved biodiversity and marine habitats (2B)</p> <p>Improved simplicity, efficiency and clarity of processes for land use and development planning and approvals in coastal and foreshore zones (2D)</p> <p>Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community (2I)</p> <p>Improved integration of information related to threatened and protected species to inform decision making (5C)</p> <p>Improved interagency coordination and management of threatened and protected species (5G)</p> <p>Increased landholder, community and business compliance with rules and regulations for activities that have the potential to impact upon the marine estate (9F)</p>
Better support to implement best management practices	<p>Improved community, landholder, urban planner and developer understanding of best practice land management, rules and regulations for managing water pollution and litter (1N)</p> <p>Improved simplicity, efficiency and clarity of processes for land use and development planning and approvals in coastal and foreshore zones (2D)</p> <p>Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community (2I)</p> <p>Increased stakeholder and community awareness of safe and sustainable use of the marine estate (8G)</p>
Reduced red tape in permits and administration	<p>Improved simplicity, efficiency and clarity of processes for land use and development planning and approvals in coastal and foreshore zones (2D)</p> <p>Improved efficiency and effectiveness in managing the marine estate (9B)</p> <p>Simpler and clearer regulatory processes and roles for agencies and communities (9G)</p>

BENEFIT	OUTCOMES
Better climate change support tools and guidance	<p>Improved capacity of coastal and marine managers and communities to anticipate climate impacts and identify adaptation pathways (3C)</p> <p>Coastal and marine managers, and communities have improved access to and knowledge of the impacts of climate change on environmental, social, cultural and economic values of the marine estate (3D)</p> <p>Ongoing and likely effects of climate change on the marine estate are monitored (3E)</p>
Improved communication and education	<p>Greater community awareness of the sources and effects of water pollution and litter on the marine estate (1M)</p> <p>Improved community, landholder, urban planner and developer understanding of best practice land management, rules and regulations for managing water pollution and litter (1N)</p> <p>Improve stakeholder and community awareness of benefits, threats, and management arrangements relevant to the marine estate (8I)</p>
Coordinated and inclusive approach to management	<p>Frameworks, policies and processes for managing water quality are embedded in responsible agencies' business- as usual operations (1E)</p> <p>Greater clarity of roles, responsibilities and accountabilities among all agencies responsible for water quality and litter management (1K)</p> <p>Improved access to, use, coordination and efficiency of frameworks, policies and processes by responsible agencies for managing water quality and litter (1L)</p> <p>Improved coordination, consistency and efficiency in coastal and foreshore planning and management (2C)</p> <p>Increased stakeholder and community participation in informed decision-making and management of the marine estate (8D)</p> <p>Improved coordination, transparency, consistency and inclusiveness of managing the marine estate (9A)</p> <p>Improved consistency, coordination and integration among responsible agencies (9C)</p> <p>Increased community participation in decision-making and management of the marine estate (9E)</p> <p>Greater clarity of roles, responsibilities and accountabilities and improved capacity to fulfil roles among all responsible agencies (9H)</p>
Research and monitoring to inform adaptive management	<p>Improved understanding among responsible agencies of methods, associated effectiveness and benefit of investment for managing water quality and litter (1F)</p> <p>Improved understanding of current coastal and foreshore environments and land uses in prioritised regions among responsible agencies (2H)</p> <p>Ongoing and likely effects of climate change on the marine estate are monitored (3E)</p> <p>Improved information base on human dimensions of the marine estate relevant to management (8F)</p> <p>Improved knowledge sharing and communication among responsible agencies (9D)</p>
Improved capacity building	<p>Improved community, landholder, urban planner and developer understanding of best practice land management, rules and regulations for managing water pollution and litter (1N)</p> <p>Increased adoption of best practice design and management of foreshore and coastal planning, development and use (2E)</p> <p>Improved understanding of environmentally, socially, culturally and economically appropriate land use and best practice design in coastal and foreshore zones among agencies, landholders, developers and the community (2I)</p> <p>Improved capacity of coastal and marine managers and communities to anticipate climate impacts and identify adaptation pathways (3C)</p>

### Fisheries and aquaculturalists

The outcomes aligned with benefits for fisheries and aquaculturalists, as identified in the business case, are shown below.

