

DELWP Output data standards

For monitoring, evaluation and reporting



Version 2.0 – June 2015

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Printed by Impact Digital – Brunswick.

ISBN 978-1-74146-544-0 (print)

ISBN 978-1-74146-545-7 (pdf)

Accessibility

If you would like to receive this publication in an alternative format, please telephone the DELWP Customer Service Centre on 136186, email customer.service@delwp.vic.gov.au, or via the National Relay Service on 133 677 www.relayservice.com.au. This document is also available on the internet at www.delwp.vic.gov.au

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Part 1 Overview

Introduction

The Victorian Department of Environment, Land, Water and Planning (DELWP) Output Data Standards is one of the Standards developed under the Monitoring, Evaluation and Reporting Framework (MER Framework). These Standards, including these Output Data Standards, are designed to provide guidance for best-practice planning, implementation, evaluation and reporting.

The Output Data Standards (the Standards) describe the minimum information requirements for reporting on the most common goods and services (i.e. outputs) that the department purchases through its range of investment programs. Specifically, the Standards provide:

- a range of standard descriptors for the outputs from investment
- clarity on the requirements for reporting on investment outputs
- the basis for consistent data, systems and reporting on investment outputs.

The standard outputs enable:

- broad and consistent public reporting, such as the regular CMA Achievements Report
- improved support for the development of data capture and reporting systems
- improved tracking of historical investment
- creation of a database that records all relevant investment outputs across all participating agencies.

Who does what – roles and responsibilities

These Standards have been developed by the Water and Catchments Group within DELWP, in partnership with Victoria's 10 CMAs and the Trust for Nature, and in consultation with Parks Victoria. Ongoing maintenance of the Standards is coordinated by a multi-agency working group convened when a review is required. The group is supported by the Monitoring and Evaluation Unit within DELWP Catchments Branch. Table 1 clarifies the responsibilities relating to maintenance of the Standard.

Who the Standards apply to

The Standards apply to all DELWP programs that invest in natural resource management and have been developed to specify the minimum standard for investment reporting on outputs.

The current outputs have been tailored to fit the needs of DELWP investment programs that commonly interact with CMAs. However, it is hoped that, in future, the Standard will encompass a broader range of outputs and have the capacity to support reporting across all catchment agencies.

How the Standards were developed

The Standards have been developed over several years and involved considerable consultation and review of existing data standards.

After an independent review was completed in 2012, the Standards were trialled by Victoria's 10 CMAs in 2013/14. The data received for the 2013/14 year was much improved over previous years, but a review, conducted by the Mallee CMA on behalf of DELWP, found opportunities for further improvement.

Table 1: Roles and responsibilities related to the DELWP Output Data Standards.

Role	Responsibility
Joint multi-agency working group (including DELWP, Parks Victoria [PV], Trust for Nature [TFN], Catchment Management Authorities [CMAs])	Co-ordinate review and maintenance of the Output Data Standards, supported by DELWP Monitoring and Evaluation (M&E) Unit.
Agency investment programs	Support the appropriate use of the Standards within their investment process (e.g. reporting timelines, data requirements for project proposals and investment priorities). Provide quality assurance, collation and storage of data received from funded agencies.
Delivery agent (receiving funds)	Collect data to Standard. Provide quality assurance to ensure the requirements defined in the Standards are being met by third parties. Collate and store agency data. Report on delivery planning and output data to appropriate agency.

Key changes from the 2014/15 review included:

- changes to the language to align the Standards with the MER Framework
- inclusion of a new output for rubbish removal
- making the language simpler and more reader friendly
- amendments to the common attributes
- removal of the section on delivery data and the inclusion of key information as common attributes.

Related documents

Monitoring, Evaluation and Reporting Framework

The DELWP MER Framework is a separate document that was developed in 2012. The Framework aims to improve the capacity of Victorian natural resource management agencies to deliver improved policy, program and project outcomes. The framework supports a consistent approach to the documentation and implementation of monitoring, evaluation and reporting on programs and projects.

Central to the MER Framework is the concept of adaptive management. Adaptive management is a cyclical process that formalises information flows between strategy and planning, and program/project implementation and monitoring. The purpose is to set up high-quality evaluation and reporting, and maximise opportunities to learn and adapt during and following the implementation of policies, programs and projects.

Consistency of underlying data and information is critical to the implementation of an adaptive management approach. The Output Data Standards provide primary information about what activities were carried out, where they were carried out and what outcomes were expected.



Figure 1: Key elements of the adaptive management cycle.

Program logic

The MER Framework promotes the use of a program logic as the basis for information requirements from plans and strategies. The use of a basic logic ensures appropriate information to guide implementation of strategies and plans, targeted monitoring and high-quality evaluation and reporting.

When applied at the appropriate scale, a program logic can help clarify the desired condition change, the assumed long-term outcomes, the assumed shorter-term management outcomes and the activities and outputs required to achieve these. This structure can help inform implementation and monitoring decisions, as well as evaluation and reporting requirements.

The simplified program logic (Figure 2) provides a framework for project and program planning to ensure appropriate information gathering and reporting. Standardised language and assumptions in the planning process will support consistent reporting, especially where information is gathered from multiple programs and projects and, potentially, multiple agencies.

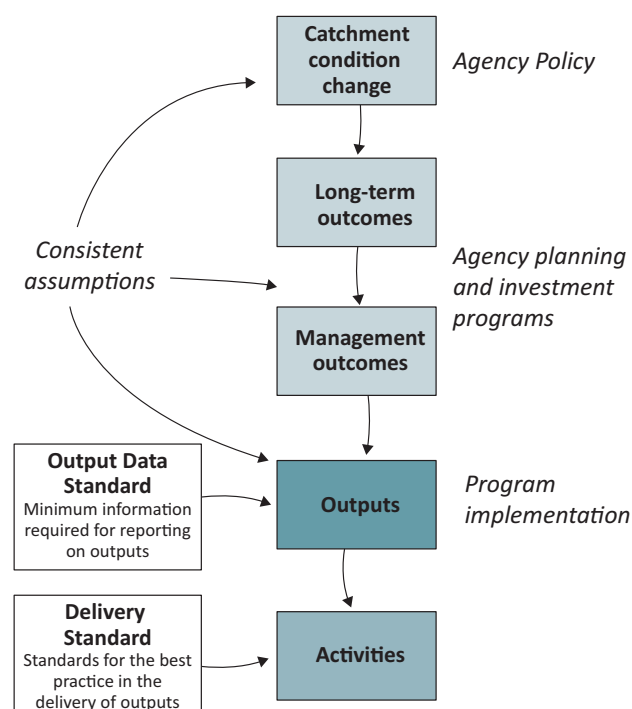


Figure 2: A program logic that links the outputs delivered through a program to the expected management outcomes, long-term outcomes and, ultimately, the condition of catchments.

Figure 2 illustrates the importance of the Output Data Standards within the program logic. If all elements of the program logic are in place and documented, the following information can be derived:

- appropriate activities and outputs to deliver a strategy or plan
- assumptions about the contribution of activities to expected outcomes
- measureable management outcomes expected in the life of strategies and plans
- longer-term outcomes that we expect from investment in strategies and plans
- a description of how these elements support the broader achievement of policy objectives for protection and enhancement of our catchments.

Consistency is required in each stage of the logic. If we plan using consistent language and support the collection and collation of consistent data, we can report using consistent language and consistent data. The Output Data Standards support consistency within the lower levels of the logic and will support consistent planning and reporting on activities within and between agencies.

DELWP Delivery Standards

The DELWP Delivery Standards are in a separate document that details minimum state-wide standards for the conduct of management activities and the delivery of outputs, and is applied to all DELWP natural resource management investment programs. Although the Delivery Standards are currently limited in their application, they could also be applied to other agency investment programs and funding sources should the opportunity arise.

Specifically, the Delivery Standards aim to:

- describe best practice for delivery of activities and outputs through investment
- provide guidance for the implementation of the Standards across a range of agencies.

The Standards enable evaluations/audits to demonstrate how effectively investments are being implemented.

Together, the Output Data Standards and the Delivery Standards represent key components of the DELWP MER Framework. The Delivery Standards provide guidance for consistent management activities and outputs; the Output Data Standards provide guidance on reporting those management activities and outputs.

Key definitions

What is an output?

Outputs are the good or service delivered through project investment. Generally, outputs are completed activities that are funded through agency programs. Each output represents a discrete item that contributes to the delivery of a broader project or program.

An output is a general description of the good or service. In some cases, the goods or services may not entirely fit into a specific output. For instance, a fence may be made up of a length of fencing (fence output type) and some bollards (bollard output type). While these may constitute two different outputs, the purpose of reporting on outputs is to provide a general description of the item that was delivered. In this case, the output type should be considered as a single 'fence' output.

What is output data?

Output data is numerical, textual and spatial information that describes the location and characteristics of the outputs from environmental investment and effort. Essentially, it is a set of points, lines and polygons that can be mapped and queried to help answer questions about the 'what, where and why' of Victoria's investment in environmental outcomes.

What are management outcomes?

Management outcomes are the measurable changes directly attributable to implementation of a strategy or plan through delivery of projects and programs. Measureable changes may include physical change to the landscape, changes to land management, changes in community support or improvements to strategic planning. They provide the basis for measuring and monitoring their effectiveness.

Management outcomes may be reported at any scale and at the end of a specific timeframe (usually five or more years). They should be a part of planning and reporting at site scale, landscape scale, regional scale or state-wide scale.

Management outcomes are important components of site-scale project planning and should be documented as part of a project logic to clearly articulate the expected measureable outcomes for a project.

Recording and reporting outputs enables us to tell a story about the activities conducted to achieve strategic objectives described in state-wide and regional strategies and plans.

Where there is no specific state/regional strategy or plan, as sometimes happens, programs and projects should report on the most relevant management outcome outlined in these Output Standards.

A project manager may look at a number of pieces of evidence to understand the progress of a project; however, from a strategic planning viewpoint, the crucial evidence is linked to the intent of the appropriate plan or strategy.

For example, a fence may be built to control rabbit numbers and the higher order intent may be to improve vegetation structure and diversity. However, strategically, the intent may really be to protect habitat to encourage the recovery of a threatened species of bird. If the funding and planning has been provided for the recovery of the bird, and it is linked to a management outcome in a specific state or regional plan, then this is the management outcome required to be recorded as an attribute of the Standard Output.

An alternative approach, trialled in the previous iteration of these Standards, was to document the immediate management outcome of an output. This has been shown to limit the ability to identify how management outcomes are linked to strategic planning. Using this alternative approach, in the above example, species recovery would be reported as species control – for a completely different species.

Management outcomes are important components of site-scale projects. They should be developed as part of the project logic and clearly articulate the expected measureable outcomes from a project. Only the broader, strategic management outcomes need to be provided in reported standard outputs.

Spatial data

Central to the development of these Standards is the requirement to provide spatial data for the outputs. This enables them to be aggregated, ideally into a single spatial database. The initial collection, collation and reporting of output data is the responsibility of delivery agencies.

Individual outputs are captured as either a polygon, line or point feature. In the Standards, each output includes a description of the appropriate spatial data feature.

A number of outputs may not be specifically considered spatial in nature, including Partnerships, Publications and Information Management Systems. It is important for these outputs to be attached to a spatial feature so that the output database can be a complete record of all outputs, rather than needing two separate databases. It also simplifies reporting by requiring agencies to report only once, rather than having to provide two sets of data.

For convenience, each non-spatial output should be registered to a point feature located on the office of the delivery agent.

Metadata statement

Spatial data submitted with the output data each year must be accompanied by a metadata statement consistent with the concepts and guidelines developed by the Australia New Zealand Land Information Council (ANZLIC). In accordance with the National Metadata Directory System, a set of mandatory core metadata elements are required. Any additional information that is deemed relevant to interpret the data supplied should also be provided in an accompanying document.

Reporting DELWP output data

Outputs should be provided to the timeline specified by the relevant agencies or investment programs. Agencies are to provide data to DELWP in an ESRI, file geodatabase format (model geodatabase available on request).

Data accuracy

Spatial data should be as accurate as possible. For purposes of mapping, the underlying data is usually mapped at 1:25,000. Positional accuracy should provide a reasonable guide to the location of reported activities and clearly distinguish the location of one activity from another.

Document structure

Within this document, the outputs are divided into four classes, and within each class, outputs are given a two-digit number:

- 1. Structural works:** Outputs associated with stand-alone environmental goods
 - 1.1 Channel
 - 1.2 Water storage
 - 1.3 ... etc.
- 2. Environmental works:** A mixture of goods and services outputs that modify characteristics of the environment (e.g. vegetation)
 - 2.1 ... etc.
- 3. Management services:** Service outputs that involve changes in the behaviour of land managers
 - 3.1 ... etc.
- 4. Planning and regulation:** A mixture of goods and services outputs to communicate, administer, plan or gather information.
 - 4.1 ... etc.

What does an output standard look like?

Each Output Standard covers two pages and consists of the following sections:

- **Scope:** A detailed description of what should be reported using this output and includes additional information about similar outputs.
- **Terminology:** Definitions of any key terms specific to the output. Commonly used terms are defined in the glossary.
- **Program logic:** A program logic diagram that summarises the typical decision pathways between each output and relevant management outcomes in strategic plans and strategies. The program logic is a starting point only. The logic for delivery of outputs should be documented in project planning and will be different for each context.

- **Output specific attributes:** A table of attributes and appropriate values, in addition to the common attributes, that are to be reported specifically for that output.

Attribute data

Each output requires the following common attribute data (see Table 2). For most outputs there are also additional requirements to provide 'specific attributes'. These are described individually for each output in a table on the relevant page.

Table 2: Description of common attribute data required for each output.

Attribute	Description	Source
Output ID	<p>Unique identifier for each output delivered.</p> <p>The Output ID should be composed of a two-to-six letter agency code (e.g. PV, NECMA, TFN, etc), followed by a unique number, e.g. EGCMA000001.</p> <p>Where an output is composed of more than one spatial feature, the Output ID applies to both spatial features.</p> <p>The sequence of these IDs is unimportant, however, it is crucial that each ID is unique to the output.</p>	Provided by delivery agent as part of output reporting
Output Data Standards version	<p>1.1, 1.2, etc</p> <p>This version is v2.0</p>	See Output Data Standards
Output title	Used to simplify data collection by grouping goods and services which have similar data requirements, e.g. Channel, Assessment.	See individual outputs for relevant values
Output type	Provides a more detailed classification of outputs.	See individual outputs for relevant values
Activity type	Broadly defines the changes being made to the output using terms such as: install, maintain, modify, remove, develop and review.	See individual outputs for relevant values
Year completed	Identifies the financial year in which the output was completed. Outputs are reported annually. Where the same output is delivered again in the following year (e.g. maintenance of vegetation) the outputs should be reported separately.	Provided by delivery agent as part of output reporting
Fund source	<p>The name of the key fund source.</p> <p>This could be a DELWP investment program or, where the investor is not DELWP, the appropriate agency title for the investment source.</p> <p>This information enables the story about how the output helps deliver on the agency strategy and plans to be told. It is important that the fund source name can be traced to a particular purpose. So 'DELWP funding' is not sufficient but 'DELWP Waterway Health Program' would be.</p> <p>The same applies to other fund sources such as the Australian Government.</p> <p>In the case of funding from private individuals, it would be enough to say 'Private landholder'.</p>	Provided by relevant agency or investment program

Table 2 continued overleaf

Table 2 continued

Attribute	Description	Source
Project ID	For CMAs and agencies that invest through DELWP this should be the Project Implementation and Retrieval System (PIRS) number for the project. Where the agency does not use PIRS, this should identify the relevant investment program.	Provided by relevant agency or investment program
Delivery agent	Identify the community partner or relevant government agency involved in the delivery of the output. This information identifies outputs that are delivered with significant support from community groups or are delivered through government agencies. If delivery is shared across multiple agencies, provide the major delivery partner. This is general information, so there is no need to specify the exact name of the group – use one of the following: <ul style="list-style-type: none"> • Landcare • Management committee • Friends-of group • Private land manager • Traditional owner • Catchment Management Authority • Parks Victoria • DELWP • Trust for Nature 	Provided by delivery agent as part of output reporting
River-related works	Identifies if the output occurred on the left or right side of the river (facing downstream). Left Right Both Not applicable	Provided by relevant agency
Planned management outcome	The key management outcomes that the output is contributing to in the appropriate plan or strategy. If there is no specific outcome documented in a plan (or no plan), provide an appropriate title from the list in Appendix 1.	Provided by relevant agency or investment program
Planned management outcome direction of change	Broadly defines the outcomes sought using the following categories: Increase Maintain Reduce	See individual outputs for relevant values
Region, area or reach	Relevant region, area or reach that is the subject of the management outcome, e.g. appropriate river reach in AVIRA. Appropriate areas are defined in plans and strategies and should be provided by investors.	Provided by relevant agency or investment program
Specific Attribute #1 (e.g. Volume of water conveyed)	Specific attributes are provided within each Standard. Provide a new tabular column for each specific attribute as required.	