BENEFIT	OUTCOMES
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BENEFIT	OUTCOMES
Improved water quality, healthier habitats and better fishing	<p>Improved water quality* and waterway health in the marine estate in alignment with community values (1A)</p> <p>(2B) Maintained or improved biodiversity and marine habitats (1C)</p> <p>Maintained or improved biodiversity and marine habitats (2B)</p> <p>Improved ecological sustainability, economic viability and community wellbeing relating to fishing and aquaculture in the marine estate (6A)</p> <p>Enhanced opportunities and experiences for recreational fishers while balancing other social, cultural, economic and environmental values (6G)</p>
Reduced bycatch and interactions with threatened and protected species	<p>Improved compliance with regulations to protect threatened and protected species (5D)</p> <p>Greater land owner, community, industry and Aboriginal participation in managing threatened and protected coastal and marine species (5E)</p> <p>Improved public and industry participant awareness of threats to biodiversity and their statutory and social responsibilities relating to threatened and protected species (5F)</p> <p>Improved compliance with and support for rules, regulations and guidelines for sustainable fishing and aquaculture practices (6B)</p>
Reduced risk of marine pests and disease	<p>Improved compliance with and support for rules, regulations and guidelines for sustainable fishing and aquaculture practices (6B)</p> <p>Improved awareness and understanding among industry and the community of responsibilities and regulation relating to marine pest management (6C)</p> <p>Improved awareness, understanding, experience and engagement among commercial and recreational fishers of best practice guidelines, rules and regulations for ecologically sustainable fishing and aquaculture practices (6F)</p>
Reduced conflict with other users	<p>Improved compliance with and support for rules, regulations and guidelines for sustainable fishing and aquaculture practices (6B)</p> <p>Improved understanding among responsible agencies and commercial and recreational fishers of the impacts of fishing and aquaculture on the marine estate (6E)</p> <p>Enhanced opportunities for commercial fishers and marine aquaculture while balancing other social, cultural, economic and environmental values (6H)</p>
New aquaculture opportunities and business growth	<p>Improved ecological sustainability, economic viability and community wellbeing relating to fishing and aquaculture in the marine estate (6A)</p> <p>Enhanced opportunities for commercial fishers and marine aquaculture while balancing other social, cultural, economic and environmental values (6H)</p> <p>Greater adoption of principles for ecologically sustainable growth among marine industries (8C)</p> <p>Social, cultural and economic values are better incorporated into planning and management of the marine estate (8E)</p>
Transparent reporting and data sharing	<p>Improved knowledge sharing and communication among responsible agencies (9D)</p> <p>Improved processes for knowledge sharing and communication among responsible agencies (9I)</p>
Clearer rules and improved opportunities for self-compliance	<p>Improved compliance with and support for rules, regulations and guidelines for sustainable fishing and aquaculture practices (6B)</p> <p>Improved awareness, understanding, experience and engagement among commercial and recreational fishers of best practice guidelines, rules and regulations for ecologically sustainable fishing and aquaculture practices (6F)</p> <p>Increased landholder, community and business compliance with rules and regulations for activities that have the potential to impact upon the marine estate (9F)</p>
Greater social acceptance of fishing and industry	<p>Improved understanding and appreciation among community and other stakeholder groups of the benefits of fishing and aquaculture (6D)</p>

BENEFIT	OUTCOMES
Improved fishing opportunities through fisheries enhancements	<p>Enhanced opportunities and experiences for recreational fishers while balancing other social, cultural, economic and environmental values (6G)</p> <p>Enhanced opportunities for commercial fishers and marine aquaculture while balancing other social, cultural, economic and environmental values (6H)</p> <p>Enhanced opportunities and experiences for Aboriginal cultural fishing practices (6I)</p>
Research and monitoring to inform adaptive management	<p>Ongoing and likely effects of climate change on the marine estate are monitored (3E)</p> <p>Improved understanding among responsible agencies and commercial and recreational fishers of the impacts of fishing and aquaculture on the marine estate (6E)</p> <p>Improved information base on human dimensions of the marine estate relevant to management (8F)</p> <p>Improved knowledge sharing and communication among responsible agencies (9D)</p>

## Tourists and tour operators

The outcomes aligned with benefits for tourists and tour operators, as identified in the business case, are shown below.

BENEFIT	OUTCOMES
Abundant and diverse marine life for current and future generations	(2B) Maintained or improved biodiversity and marine habitats (1C) Maintained or improved biodiversity and marine habitats (2B) Improved or maintained conservation status and health of targeted threatened and protected species in the wild (5A) Increased opportunities, experiences and appreciation for commercial boating operations while balancing other social, cultural, economic and environmental values (7D) Improved boating and infrastructure programs for the benefit of coastal and marine habitats and species (7F)
Better water quality and less litter	Improved water quality* and waterway health in the marine estate in alignment with community values (1A) Reduction in input litter to the marine estate in alignment with community values (1B) Boating provides increased social and economic benefits for NSW communities while supporting sustainable social, economic, cultural and environmental benefits of the marine estate (7A) Increased opportunities, experiences and appreciation for commercial boating operations while balancing other social, cultural, economic and environmental values (7D)
Increased business activity and growth	Boating provides increased social and economic benefits for NSW communities while supporting sustainable social, economic, cultural and environmental benefits of the marine estate (7A) Increased opportunities, experiences and appreciation for commercial boating operations while balancing other social, cultural, economic and environmental values (7D) Greater adoption of principles for ecologically sustainable growth among marine industries (8C) Social, cultural and economic values are better incorporated into planning and management of the marine estate (8E)
Reduced red tape in permits and administration	Improved efficiency and effectiveness in managing the marine estate (9B) Simpler and clearer regulatory processes and roles for agencies and communities (9G)
Improved fishing opportunities	Enhanced opportunities and experiences for recreational fishers while balancing other social, cultural, economic and environmental values (6G) Enhanced opportunities for commercial fishers and marine aquaculture while balancing other social, cultural, economic and environmental values (6H) Enhanced opportunities and experiences for Aboriginal cultural fishing practices (6I)
More tourist interest in marine estate	Enhanced opportunities and experiences for recreational fishers while balancing other social, cultural, economic and environmental values (6G) Increased opportunities, experiences and appreciation for commercial boating operations while balancing other social, cultural, economic and environmental values (7D) Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community (8A)
Enhanced visitor education and awareness	Improved awareness and understanding among industry and the community of responsibilities and regulation relating to marine pest management (6C) Improved understanding among responsible agencies and commercial and recreational fishers of the impacts of fishing and aquaculture on the marine estate (6E) Improved awareness, understanding, experience and engagement among commercial and recreational fishers of best practice guidelines, rules and regulations for ecologically sustainable fishing and aquaculture practices (6F) Greater community, government and industry awareness and understanding of guidelines and regulations for safe and sustainable boating (7E)

BENEFIT	OUTCOMES
Enhanced marine eco-tourism opportunities	<p>Enhanced opportunities and experiences for recreational fishers while balancing other social, cultural, economic and environmental values (6G)</p> <p>Boating provides increased social and economic benefits for NSW communities while supporting sustainable social, economic, cultural and environmental benefits of the marine estate (7A)</p> <p>Increased opportunities, experiences and appreciation for commercial boating operations while balancing other social, cultural, economic and environmental values (7D)</p> <p>Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community (8A)</p>
Improved health and wellbeing from positive marine interactions	<p>Boating provides increased social and economic benefits for NSW communities while supporting sustainable social, economic, cultural and environmental benefits of the marine estate (7A)</p> <p>Increased opportunities, experiences and appreciation for commercial boating operations while balancing other social, cultural, economic and environmental values (7D)</p> <p>Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community (8A)</p> <p>Increased stakeholder and community adoption of safe and sustainable use of the marine estate (8B)</p> <p>Improved information base on human dimensions of the marine estate relevant to management (8F)</p>
Research and monitoring to inform adaptive management	<p>Ongoing and likely effects of climate change on the marine estate are monitored (3E)</p> <p>Improved information base on human dimensions of the marine estate relevant to management (8F)</p> <p>Improved knowledge sharing and communication among responsible agencies (9D)</p>

## Boat users

The outcomes aligned with benefits for boat users, as identified in the business case, are shown below.