Part 2 Output Data Standards

1 Structural works

Structural works are outputs associated with the management of man-made structures.

Output title	Output types	Specific attributes	
1.1 Channel	Channel	Drain	
1.2 Water storage	Constructed wetland Dam	Reuse System Sump Tank	Trough Weir
1.3 Pump	Ground water	Surface water	
1.4 Irrigation structure	Gravity	Pressurised	
1.5 Waterway structure	Carp screen Chute Fish barrier Fishway	Flow regulator Groyne Large wood Outlet	Pile field Rock seeding Sill
1.6 Terrestrial structure	Hygiene station	Sediment trap	Erosion control
1.7 Terrestrial habitat	Man-made ground feature	Natural ground feature	Nest box
1.8 Monitoring structure	Bore Hide	Measuring station	Trap
1.9 Fence	Bollard	Fence	
1.10 Visitor facility	Building	Operations	Recreational
1.11 Road	Firebreak	Road	Trail
1.12 Crossing	Bridge Causeway crossing	Culvert	Ford

1.1 Channel

Scope

This output records the length of channels and drains that have been installed, maintained, modified or removed.

Related outputs: Where the output is part of an irrigation or reuse system, associated structures (e.g. dam, pump), plan/strategy (e.g. Irrigation Farm Plan), irrigation infrastructure (upgrading of existing), water storage (re-use) or assessments (survey), they should be recorded as separate outputs.

Terminology

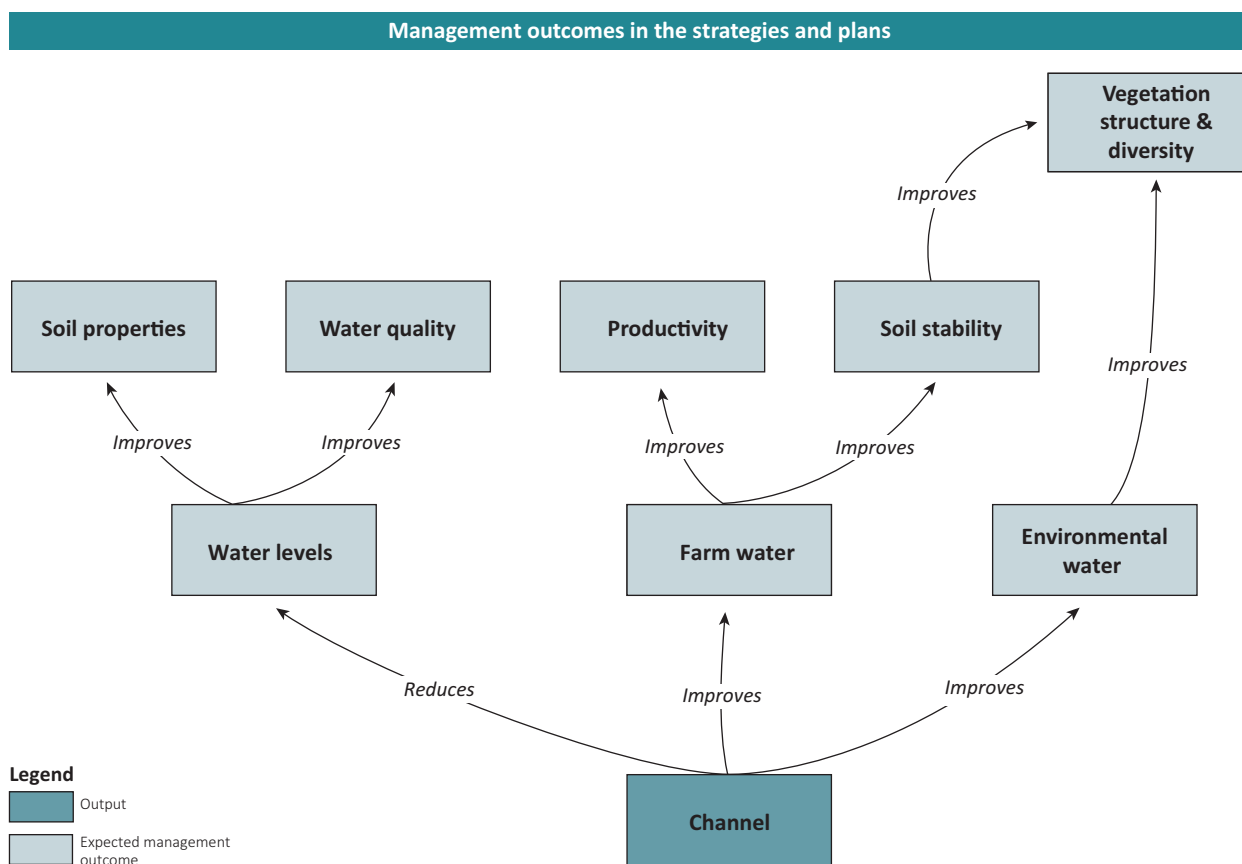
Channel: Conveys water from one point to another, generally to irrigators from a source.

Community drain: Are initiated by landholders, who remain responsible for ongoing operation and maintenance.

Drain: Are designed to carry surplus water away from an area.

Primary drain: Are owned and operated by rural water corporations or CMAs.

Swale drain: A shallow ditch intended to drain water.



Logic diagram 1. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Water volume	Specific type
Description	Select one from list	Select one from list	Location of structure	Volume of water conveyed	Select one from list
Valid values	Channel Drain	Install Maintain Modify Remove	Line	ML	Community Environmental water Irrigation supply Primary Swale

1.2 Water storage

Scope

This output records the number of structures intended to store water (e.g. dams, troughs, constructed wetlands and weirs) that have been installed, modified, maintained or removed.

These water storages serve a variety of purposes, including improving access to farm water for irrigation, re-use systems, flow and turbidity management (e.g. constructed wetlands), habitat and as off-stream watering points for livestock.

This output may relate to both natural and man-made water storages/bodies.

Related outputs: Often a water storage output is delivered in conjunction with other outputs, which should all be recorded in addition to this output. For example, fences to exclude stock or channel/pump as part of an irrigation system upgrade.

Terminology

Constructed wetland: man-made inland, standing, shallow bodies of water, which may be permanent or temporary, fresh or saline.

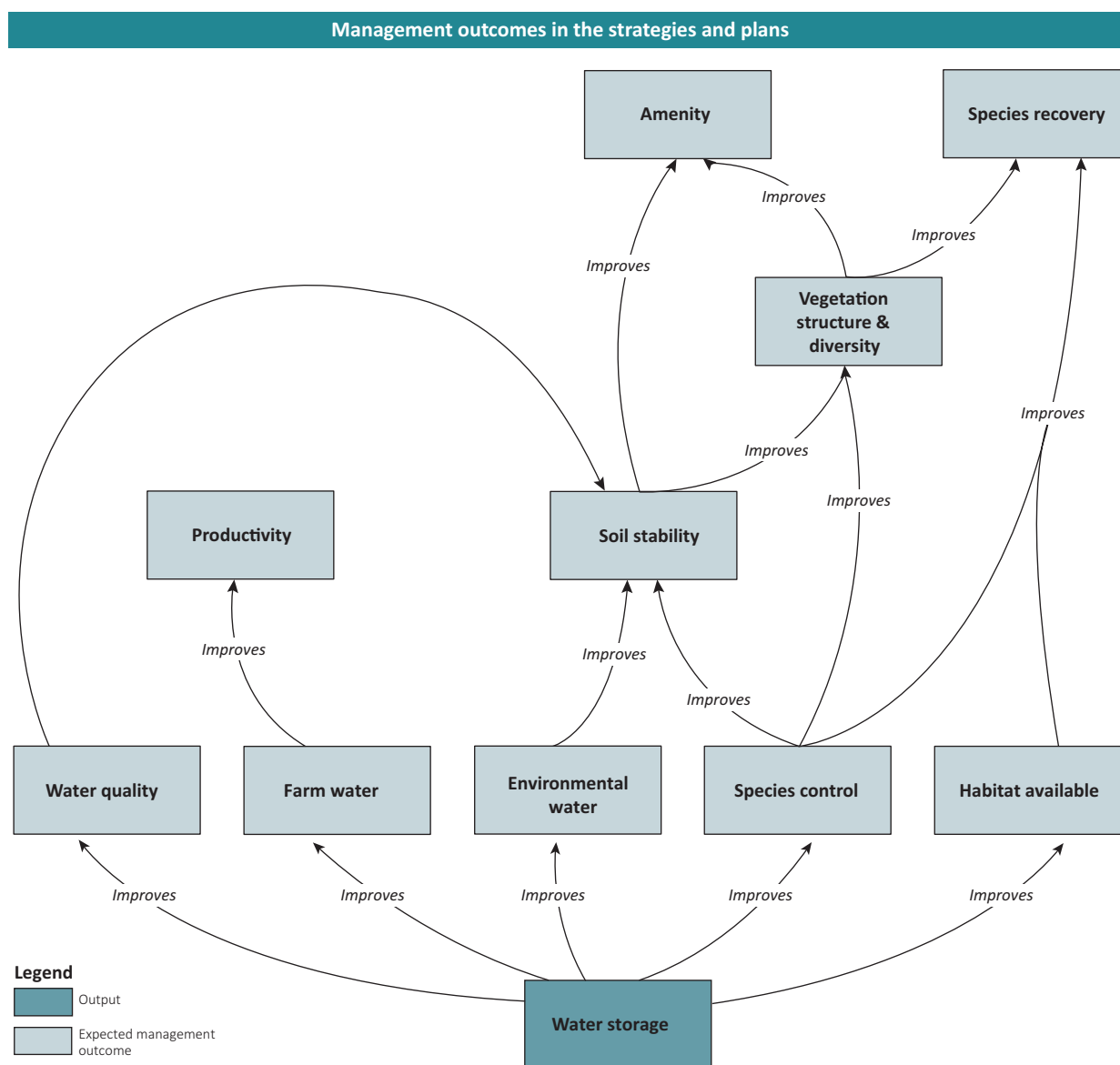
Dam: A barrier constructed to hold back and store water.

Sump: A dam constructed for use as part of an irrigation re-use system.

Tank: A large storage chamber for water.

Trough: An open container for livestock to drink from.

Weir: A low dam built across a waterway to raise the level of water upstream or regulate its flow.



Logic diagram 2. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Water volume	Specific type
Description	Select one from list	Select one from list	Location of structure	Volume of water stored	Select one specific type for the output
Valid values	Constructed wetland Dam Sump Tank Trough Weir	Install Maintain Modify Remove	Point	ML N/A	Effluent Irrigation Livestock Re-use system N/A

1.3 Pump

Scope

This output records the number of pumps and associated infrastructures (i.e. pump housing) that have been installed, maintained, modified, removed or replaced.

This output includes the installation of connections and housing for the pump.

Related outputs: Pumps can be associated with the delivery of other outputs, such as water storage, irrigation infrastructure and channel. It is at the discretion of the DELWP investment program whether a pump should be

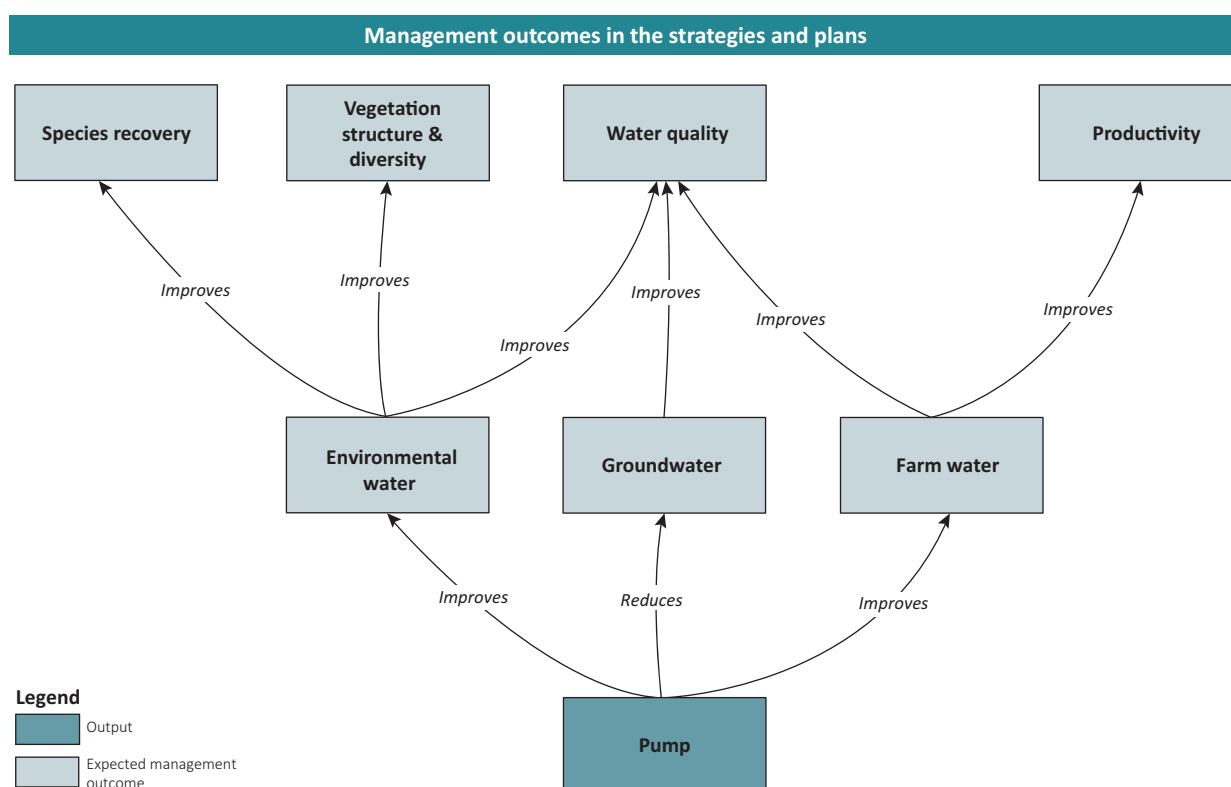
recorded in addition to this output or as an activity within the outputs. Inspection of pumps should be recorded under the 'Assessment' output.

Terminology

Ground water: Underground water that is held in the soil and impervious rocks.

Pump: A device that moves water by mechanical action.

Surface water: Water that collects on the surface of the ground.



Logic diagram 3. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Tenure
Description	Select one from list	Select one from list	Location of structure	Land manager
Valid values	Ground water Surface water	Install Maintain Modify Remove	Point	Private Public

1.4 Irrigation infrastructure

Scope

This output records the area where irrigation infrastructure has been installed, modified or maintained.

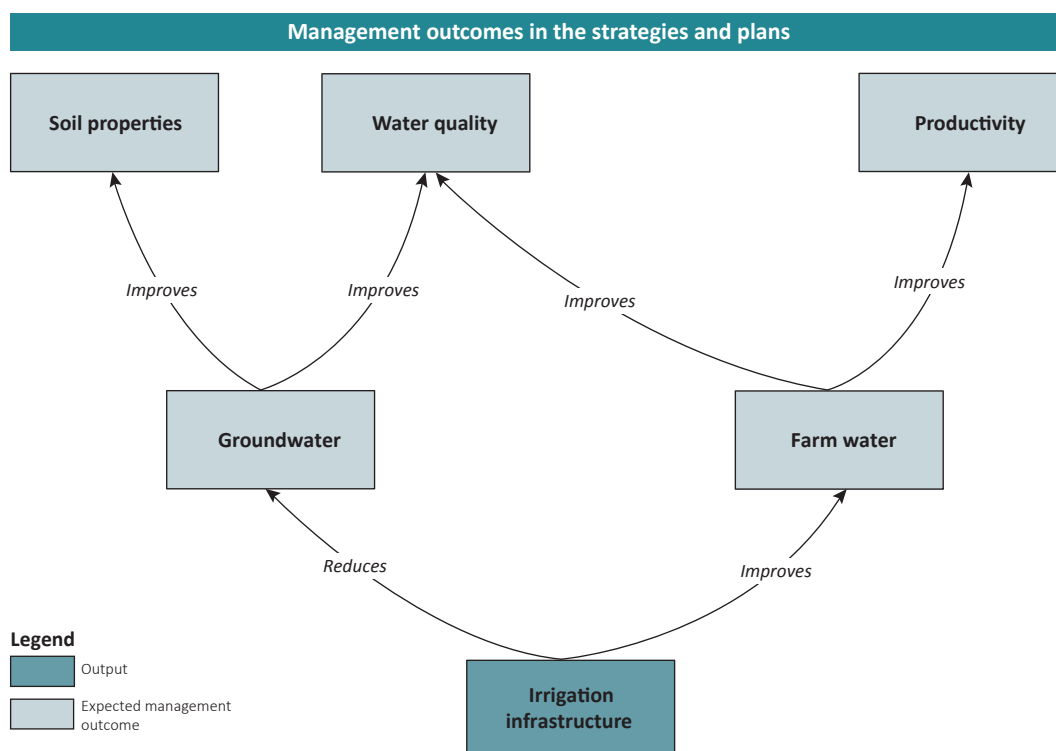
This includes the activities of land-forming or laser levelling to improve the efficiency of irrigation systems.

Related outputs: Any associated structures covered by other outputs (e.g. water storage, channel or pump) should be recorded in addition to this output.

Terminology

Gravity irrigation system: irrigation method that applies irrigation water to paddocks by letting it flow from a higher level supply through to fields at a lower level.

Pressurised irrigation system: irrigation method that applies irrigation water to paddocks using a pressurised system to transport water.



Logic diagram 4. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Previous type	Specific activities	Water savings
Description	Select one from list	Select one from list	Location of irrigation structure	Select the previous type of infrastructure where there was some	List the activities	Estimate the water savings
Valid values	Gravity Pressurised	Install Maintain Modify Remove	Polygon	Drip Flood/furrow Other N/A	Laser levelling Laying pipe Scheduling	ML

1.5 Waterway structure

Scope

This output records the number of waterway structures that have been installed, replaced, modified, removed or maintained.

Related outputs: Any associated agreement or plan/strategy (e.g. seasonal watering plan, environmental water management plan or species management plan) should be recorded as a separate output. The management of culverts should be recorded within the 'Crossing' output. Earth works done within a waterway must be recorded under the 'Earth works' output.

Terminology

Carp screen: A structure that prevents carp entering waterways.

Chute: Short channel that cuts across the neck of land separating the two ends of a river oxbow.

Fish barrier: An obstruction that prevents fish moving along a waterway.

Fishway: A structure that allows fish to swim upstream past a waterway barrier (e.g. a weir).

Flow regulator: A device located in a waterway that restricts the rate at which water is released.

Groyne: A protective structure that extends from the edge of the water to prevent erosion of a waterway.

Large wood: Single or multiple pieces of timber in the stream.

Outlet: A pipe or hole through which water may be released.

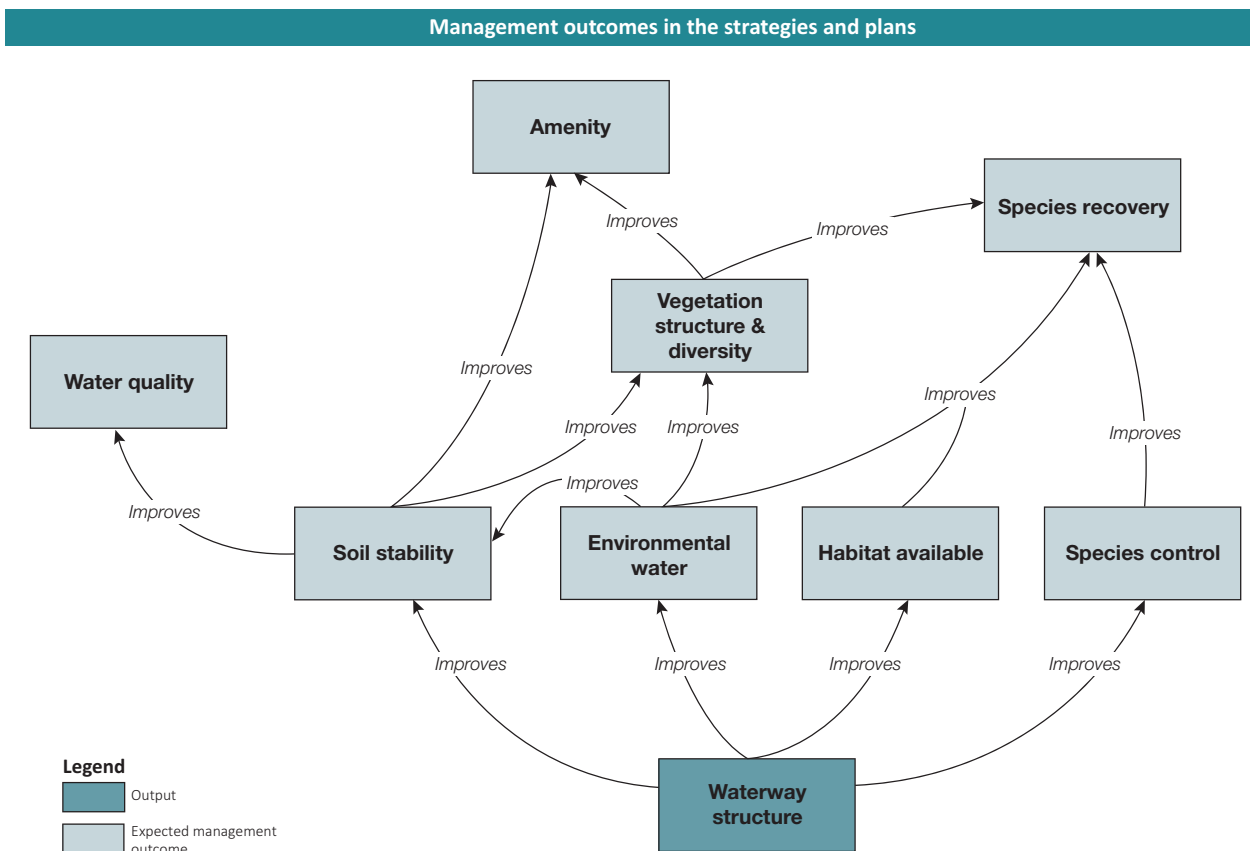
Rock seeding: Boulders placed in the waterway bed to obstruct stream flow and create localised scour holes and related habitat.

Sill: A structure placed perpendicular to flow and across the channel to create habitat.

Pile: A heavy beam or post driven vertically into the bed of a waterway or ground.

Pile field: Lines of timber logs generally driven vertically into the waterway.

Waterway: A natural channel in which water regularly flows, including but not limited to, a river, creek, stream or watercourse.



Logic diagram 5. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object
Description	Select one from list	Select one from list	Location of structure
Valid values	Carp screen Chute Fish barrier Fishway Flow regulator Groyne Large wood Outlet Pile field Rock seeding Sill	Install Maintain Modify Remove Replace	Point

1.6 Terrestrial structure

Scope

This output records the number of terrestrial structures that have been installed, maintained, modified or removed.

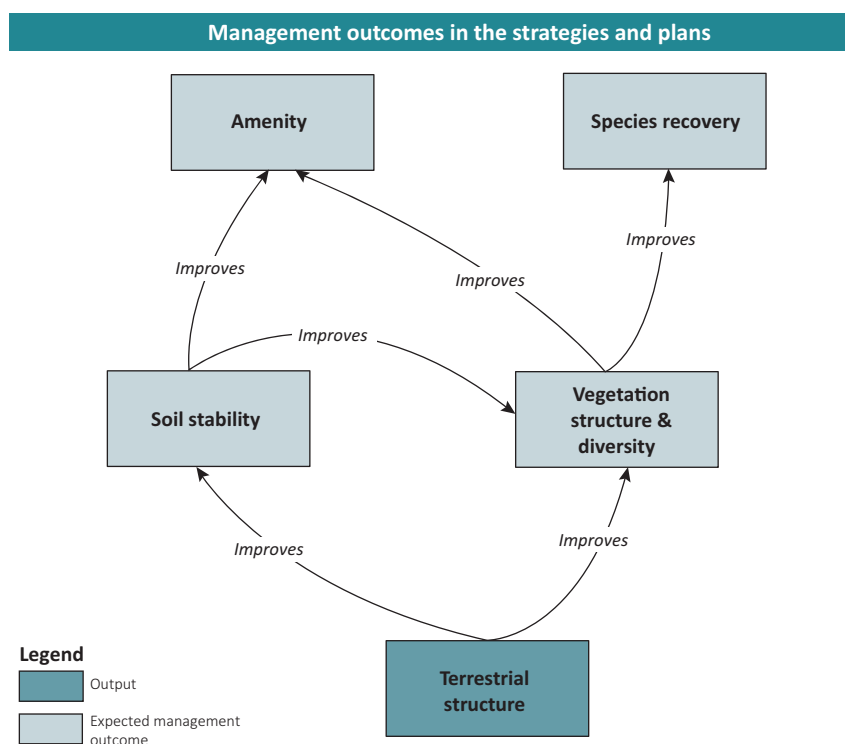
This output includes sediment traps, the establishment of hygiene stations for managing pathogens (in particular *Phytophthora cinnamomi*) and temporary erosion control structures (e.g. hay bales or coir logs).

Related outputs: Any associated agreement, plan or inspection (i.e. assessment) associated with the structure should be recorded as a separate output.

Terminology

Pathogen: a bacterium, virus, or other microorganism that can cause disease.

Sediment trap: a temporary containment area that allows sediment in collected storm water to settle out during infiltration.



Logic diagram 6. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object
Description	Select one from list	Select one from list	Location of structure
Valid values	Hygiene station Sediment trap Erosion control	Install Maintain Modify Remove Replace	Point

1.7 Terrestrial feature

Scope

This output records the number of terrestrial-related habitat features that have been installed, maintained, modified or replaced.

Related outputs: Water-related habitat features (e.g. large wood) should be recorded under the 'Waterway structure' output. Inspection of terrestrial habitat features should be recorded under the 'Assessment' output and any associated agreement, plan/strategy or assessment should be recorded as a separate output.

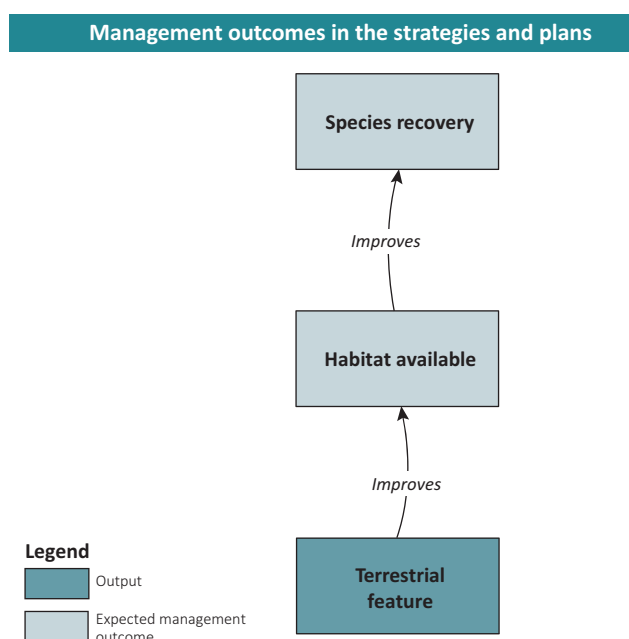
Terminology

Habitat feature: A structure that is suitable for fauna habitat.

Man-made ground feature: A constructed structure that is suitable for fauna habitat.

Natural ground feature: A naturally formed structure used as habitat.

Nest box: A man-made enclosure provided for animals to nest.



Logic diagram 7. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Target Species
Description	Select one from list	Select one from list		Select species ID from Victorian Biodiversity Atlas (Appendix 7)
Valid values	Man-made ground feature Natural ground feature Nest box	Install Maintain Modify Replace	Point	

1.8 Monitoring structure

Scope

This output records the number of monitoring structures that have been installed, maintained, modified or removed.

Related outputs: Use of monitoring structures for the assessment of fauna behaviour or reports generated from the structure should be recorded under separate outputs. The output does not include the establishment of locations for monitoring that do not require a permanent structure (e.g. photo points, quadrats).

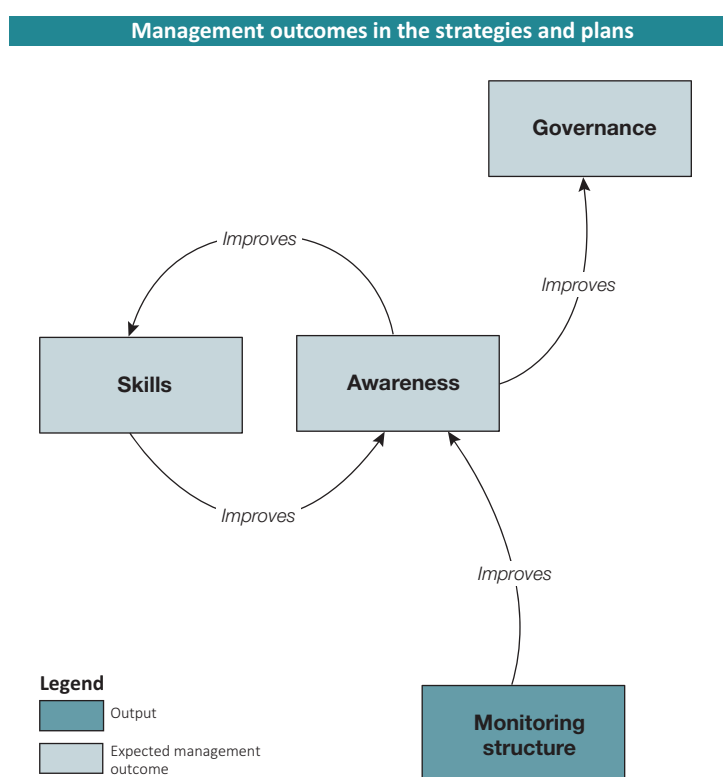
Terminology

Bore: A pipe installed vertically in the ground through which groundwater is pumped.

Hide: A camouflaged shelter used to get a close view of wildlife.

Measuring station: A place set up for recording, observing or measuring information, data or phenomena in the local environment or from a particular vantage point. The information may come from natural or man-made sources.

Trap: A device or enclosure designed to catch and keep animals.



Logic diagram 8. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Description
Description	Select one from list	Select one from list	Location of structure	Identify what the structure is intended to monitor.
Valid values	Bore Hide Measuring Station Trap	Install Maintain Modify Remove Replace	Point	Fauna Flora Groundwater Soil Surface water Weather

1.9 Fence

Scope

This output records the length of fences and bollards installed, replaced (i.e. full replacement of wire and posts), modified, removed or maintained (e.g. rewiring).

Associated access points (e.g. cattle grids, gates) should be considered a feature of the fence/barrier and not recorded separately.

Related outputs: Associated plans, agreements or changes to grazing regimes that may be associated with the delivery of this output should be recorded as separate outputs.

Terminology

Bollards: One of a series of posts preventing vehicles entering an area.

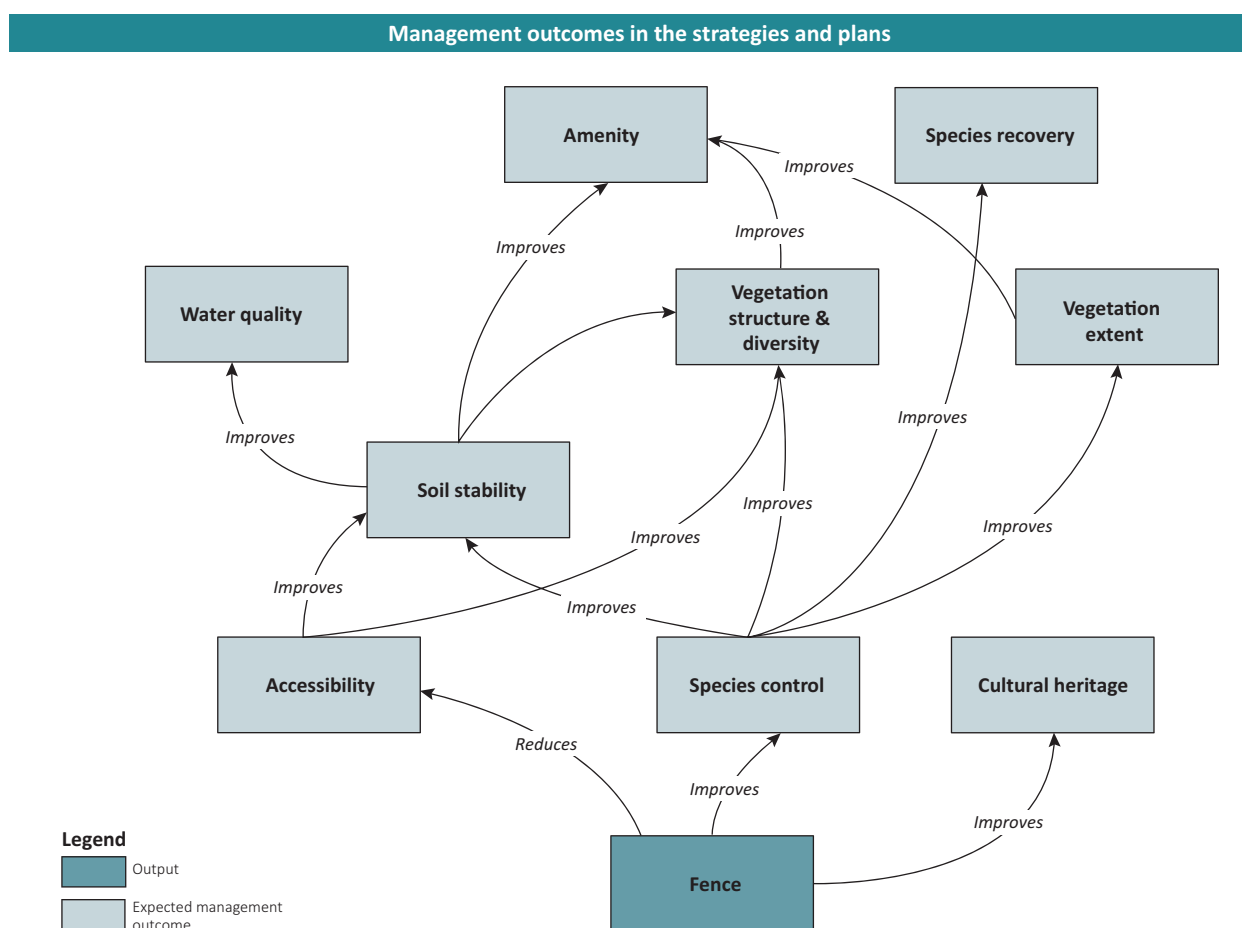
Conventional fence: Standard post and wire fencing, typical on many rural properties.