BENEFIT	OUTCOMES
Improved outcomes for threatened and protected species	<p>Improved or maintained conservation status and health of targeted threatened and protected species in the wild (5A)</p> <p>Improved public and industry participant awareness of threats to biodiversity and their statutory and social responsibilities relating to threatened and protected species (5F)</p> <p>Improved survivorship and management of threatened and protected species (5H)</p> <p>Increased compliance with and support for guidelines and regulations for safe and sustainable boating (7B)</p>
Improved health and wellbeing from positive marine interactions	<p>Boating provides increased social and economic benefits for NSW communities while supporting sustainable social, economic, cultural and environmental benefits of the marine estate (7A)</p> <p>Improved opportunities, experiences and appreciation for recreational boating while balancing other social, cultural, economic and environmental values (7C)</p> <p>Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community (8A)</p> <p>Increased stakeholder and community adoption of safe and sustainable use of the marine estate (8B)</p> <p>Improved information base on human dimensions of the marine estate relevant to management (8F)</p>
Better mooring management	<p>Improved opportunities, experiences and appreciation for recreational boating while balancing other social, cultural, economic and environmental values (7C)</p> <p>Improved boating and infrastructure programs for the benefit of coastal and marine habitats and species (7F)</p>
Reduced conflict with other users	<p>Improved opportunities, experiences and appreciation for recreational boating while balancing other social, cultural, economic and environmental values (7C)</p> <p>Increased stakeholder and community awareness of safe and sustainable use of the marine estate (8G)</p>
Better boating access and waterway infrastructure	<p>Improved opportunities, experiences and appreciation for recreational boating while balancing other social, cultural, economic and environmental values (7C)</p> <p>Improved boating and infrastructure programs for the benefit of coastal and marine habitats and species (7F)</p> <p>Improved social, cultural and economic benefits of the marine estate that contribute to the wellbeing of the NSW stakeholders and community (8A)</p>
Improved boating behaviour	<p>Increased compliance with and support for guidelines and regulations for safe and sustainable boating (7B)</p> <p>Greater community, government and industry awareness and understanding of guidelines and regulations for safe and sustainable boating (7E)</p>
Coordinated and inclusive approach to management	<p>Frameworks, policies and processes for managing water quality are embedded in responsible agencies' business- as usual operations (1E)</p> <p>Greater clarity of roles, responsibilities and accountabilities among all agencies responsible for water quality and litter management (1K)</p> <p>Improved access to, use, coordination and efficiency of frameworks, policies and processes by responsible agencies for managing water quality and litter (1L)</p> <p>Improved coordination, consistency and efficiency in coastal and foreshore planning and management (2C)</p> <p>Increased stakeholder and community participation in informed decision-making and management of the marine estate (8D)</p> <p>Improved coordination, transparency, consistency and inclusiveness of managing the marine estate (9A)</p> <p>Improved consistency, coordination and integration among responsible agencies (9C)</p>

BENEFIT	OUTCOMES
	<p>Increased community participation in decision-making and management of the marine estate (9E)</p> <p>Greater clarity of roles, responsibilities and accountabilities and improved capacity to fulfil roles among all responsible agencies (9H)</p>
Improved communication and education	<p>Greater community, government and industry awareness and understanding of guidelines and regulations for safe and sustainable boating (7E)</p> <p>Increased stakeholder and community awareness of safe and sustainable use of the marine estate (8G)</p>
Reduced red tape in permits and administration	<p>Improved efficiency and effectiveness in managing the marine estate (9B)</p> <p>Simpler and clearer regulatory processes and roles for agencies and communities (9G)</p>
Research and monitoring to inform adaptive management	<p>Ongoing and likely effects of climate change on the marine estate are monitored (3E)</p> <p>Improved information base on human dimensions of the marine estate relevant to management (8F)</p> <p>Improved knowledge sharing and communication among responsible agencies (9D)</p>

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