Electric fence: A fence through which an electric current can be passed.

Fence: A barrier or other upright structure enclosing an area of ground to mark a boundary or control access.

Mesh fence: Prefabricated wire fencing often used for sheep (e.g. ring-lock, hinge joint).

Waterway fence: Fencing designed to exclude stock but remain resistant to floodwater, including suspended fences and hinged flood gates.



Logic diagram 9. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Change in access	Specific type	Target species	Area fenced
Description	Select one from list	Select one from list	Location of structure. Where sections of fence are >10 m apart they should be recorded separately	Identify whether the management outcome area represents the containment or exclusion of the disturbance	Select one from list	Select animals not wanted on site	Calculate the area contained/ excluded by construction of fence
Valid values	Bollard Fence	Install Maintain Remove Modify Replace	Line	Containment Exclusion	Conventional Electric Mesh Waterway Combination Other	Domestic stock Environmental pest animals Native species N/A	Hectares

1.10 Visitor facility

Scope

This output records the number of visitor facilities (e.g. picnic area, camping ground, toilet or viewing platform) that have been installed, maintained, modified, removed or replaced.

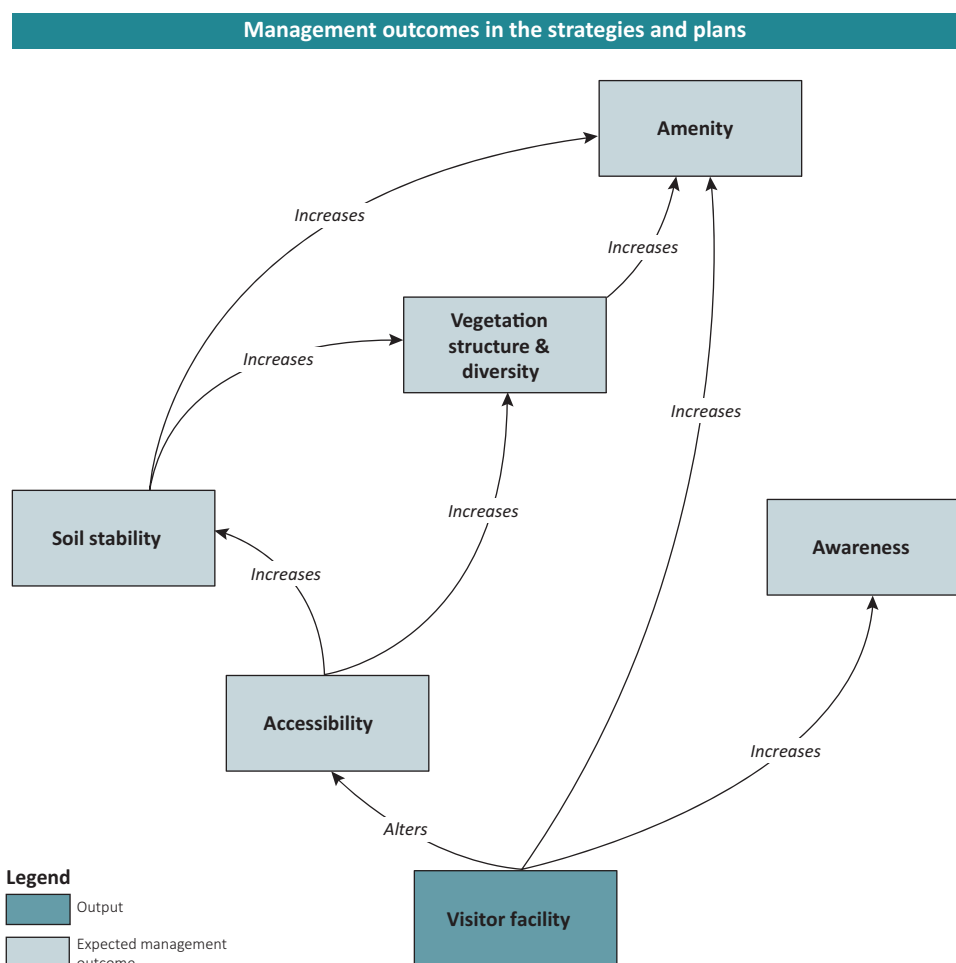
Related outputs: Associated agreements or plans (e.g. site design/plan) and roads or trails should be recorded as separate outputs.

Terminology

Building facilities: Includes a range of buildings, such as picnic shelter, information shelter, hut or toilet block.

Operations facilities: Facilities to support day-to-day operations, such as a payment point, rubbish bin or car park.

Recreation facilities: Facilities directly targeted at visitor recreation, such as a horse yard, hang gliding launch, trail bike prop or jetty.



Logic diagram 10. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Data storage	Specific type
Description	Select one from list	Select one from list	Location of structure	Identify where the assessment data is stored	Select the from list
Valid values	Building Operations Recreational	Install Maintain Modify Remove Replace	Point	Recweb PV asset system Other N/A	Barbecue Bench-seat Boardwalk Boat ramp Car park Elevated stairs Generator Hand rail Horse yards Hang gliding launch Hut Information shelter Jetty Payment point Picnic shelter Picnic table Retaining wall Rubbish bins Signage Toilet block Trail bike prop Viewing platform

1.11 Road

Scope

This output records the length of roads, trails and firebreaks that have been installed, maintained, modified, removed or replaced.

Related outputs: Inspection of roads should be recorded under the 'Assessment' output.

Terminology

Firebreak: An obstacle to the spread of fire.

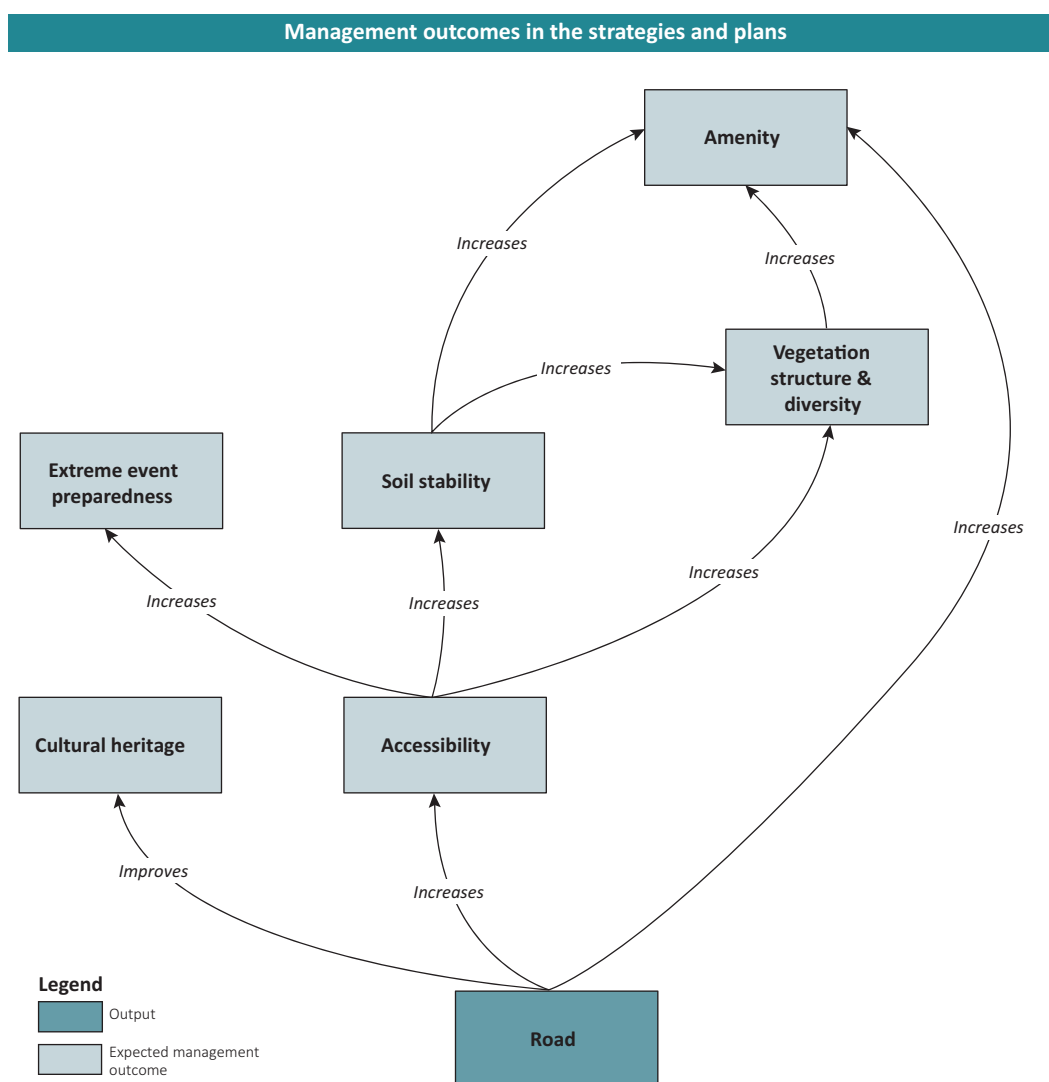
Operational road: Roads used for management purposes, including fire prevention and suppression activities, that are not public roads. These may be available for public use but road conditions cannot be assured.

Private road: Roads established for private use only.

Public road: Roads primarily used to provide access for the general public and listed in the Register of Public Roads.

Road: A wide way leading from one place to another, primarily used for motorised transport. Roads are defined by categories and class and can be used for public or operational purposes.

Trail: A rough path primarily used for non-motorised transportation.



Logic diagram 11. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Data storage	Specific type
Description	Select one from list	Select one from list	Location of structure	Identify where the assessment data is stored	Identify the specific type of road category
Valid values	Firebreak Road Trail	Install Maintain Modify Remove	Line	PV asset system Recweb Other N/A	Operational Private Public N/A

1.12 Crossing

Scope

This output records the number of bridges, culverts, causeway crossings and fords that have been installed, maintained, modified or removed.

Related outputs: Where the crossing functionality is associated with the delivery of other outputs, these outputs should be recorded in addition to this output (e.g. fire regime, visitor facility, road).

Terminology

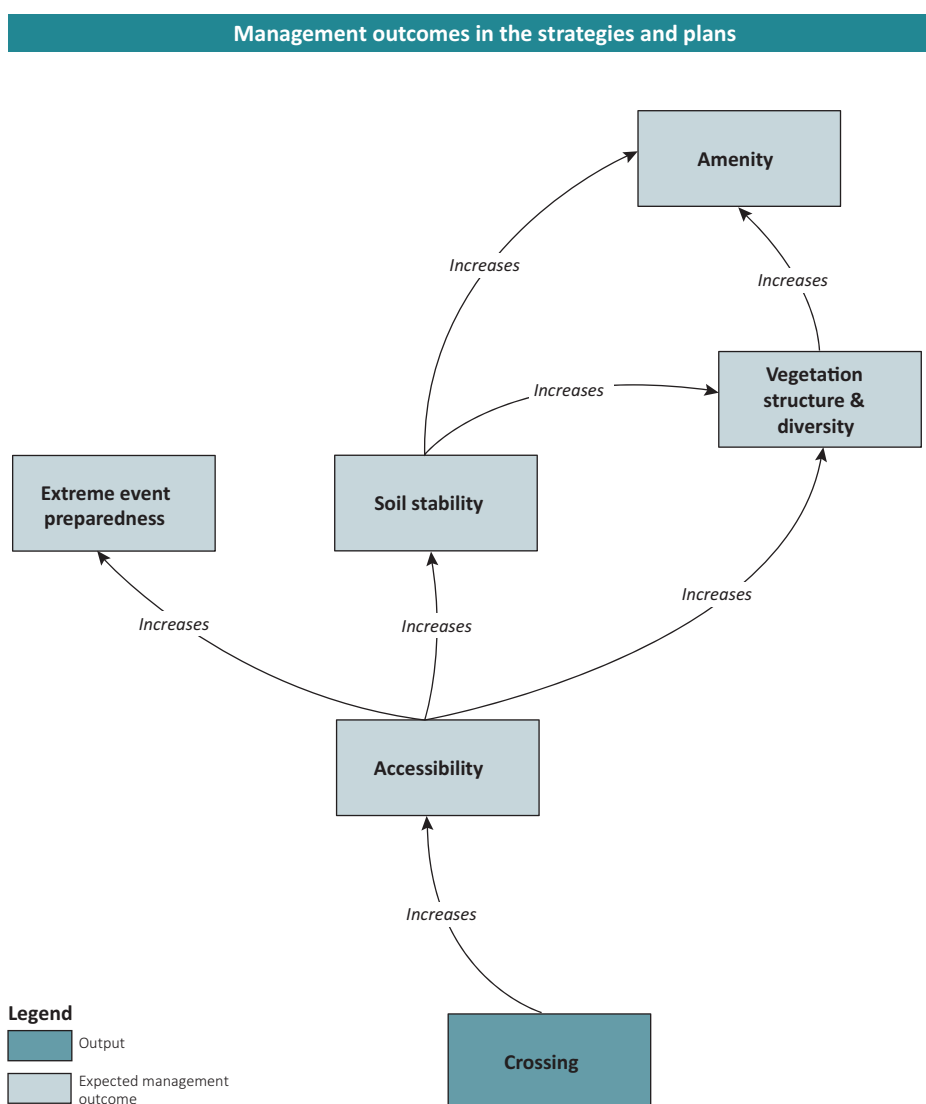
Bridge: A structure carrying a road, trail, railroad, or canal across a waterway, ravine, road, railroad or other obstacle.

Culvert: A tunnel carrying a waterway or open drain under a road or railroad.

Causeway crossing: A raised road or trail across low or wet ground.

Ford: A shallow place in a waterway allowing people to walk or drive across.

Waterway: Includes but is not limited to a river, creek, stream or watercourse, a natural channel in which water regularly flows, wetland, dam or other collection of water.



Logic diagram 12. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Data storage	Specific type
Description	Select one from list	Select one from list	Location of structure	Identify where the assessment data is stored	Select one from list
Valid values	Bridge Causeway crossing Culvert Ford	Install Maintain Modify Remove	Point	PV asset system Recweb N/A	900–1,200 mm 900–1,800 mm 1,500–1,800 mm 2,100–2,400 mm 2,100–2,700 mm 3,000–3,600 mm Concrete Concrete/steel Concrete/steel/timber Concrete/timber Log earth fill Log fill Steel Unknown

2 Environmental works

Environmental works outputs are a mixture of goods and services outputs involving the modification of environmental characteristics (e.g soil, water, vegetation).

Output title	Output types		
2.1 Vegetation	Mixed Native indigenous	Native non-indigenous	Non-native
2.2 Weed control	Non-woody	Woody	
2.3 Pest animal treatment	Estuarine Inland aquatic	Marine	Terrestrial
2.4 Over-abundant wildlife control	Estuarine Inland aquatic	Marine	Terrestrial
2.5 Threatened species response	Estuarine Inland aquatic	Marine	Terrestrial
2.6 Emergency species response	Estuarine Inland aquatic	Marine	Terrestrial
2.7 Soil treatment	Biological Mechanical	Chemical	Temperature
2.8 Earth works	Armouring Barrier	Battering Dredging	Levee Levelling
2.9 Rubbish removal	Estuarine Inland aquatic	Marine	Terrestrial

2.1 Vegetation

Scope

This output records the area where vegetation has been established (e.g. revegetation, buffers), modified (e.g. supplementary planting) or maintained (e.g. thinning, slashing or mulching).

The output covers native and non-native species. While not frequently used, non-native species may be planted to manage soil stability in riparian or agricultural areas (i.e. grasslands). This output does not cover agricultural crops or pasture.

Natural regeneration is a management outcome (i.e. improved vegetation structure and diversity) and therefore cannot be recorded as an output. Regeneration may be encouraged by the delivery of this vegetation output and/or other outputs (e.g. fence, grazing regime, management agreement, fire regime), which must be recorded in addition to this output.

Related outputs: Other than thinning of native vegetation, which should be recorded here, removal of vegetation (native or non-native) is to be recorded under the 'Weed management' output. Site preparation outputs (e.g. weed control) should also be recorded in addition to this output.

Terminology

Buffer: Either a) an area of land revegetated or maintained to assist in the mitigation of threats to soil and water quality; or b) a zone between an area being

managed for biodiversity values and areas being managed for other means, to limit the impact of outside activities within the biodiversity-managed zone or to stop fire and smoke from within remnant.

Establish: Establishment of vegetation to a minimum standard in formerly cleared areas, outside a remnant patch. Commonly termed revegetation.

Indigenous: Originating or occurring naturally in a particular place.

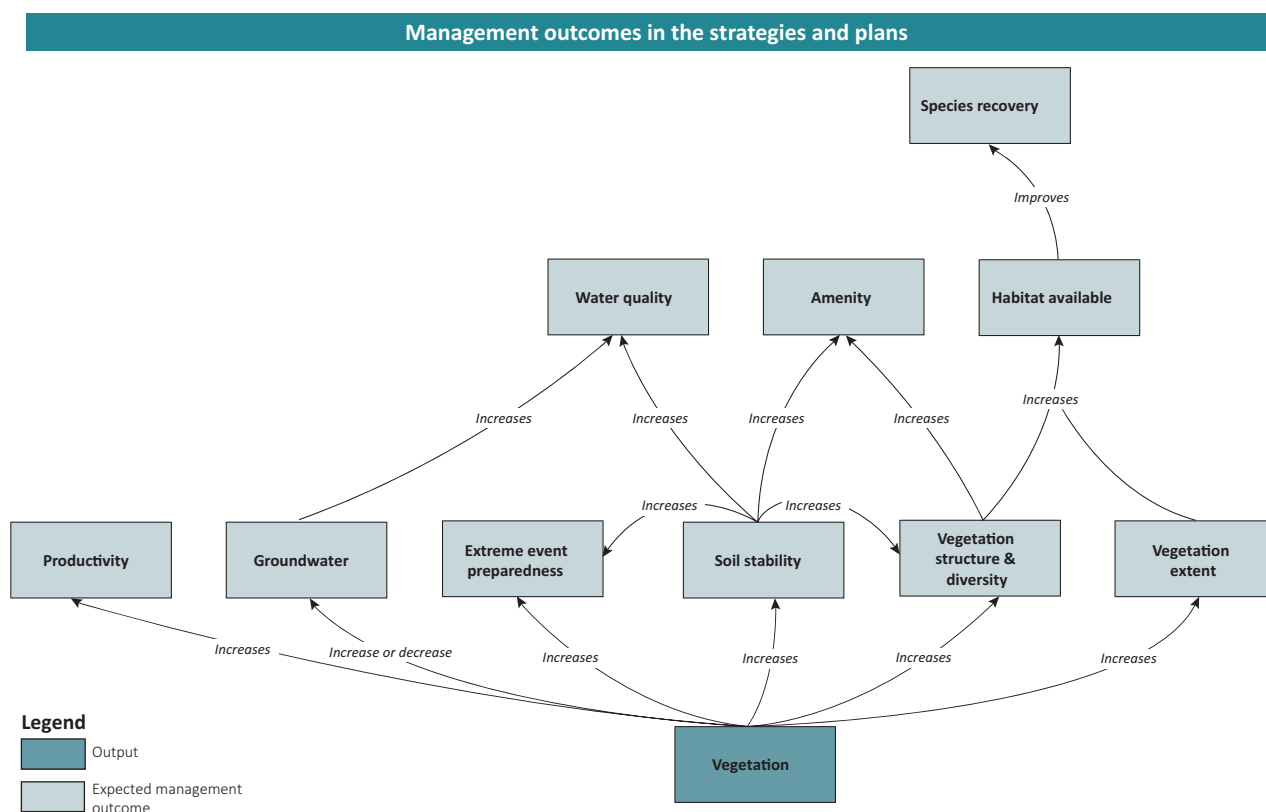
Mixed: A mixture of indigenous and/or non-indigenous native species.

Native vegetation: Plants native to Victoria, including trees, shrubs, herbs and grasses.

Remnant: Native vegetation established or regenerated on a largely natural landform. The species present are those normally expected in that vegetation community. Largely natural landforms may have been subject to some past surface disturbance, such as some clearing or cultivation, but do not include man-made structures, such as dam walls and quarry floors.

Revegetation: Establishment of native vegetation to a minimum standard in formerly cleared areas outside a remnant patch.

Supplementary planting: Establishment of plants within a remnant patch of native vegetation. Typically includes the planting or direct seeding of understorey life forms.



Logic diagram 13. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Specific activities
Description	Select one from list	Select one from list	Area where vegetation has been established, maintained or modified	Select multiple from list
Valid values	Mixed Native indigenous Native non-indigenous Non-native	Establish Maintain Modify	Polygon	Direct seeding Long-stem planting Mulching Plant guarding Seed bank introduction Supplementary watering Thinning Seedling planting

2.2 Weed control

Scope

This output records the gross area over which weeds were controlled by killing, removing or restricting them. It recognises that weed control generally involves a combination of searching for and treating target weed species within the area designated for control. The proportion of the gross output area where actual weed treatment occurred is indicated by the Treatment Coverage attribute.

Where two or more target species of the same output type (woody or non-woody) are controlled over the same gross area, one output may be used. However, if the control targets weeds of both types, it is encouraged that a separate output is recorded for each (e.g. one for treatment of (woody) willows; another for treatment of non-woody weeds). The decision to amalgamate or separate the output is best determined by the on-ground practitioner or will be determined by the investment program.

Related outputs: Where weed survey is conducted without simultaneous treatment action, this should be recorded as an 'Assessment' output.

Weed control conducted as part of site preparation for revegetation is regarded as being separate and should be recorded under this output.

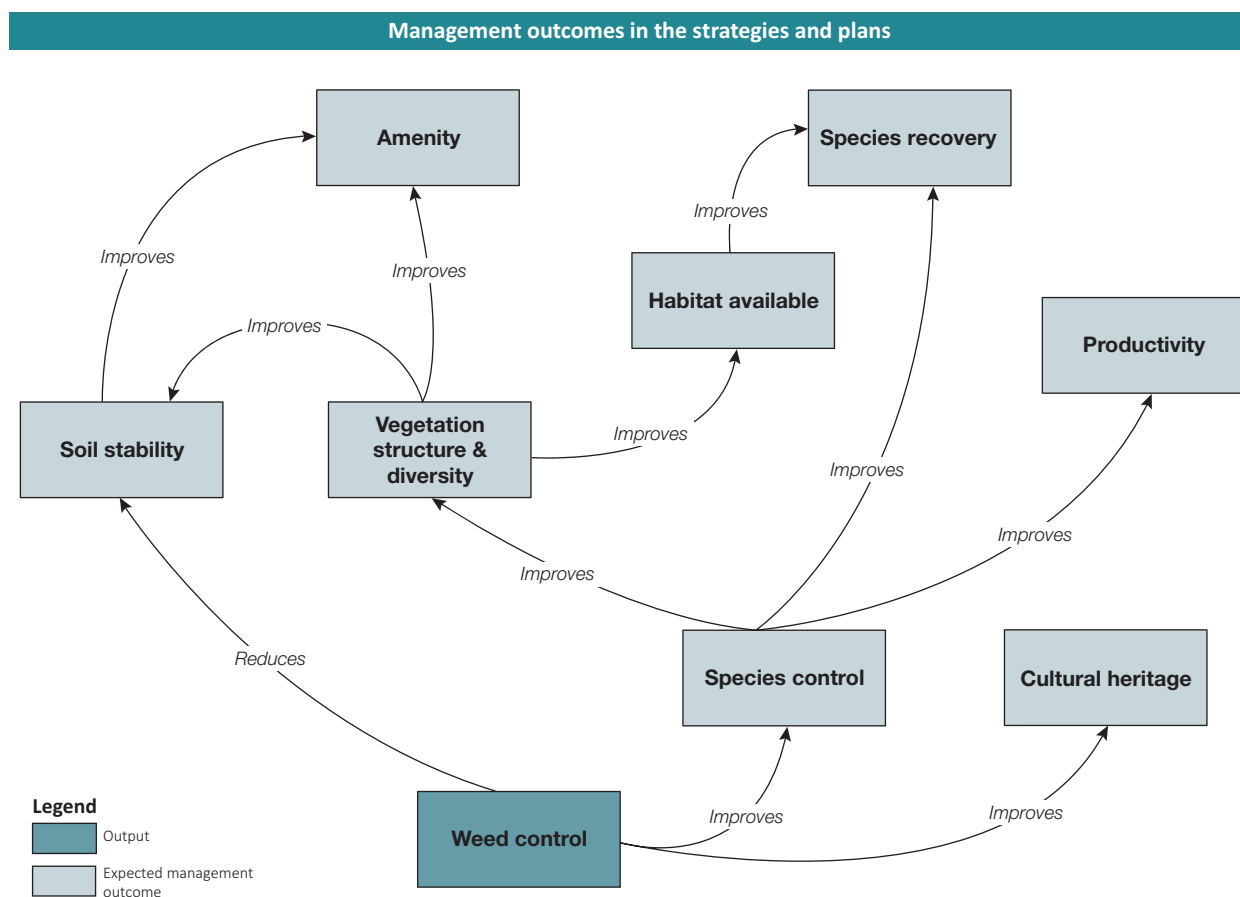
This output should not be used for methods captured by other outputs (e.g. fire, grazing, watering, fence), which should be recorded in addition to this output.

Terminology

Asset-based protection: This approach is used to manage a species only where reducing its adverse effects provides the greatest benefits by achieving protection and restoration outcomes for specific, highly valued assets. This approach is used for widespread weeds.

Aquatic weeds: Non-woody aquatic species that pose a serious threat to fishery, the aquatic environment or human health and are declared under Section 75 of the *Fisheries Act 1995* (e.g. *Spartina*, alligator weed, reed sweet grass). Some plants may be treated as weeds in certain locations irrespective of their declared status.

Containment: The application of measures in and around an infested area to prevent the spread of an invasive plant species. This may include reduction of the density or



Logic diagram 14. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

area of the infestation where appropriate. A containment program may include eradication of satellite infestations.

Eradication: When a species (including plant propagules) has been removed or killed and no longer occurs at that site. In practice, this means it is no longer detected by recommended methods of survey for a defined period.

Native vegetation: Plants native to Victoria, including trees, shrubs, herbs and grasses.

Non-woody: Includes ground cover, herbs, vine cacti/succulent and aquatic weeds.

Prevention: Preventing high-risk invasive species from establishing (at a defined site).

Specific activities: The treatment methods used to manage weeds.

Weed: A plant that requires some form of treatment to reduce its effects on the economy, the environment, human health and amenity.

Woody: Plants that have wood as the main substance of the trunk or branches, such as a tree or shrub.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Specific activity
Description	Select one from list	Select one from list	The gross area over which weeds were controlled, including the area searched for target weeds and treated where present.	Select primary treatment method from list
Valid values	Non-woody Woody	Establish Maintain Modify	Polygon	Biological Chemical Manual Mechanical

Title	Biosecurity aim	Treatment coverage	Target species arrangement	Target species
Description	Select one from list	Estimate the percentage (nearest 10%) of the output polygon that was treated	Select one from list identifying the arrangement of the target species within output polygon	Identify the species ID using Victorian Biodiversity Atlas (Appendix 7)
Valid values	Asset-based protection Containment Eradication Prevention	Percentage	Scattered individuals Small patches Large patches Majority coverage Complete coverage	

2.3 Pest animal control

Scope

This output records the gross area over which pest animals were controlled by killing, removing or restricting them.

It recognises that pest animal control generally involves a combination of searching for and treating target species within the area designated for control. The proportion of the gross output area where actual pest animal treatment occurred is indicated by the treatment coverage attribute.

Where a pest animal survey is conducted without simultaneous treatment action, it should be recorded as an 'Assessment' output.

Native animal management should be recorded under either the 'Over-abundant wildlife control', 'Threatened species response' or 'Emergency species response' outputs.

Pest animal control conducted as part of site preparation for revegetation is regarded as being separate and should be recorded under this output.

Related outputs: This output focuses on activities associated directly with the pest animals, however, the output will often be completed in close association with the delivery of other outputs. These should be

recorded as separate outputs, e.g. grazing, fence, harbour removal (i.e. rubbish dumped on site or weeds) or the establishment of management agreements or management plans.

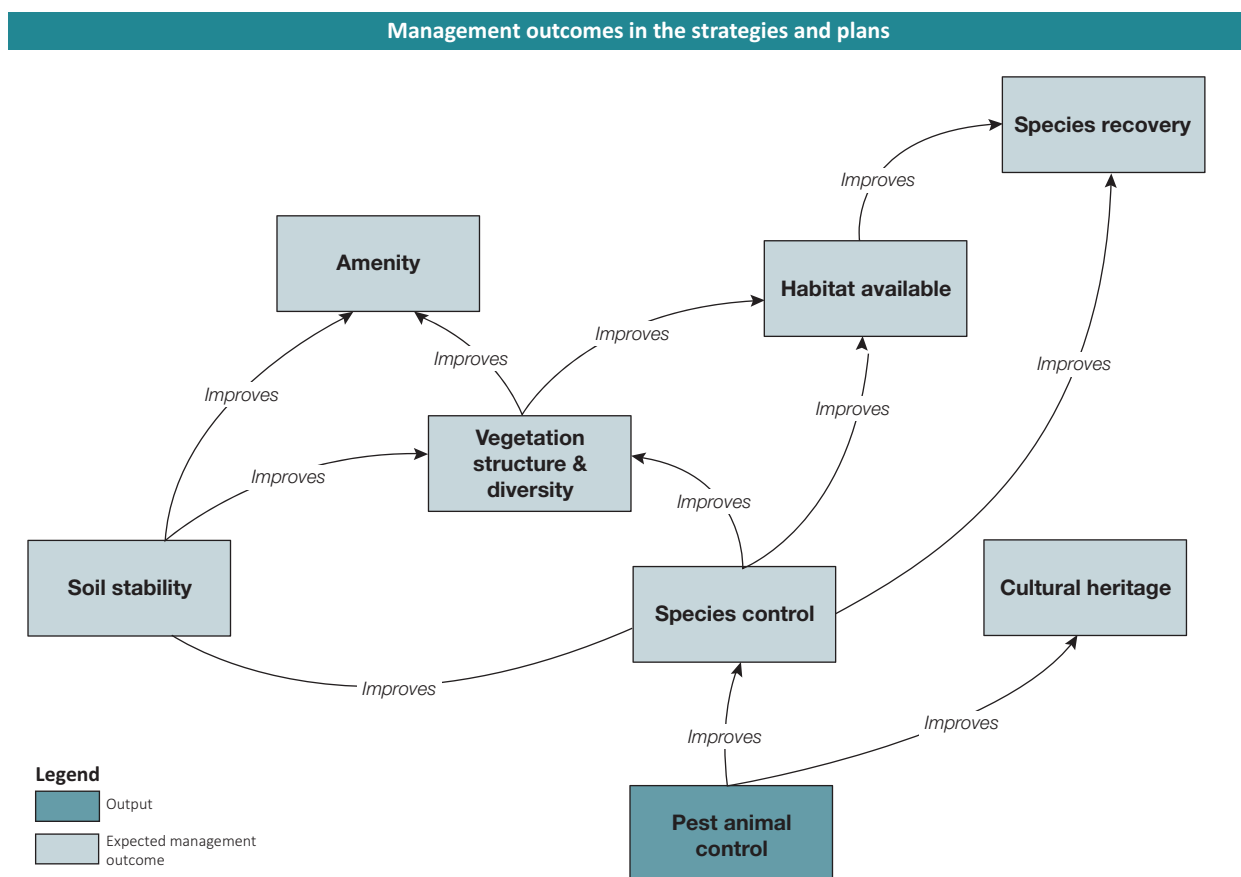
Terminology

Asset-based protection: The approach used to manage a species only where reducing its adverse effects provides the greatest benefits by achieving protection and restoration outcomes for specific highly valued assets. This approach is used for established pest animals.

Containment: The application of measures in and around an invaded area to prevent the spread of an invasive animal species. This generally applies to the species being confined within an area and may include reducing the density of the population or area that the species occupies, where appropriate.

Eradication: When a species has been removed or killed and no longer occurs at that site. In practice, this means it is no longer detected by recommended methods of survey for a defined period.

Estuarine: Animals that live predominantly or entirely in estuarine water.



Logic diagram 15. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Inland aquatic: Animals that live predominantly or entirely in inland water.

Marine: Animals that live predominantly or entirely in the ocean.

Pest animal: An animal species declared or able to be declared by the Minister under the *Catchment and Land Protection Act 1994* in one of four pest animal classes: Prohibited Pest Animal, Controlled Pest Animal, Regulated Pest Animal and Established Pest Animal.

Poisoning: This includes baiting.

Prevention: Preventing high-risk invasive species from establishing at a defined site.

Remnant: Native vegetation that is established or has regenerated on a largely natural landform. The species present are those normally expected in that vegetation community. Largely natural landforms may have been subject to some past surface disturbance, such as some clearing or cultivation, but do not include man-made structures such as dam walls and quarry floors.

Specific activities: The treatment methods used to manage pest animals.

Terrestrial: animals that live predominantly or entirely on land.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Biosecurity aim	Specific activities	Target Treatment coverage	Target species
Description	Select one from list	Select one from list	The gross area over which pest animals were controlled, including the area searched for target species and treated where present. (Due to the diffuse nature of pest animal treatment this will be an estimate)	Select one from list	Select one from list	Estimate the percentage (nearest 10%) of the output polygon that was treated	Select species ID from Victorian Biodiversity Atlas (Appendix 7)
Valid values	Estuarine Inland aquatic Marine Terrestrial	Establish Maintain Modify	Polygon	Asset based protection Eradication Containment Prevention	Bait Biological Fumigate Habitat destruction Manual removal Muster Shoot Trap	Percentage	

2.4 Over-abundant wildlife control

Scope

This output records the gross area over which populations of over-abundant wildlife were restricted, removed, maintained or translocated.

It recognises that wildlife control generally involves a combination of searching for and treating target species within the area designated for control. The proportion of the gross output area where actual treatment occurred is indicated by the treatment coverage attribute.

Where a wildlife survey is conducted without simultaneous treatment action, it should be recorded as an 'Assessment' output.

Related outputs: Pest animal control activities should be recorded under the pest animal output.

Terminology

Estuarine: Animals that live predominantly or entirely in estuarine water.

Inland aquatic: Animals that live predominantly or entirely in inland water.

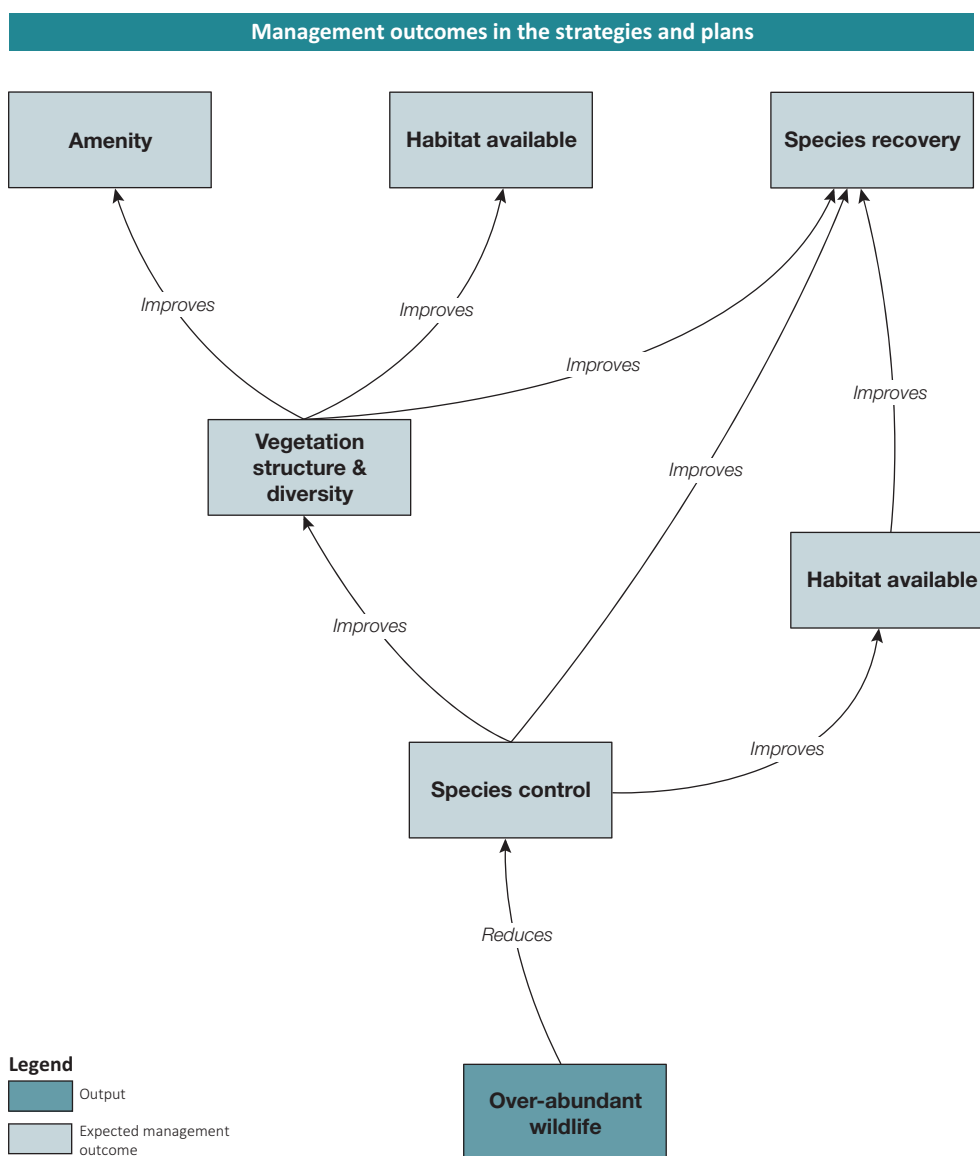
Marine: Animals that live predominantly or entirely in the ocean.

Over-abundant: A greater number of individuals within a population than is sustainable.

Specific activities: The methods used to control over-abundant wildlife.

Terrestrial: Animals that live predominantly or entirely on land.

Wildlife: Native to Victoria or designated as wildlife under the *Wildlife Act 1975* – includes exotic deer (e.g. Sambar, Red, Fallow and Hog).



Logic diagram 16. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Specific activities	Treatment coverage	Target species
Description	Select one from list	Select one from list	The gross area over which over-abundant wildlife was controlled, including the area searched for target species and treated where present. Due to the diffuse nature of animal treatment this will be an estimate	Select one or more from list	Estimate the percentage (nearest 10%) of the output polygon that was treated	Select species ID from Victorian Biodiversity Atlas
Valid values	Estuarine Inland aquatic Marine Terrestrial	Establish Maintain Modify	Polygon	Disturb (e.g. noise) Fertility control Shoot Translocate Trap Muster Poison	Percentage	

2.5 Threatened species response

Scope

This output records the number of threatened species populations that were established, maintained or translocated.

This output is for long-term activities targeted to specific threatened species or communities not already captured by existing outputs (e.g. fence, emergency species recovery). It is largely about captive breeding/propagation and reintroduction.

An element of searching is generally required and should be considered part of the output. However, where the effort to complete a search is considered important to the management outcome, it should be recorded as an 'Assessment' output.

Terminology

Estuarine: Animals that live predominantly or entirely in estuarine water.

Inland aquatic: Animals that live predominantly or entirely in inland water.

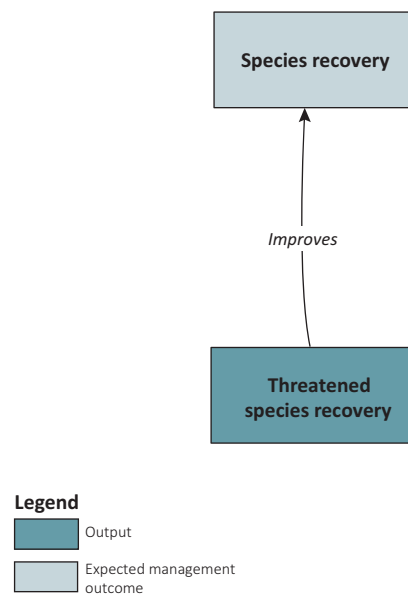
Marine: Animals that live predominantly or entirely in the ocean.

Recovery: A return to a normal or target state of health.

Terrestrial: Animals that live predominantly or entirely on land.

Threatened species: Any fauna and flora species and ecological communities that are listed as threatened under Victorian legislation (*Flora and Fauna Guarantee Act 1988*) or included in DELWP's Threatened Species Advisory Lists.

Management outcomes in the strategies and plans



Logic diagram 17. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Specific activities	Treatment Area	Target species
Description	Select one from list	Select one from list	Location of response	Select one or more from list	Estimate the area over which response undertaken	Select species ID from Victorian Biodiversity Atlas
Valid values	Estuarine Inland aquatic Marine Terrestrial	Establish Maintain Modify	Point	Caging Captive breeding Capture/release Collect/store seed or vegetative material Inoculation of soil Pollination Propagation Reintroduction/translocation Supplementary watering/feeding Other	Hectares N/A	

2.6 Emergency species response

Scope

This output records the number of incidents in which an emergency response is undertaken to treat wildlife affected by events such as chemical spills, bushfire, entanglement, strandings, etc.

An element of searching may be required and should be considered part of the output. However, where the effort to complete a search is considered to be of importance to the management outcome this should be recorded as an 'Assessment' output.

Related outputs: This output is intended for the short-term activities targeted to specific emergency recovery of wildlife. Longer-term threatened species' related activities should be recorded under the 'Threatened species recovery' output.

Terminology

Wildlife emergency: Human-induced or natural events that result in harm to individuals or groups of animals.

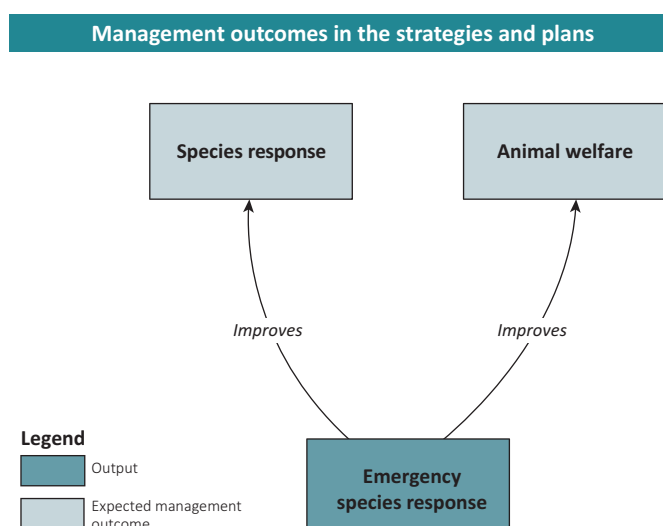
Estuarine: Animals that live predominantly or entirely in estuarine water.

Inland aquatic: Animals that live predominantly or entirely in inland water.

Marine: Animals that live predominantly or entirely in the ocean.

Recovery: A return to a normal or target state of health.

Terrestrial: Animals that live predominantly or entirely on land.



Logic diagram 18. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Specific activities	Treatment area	Target species	Event type
Description	Select one from list	Select one from list	Location of response	Select one or more from list	Estimate the area over which response undertaken	Select species ID from Victorian Biodiversity Atlas (Appendix 7)	Select one or more from list
Valid values	Estuarine Inland aquatic Marine Terrestrial	Establish Maintain Modify	Point	De-oiling Disentanglement Rehabilitation Translocation Veterinary treatment Whale stranding Other	Hectares N/A		Chemical spills Disease Entanglement Fire Flood Stranding Other

2.7 Soil treatment

Scope

This output records the area where soil has been treated through application or removal of a chemical, biological, mechanical or temperate-related input.

The activities in this output focus on treating soil acidification and reducing the impacts of salinity.

Related outputs: Any activities associated with soil treatment in a waterway, channel or along the coast should be recorded under the 'Earth work' output. The delivery of associated outputs (e.g. assessment, plan) should be recorded in addition to this output.

Terminology

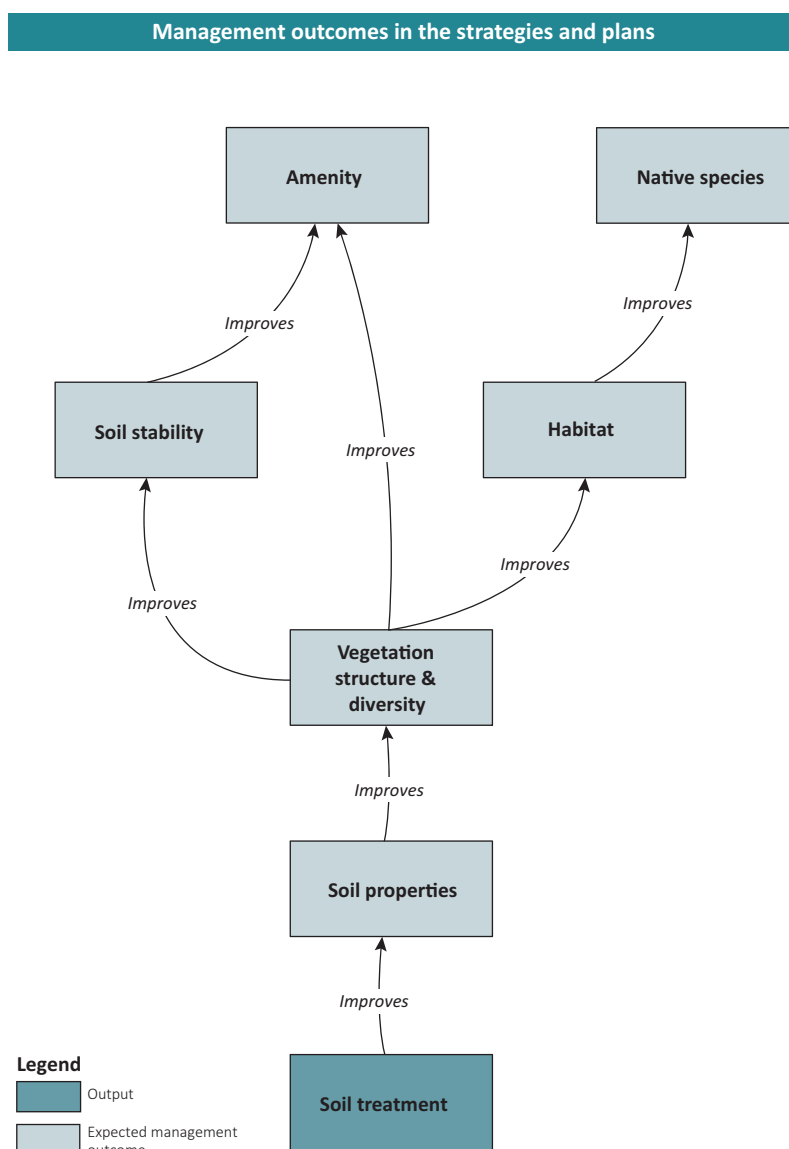
Biological: Introduction of flora or fauna to the soil to improve soil condition.

Clay topping/ripping: Incorporating clay into the soil.

Salinity: Accumulation of salt in the soil profile that adversely affects plant growth.

Soil acidification: The process by which soil pH decreases over time.

Temperature: heating or cooling of the soil.



Logic diagram 19. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Specific activities
Description	Select one from list	Select one from list	Location where soil treatment was done	Select one from list
Valid values	Biological Chemical Mechanical Temperature	Establish Maintain Modify Remove	Polygon	Biological additive Clay topping Ripping Scraping Chemical ameliorant Drying Liming Organic matter

2.8 Earth works

Scope

This output records the area of earth that has been altered through the establishment, maintenance, modification or removal of earth (soil, sand, silt and rocks). It includes activities for estuary opening.

Related outputs: The construction of waterway structures (e.g. pile fields, fishways), channels, water storages and upgrading irrigation infrastructure (e.g. laser levelling) should be recorded separately. Activities associated with conducting assessments or developing plans should also be recorded separately.

Terminology

Armouring: The top layer of waterway beds, consisting of a coarse surface layer over finer sediment. This occurs in all types of gravel waterways and is an important element in soil stability.

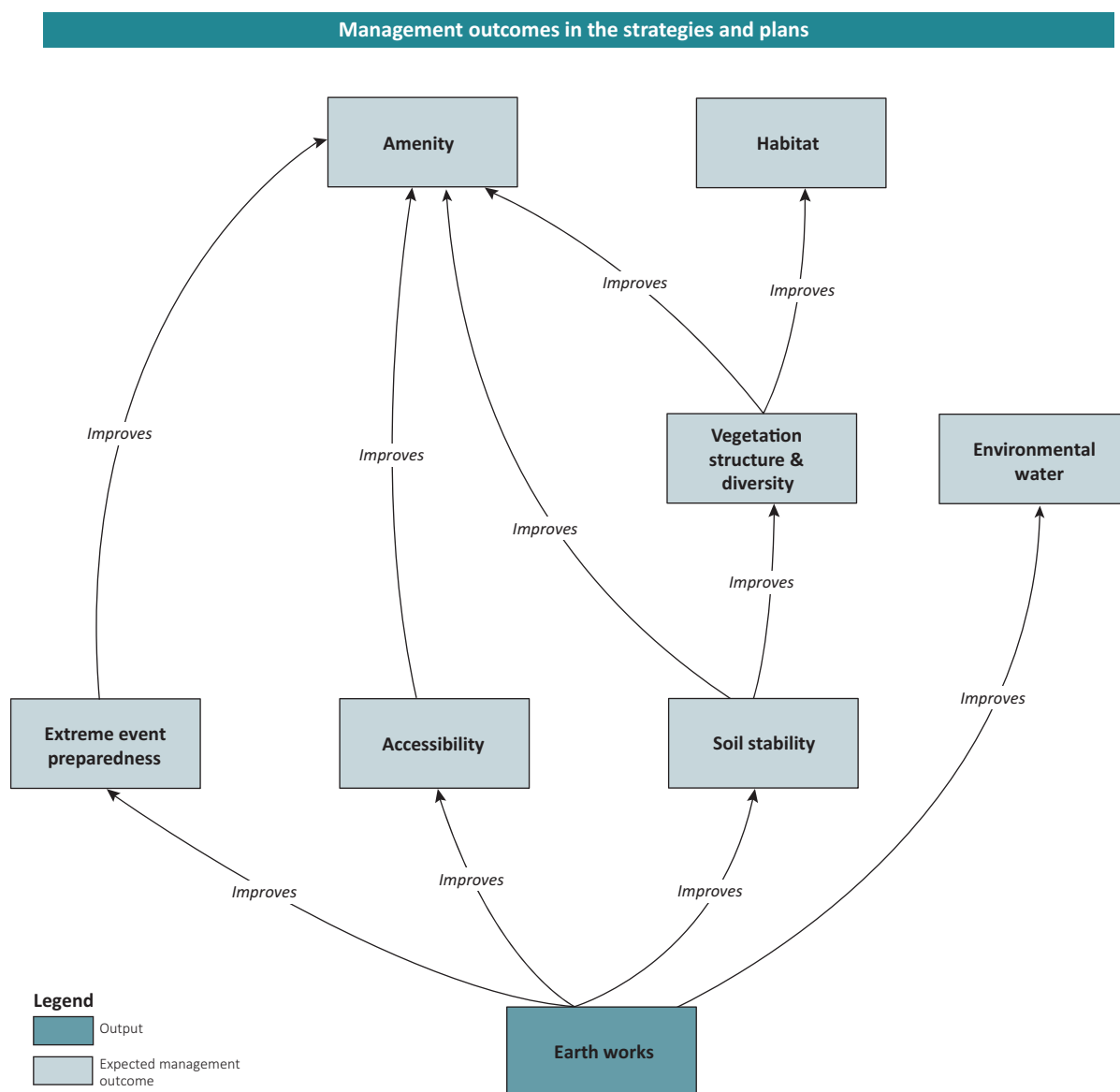
Battering: Modification of the waterway/gully to a designed bank angle.

Dredging: The process of removing bed sediment from a waterway/estuary using a dredge.

Earth works: The process of moving earth.

Levee: An embankment built to prevent the overflow of a river.

Waterway: Includes, but is not limited to, a river, creek, stream or watercourse, a natural channel in which water regularly flows, wetland, dam or other collection of water.



Logic diagram 20. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Specific activities	Treatment area
Description	Select one from list	Select one from list	Location where earth work was altered	Select one from list	Calculate area over which works undertaken
Valid values	Armouring Battering Barrier Dredging Levee Levelling	Establish Maintain Modify Remove	Point	Estuary closing Estuary opening Reclamation Other	Hectares

2.9 Rubbish removal

Scope

This output records the area over which rubbish or litter removal has been established, maintained or modified.

The output generally involves a combination of searching for and removing rubbish within the area designated for management. The proportion of the gross output area where removal occurred is indicated by the treatment coverage attribute.

A survey conducted without simultaneous treatment action should be recorded as an 'Assessment' output.

Related outputs: This output should not be used for the removal of rubbish from existing structures (e.g. fences) as a result of a flood, etc. Such activities should be captured under the 'Maintain' activity type for that output.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Specific activity	Treatment coverage
Description	Select one from list	Select one from list	The gross area over which rubbish was removed, including the area searched for rubbish and treated where present.	Select primary treatment method from list	Estimate the percentage (nearest 10%) of the output polygon that was treated'.
Valid values	Estuarine Inland aquatic Marine Terrestrial	Establish Maintain Modify	Polygon	Manual Mechanical	Percentage

3 Management services

Management services outputs involve the modification of land management, generally described as behaviour or practice change. Often associated with a management agreement, such changes may be delivered immediately (e.g. planned burning) or across the year (e.g. controlled grazing).

Output title	Output types		
3.1 Grazing	Riparian	Terrestrial	Agricultural
3.2 Agricultural practice change	Dryland	Irrigation	
3.3 Water	Estuary	River reach	Wetland Floodplain
3.4 Fire	Ecological Fuel Reduction		

3.1 Grazing

Scope

This output records the area over which grazing by livestock has been established, maintained, modified or removed.

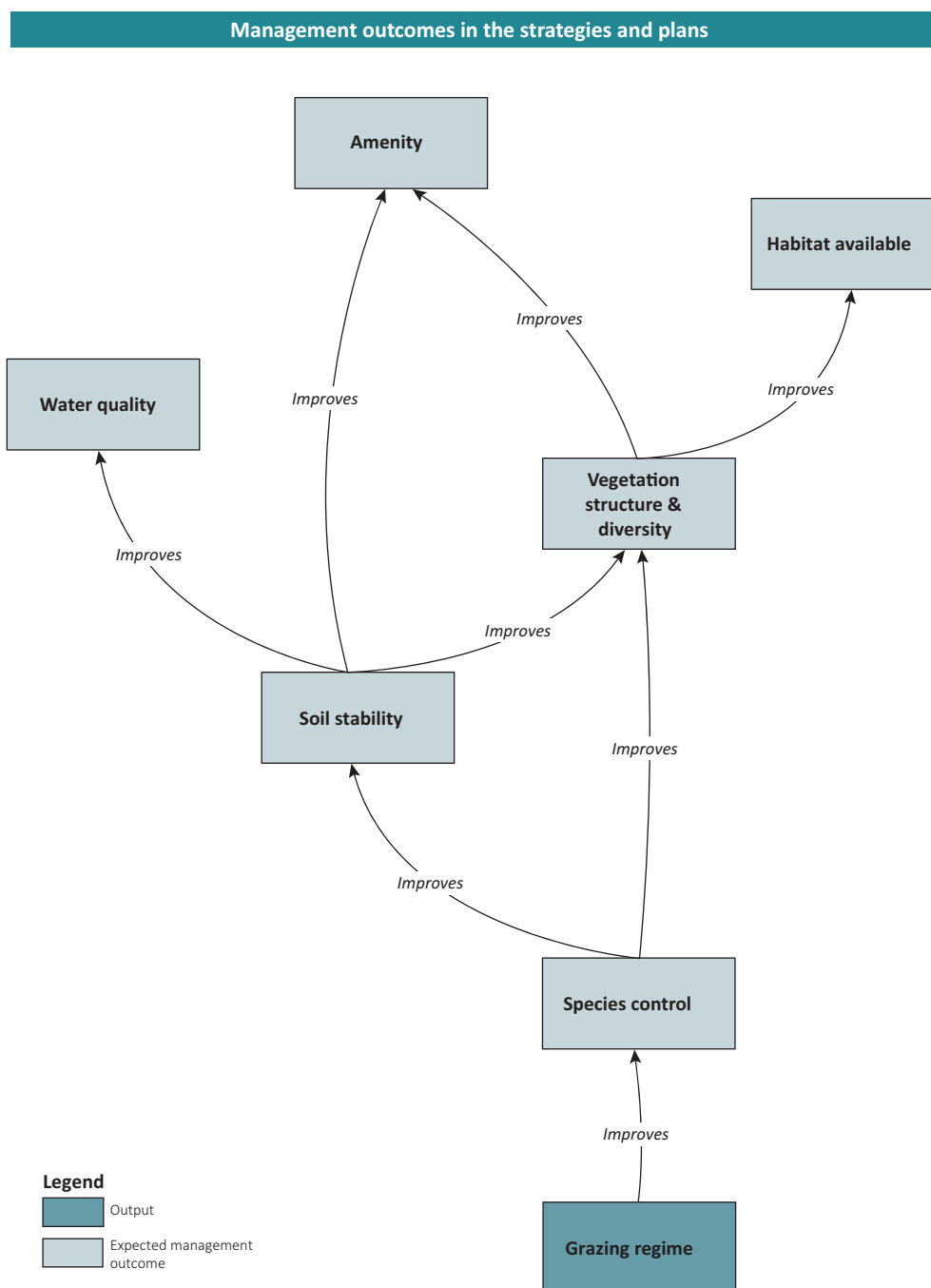
Related outputs: This output should not be used for the establishment of structures to control stock access (e.g. fence) or the establishment of management agreements or management plans, which should be recorded in addition to this output. It should only be used where grazing management is a direct output of investment, not where it is a result of other outputs such as fencing.

Terminology

Exclusion: Complete removal of livestock from a defined area.

Continuous: Livestock have ongoing and uncontrolled access to defined area.

Controlled: Livestock grazing occurs in a controlled manner based on specified times, livestock density and grazing duration.



Logic diagram 21. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Specific activities	Timing	Intensity
Description	Select one from list	Select one from list	Area over which grazing output has occurred	Select one from list	Select one from list	Select one from list
Valid values	Riparian Terrestrial Agricultural	Establish Maintain Modify Remove	Polygon	Continuous Controlled Exclusion	Autumn Winter Spring Summer N/A	High Medium Low N/A

3.2 Agricultural practices

Scope

This output records the area over which agricultural practices have been established, modified, maintained or removed. This may include retaining groundcover, changes in cropping practices or nutrient management.

The focus of this output should be to improve or support environmental and/or productivity outcomes.

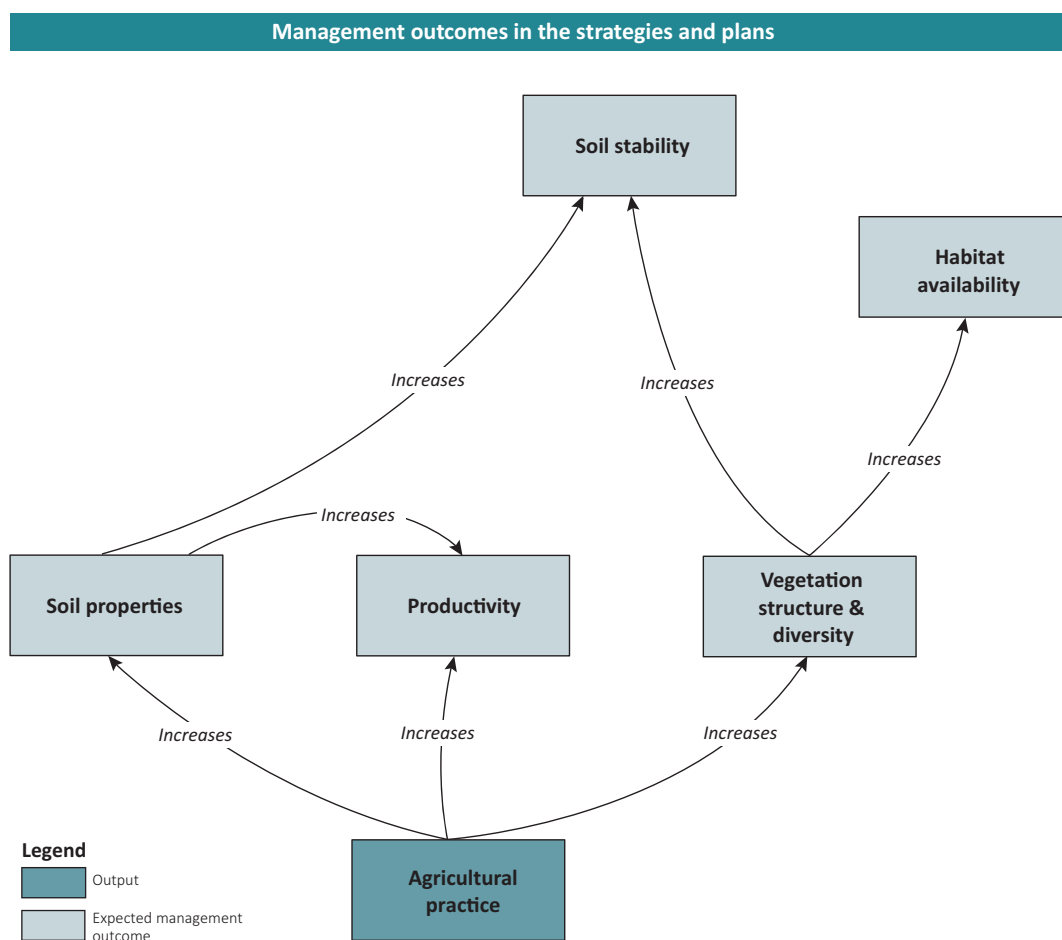
Related outputs: This output is specific to practices associated with agricultural land use or land management. It should not cover grazing activities. It should only be used where the agricultural practice is a direct output of investment, not where it is a result of other outputs such as engagement events or other capacity building focused activities.

Terminology

Biomass retained: Retention of organic matter (e.g. stubble).

Land use: The management and/or modification of natural environment.

Nutrient management: A system used to manage the amount, form, placement, and timing of the application of nutrients to plants.



Logic diagram 22. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Specific activities
Description	Select one from list	Select one from list	Area over which agricultural practice output has occurred	Select one from list
Valid values	Dryland Irrigation	Establish Modify Maintain Remove	Polygon	Biomass/ groundcover Cropping Nutrients Chemicals Other

3.3 Water

Scope

This output records the number of sites and area over which water has been delivered or removed.

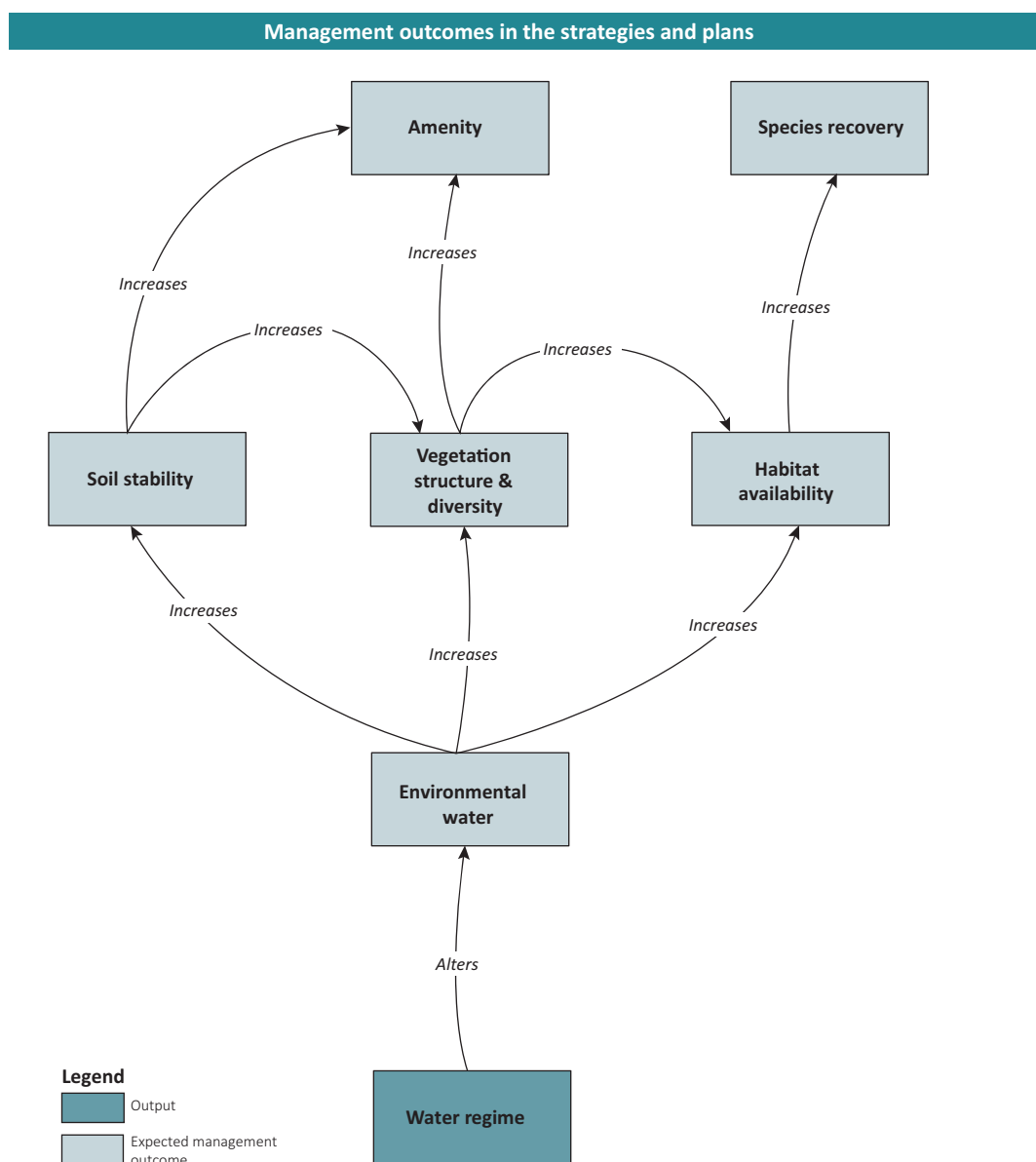
Related outputs: Associated plans (e.g. seasonal watering plan, environmental water management plan), management agreements, the establishment of structures (e.g. dam, pump) or monitoring sites should be recorded in addition to this output.

Terminology

Manage: Put into effect flow regime through management of flows at priority sites.

Delivery: Allocate or direct water to site.

Dewatering: Put into effect flow regime by removing water from site.



Logic diagram 23. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Timing	Volume of Water	Type of flow	Source of flow
Description	Select one from list	Select one from list	Area over which water output has occurred	Timing of water released/ withheld	Identify the total volume of water delivered	Select one or more from list	Select one from list
Valid values	Estuary River reach Wetland Floodplain	Establish Maintain Modify Remove	Polygon	Autumn Spring Summer Winter	ML N/A	Bank full Base flow Cease to flow Fill Flooding Fresh Low flow Overbank flow Partial fill Top-up Drying	Consumptive Mixed Water holdings

3.4 Fire

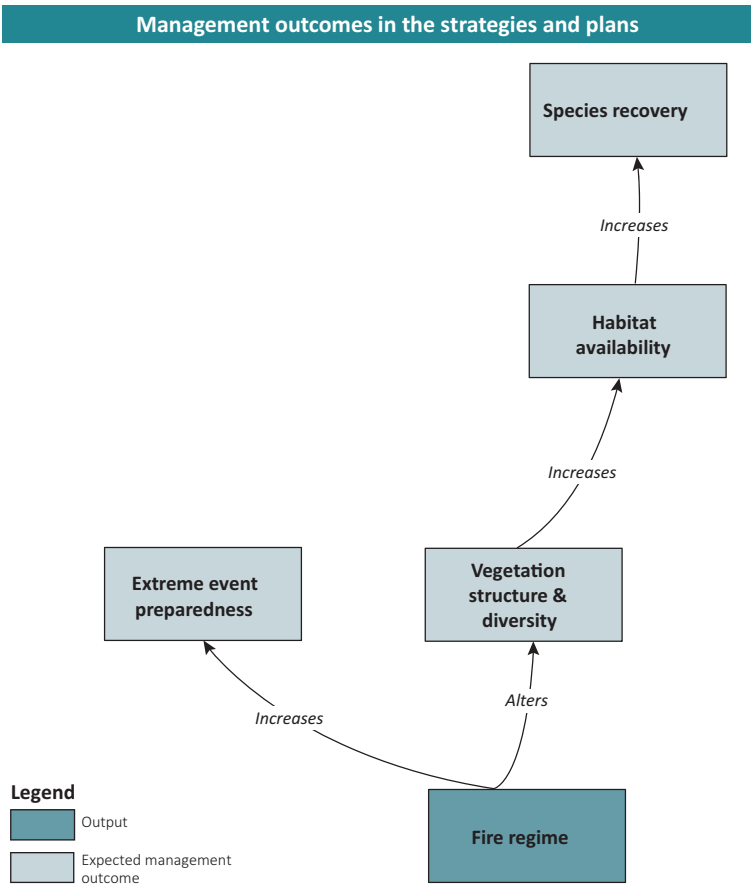
Scope

This output records the area over which fire has been applied to manage risks and/or ecological resilience.

Terminology

Fuel: Living and dead vegetation that can be ignited. It is often classified as dead or alive and as natural fuels or activity fuels (resulting from human actions, usually logging operations). Fuel components refer to such items as downed dead woody material by various size classes, litter, duff, herbaceous vegetation, live foliage, etc.

Fuel reduction: Planned fires lit to achieve a reduction in the quantity of fuel.



Logic diagram 24. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object
Description	Select one from list	Select one from list	Area over which fire output occurred
Valid values	Ecological Fuel Reduction	Establish Maintain	Polygon

4 Planning and regulation

Planning and regulation outputs are a mixture of goods and services outputs related to the information needs of planning and regulation.

Output title	Output types		
4.1 Approval and advice	Advice Lease	License Permit	Referral response Notice
4.2 Management agreement	Binding non-perpetual	Binding perpetual	
4.3 Assessment	Cultural Ecological Fauna Flora	Geological Heritage Invasive species Property	Social Soil Water Weather
4.4 Engagement event	Conference Field day	Training session Meeting	Workshop
4.5 Partnership	Agency/Corporates	Community	Mixed
4.6 Plan	Engagement Property	Management	Strategy
4.7 Publication	Written	Audio	Visual
4.8 Information management system	Database	Decision-support	

4.1 Approval and advice

Scope

This output records the number of decisions made in regard to permits, licences, leases and planning referrals, as well as advice provided to another agency or individual.

Approvals include permits processed for the regulation of works on waterways and responses made as a referral authority to planning scheme referrals relating to matters including floodplain management, irrigation development guidelines, soil protection, salinity management and native vegetation.

Note: Advice should only be used where:

- it is considered to make a noteworthy contribution towards a desired management outcome (e.g. input to Stream flow Management Plans); or
- significant effort is required to meet compliance with regulatory requirements such as 1080 baiting or advice (neighbour notification).

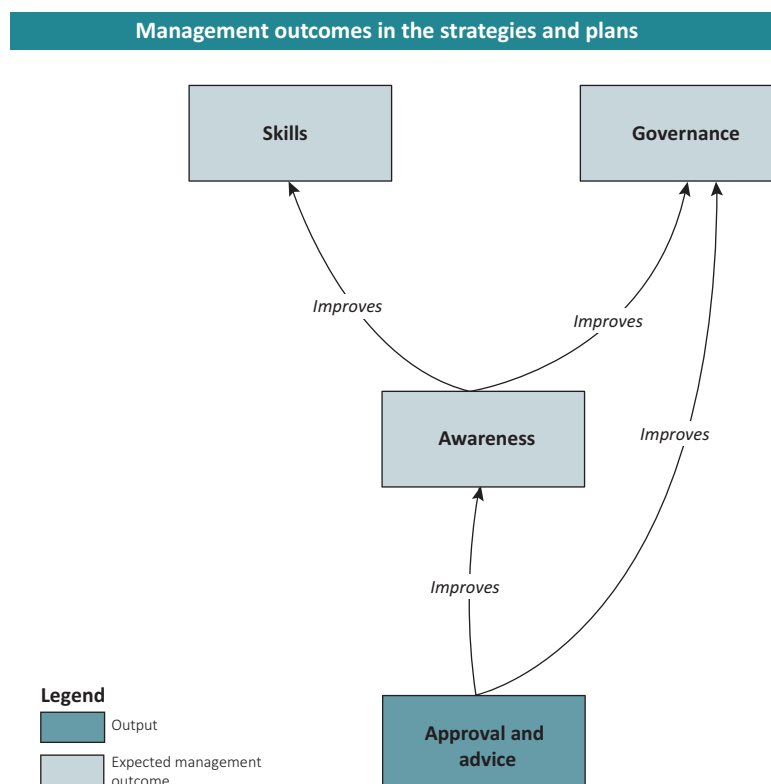
Terminology

Irrigation Development Guidelines (IDG) referrals: IDG provide guidance to both irrigation developers and government agencies on the process, matters for consideration, conditions and approvals required to obtain or modify a Water Use Licence (WUL) or Take and Use Licence (T&UL). IDG are regionally based and implemented by the relevant CMA(s) and Rural Water Corporation(s) (RWC).

Lease: Permission for exclusive use and possession of a parcel of land or a building for a defined term.

Licence: Permission for non-exclusive use of a parcel of land for a defined period.

Permit: A document or certificate that gives permission to do or not do something as governed by the Waterway Protection By-law, which is a legislative instrument under the *Water Act 1989*.



Logic diagram 25. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Referrals: Section 55 of the *Planning and Environment Act 1987* and Section 202 of the *Water Act 1989* require referral to Floodplain Management Authorities (FMAs) for specific decisions. In addition to this, councils, other agencies or individuals may seek advice or guidance from FMAs on flooding related issues.

Take and Use Licence: A water licence under Section 51 that grants the holder the right to take and use water from waterways (both regulated and unregulated), dams (both on-stream and off-stream), springs and soaks, and works of an authority or groundwater.

Waterway: Includes but is not limited to a river, creek, stream or watercourse, a natural channel in which water regularly flows, wetland, dam or other collection of water.

Waterway works permit: To undertake works or activities in, on or over a designated waterway, a permit or written authorisation from the Authority is required by law. The permit process is designed to provide common and best practice guidance for ensuring works or activities have appropriately addressed hydraulic, physical and environmental impacts on the 'health' of our important waterways.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Status	Specific type
Description	Select one from list	Select one from list	Identify the centre of the location/ property relating to the administered item	Select one from list	Select one from list
Valid values	Advice Lease Licence Notice Permit Referral response	Establish Maintain Modify Remove	Point	Exempt Issue Refuse Reject Support	Flood Game management Land management Native vegetation New irrigation Weeds and pest animals Soil and salinity Water access Waterway works

4.2 Management agreement

Scope

This output records the number of agreements that have been developed or reviewed in relation to the management of a specific location (e.g. landholder property).

This output includes agreements attached to title, legal conservation covenants or agreements placed on the property title for a parcel of land.

Where the agreement includes the restriction of access/use for native vegetation outcomes (e.g. through coventing), the vegetation structure and diversity expected management outcome should be selected. This should be used when the expected management outcome is achieved purely through the establishment of a management agreement.

Related outputs: Outputs delivered in association (e.g. assessments, plans) or those described in the agreement (e.g. grazing, fencing) should be recorded separately. Memorandums of understanding or service level agreements governing the allocation of resources or funding should be captured under the 'Partnership' output.

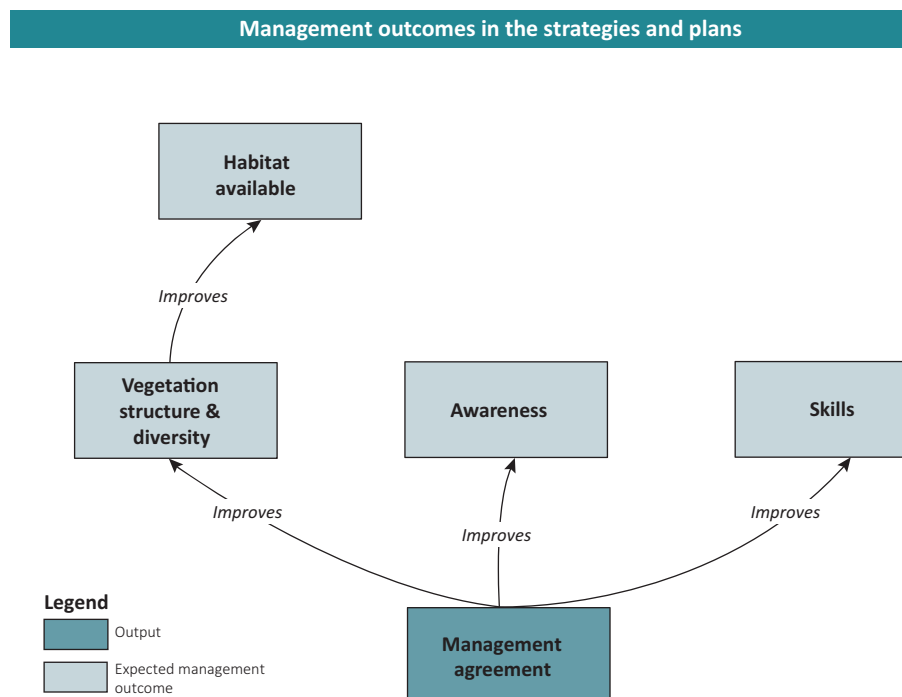
Terminology

Agreements: Documented agreements to formalise a partnership or arrangement between two or more parties. This may be the result of developing a plan or going through a planning process.

Binding: Agreement imposing a legal obligation (e.g. agreement on title).

Non-perpetual: Lapse at the end of a fixed term or when the land changes ownership.

Perpetual: An agreement is binding on future landowners as well as the current landowner.



Logic diagram 26. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Party	Duration
Description	Select one from list	Select one from list	Area/s covered by the agreement	Identify the status of the party entering into the agreement	Duration of the agreement where relevant. Agreements on property title are considered permanent (99 years should be used)
Valid values	Binding non-perpetual Binding perpetual	Establish Maintain Modify Remove	Polygon/s	Private landholder Public landholder	Years

4.3 Assessment

Scope

This output records the application of assessments of social, land, water and biodiversity characteristics.

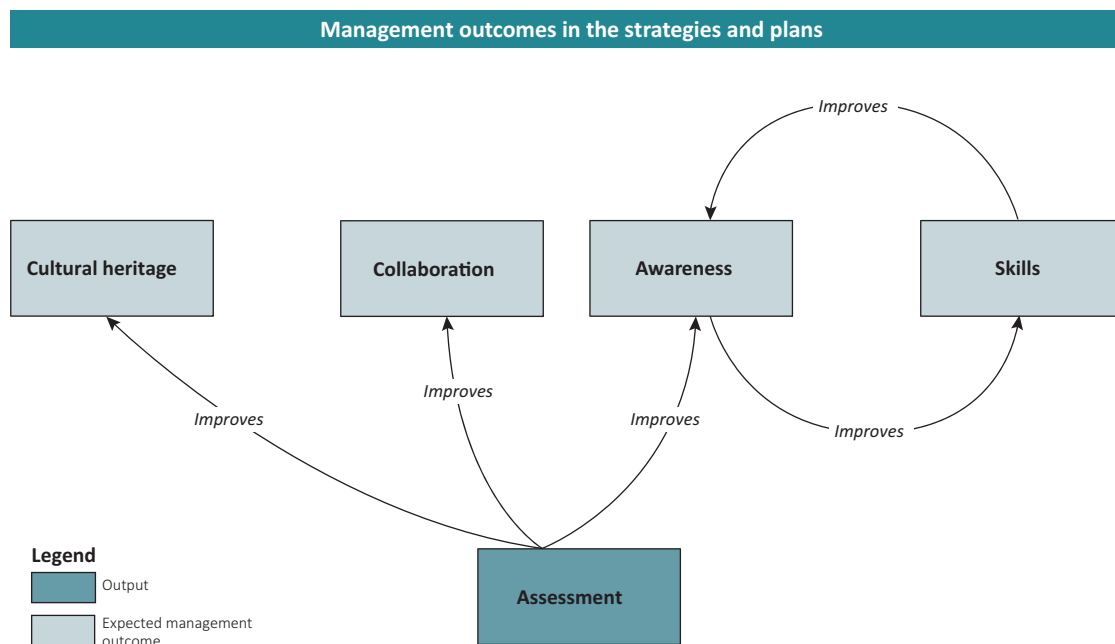
It includes monitoring activities done to ensure compliance with policy and regulation and new and emerging weeds and pest animals.

Related outputs: The installation of a monitoring structure or plan associated with the assessment should be recorded as a separate output. The output does not refer to the 'assessment' of reports or applications, which should be recorded under the 'Advice and approvals output'. Nor should it be used to record 'sighting' the data produced from the assessment (e.g. presence/absence), which should be recorded in the appropriate DELWP database (i.e. Victorian Biodiversity Atlas, Appendix 7).

Terminology

Assessment: Site-specific assessment of condition, outcomes or management issues present. This information is used to inform future decision-making and activity at that site.

Specific activities: The method used to conduct the assessment.



Logic diagram 27. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Data storage	Database ID	Specific activities
Description	Select one from list	Select one from list	Area where assessment was conducted	Identify where the assessment data is stored. Including DELWP databases where appropriate	Identify the ID for the entries into the database	Select one from list
Valid values	Agronomic Cultural Ecological Fauna Flora Geological Geospatial Heritage Invasive species Property Social Soil Groundwater Surface water Weather	Establish Maintain Modify	Polygon	Agency database Atlas of Living Australia, Birds Australia Atlas Victorian Biodiversity Atlas Victoria water data warehouse Salinity Register Waterwatch/ Estuary watch data warehouse Monitoring Sites Database NVIM STAR, Other N/A		Inspection Survey Model Remote Visual Other

4.4 Engagement event

Scope

This output records the number of engagement events held with members of the community and/or agency staff that were coordinated, attended, established, sponsored and/or supported, or where displays were presented.

This includes a wide range of engagement events including those to raise awareness or provide skills and training about a natural resource management (NRM) issue for potential and active members of the NRM volunteer community.

Note: This output is not intended to capture every engagement event, only those that are considered to make a noteworthy contribution towards a desired management outcome.

Related outputs: Engagement events often lead to and/or support the delivery of additional outputs. Where other outputs are delivered as part of the event these should be recorded in addition to this output (e.g. vegetation, pest treatment).

Terminology

Awareness raising: Proactively sharing knowledge with the public in order to alert them and potentially gain their future participation in NRM and community activities.

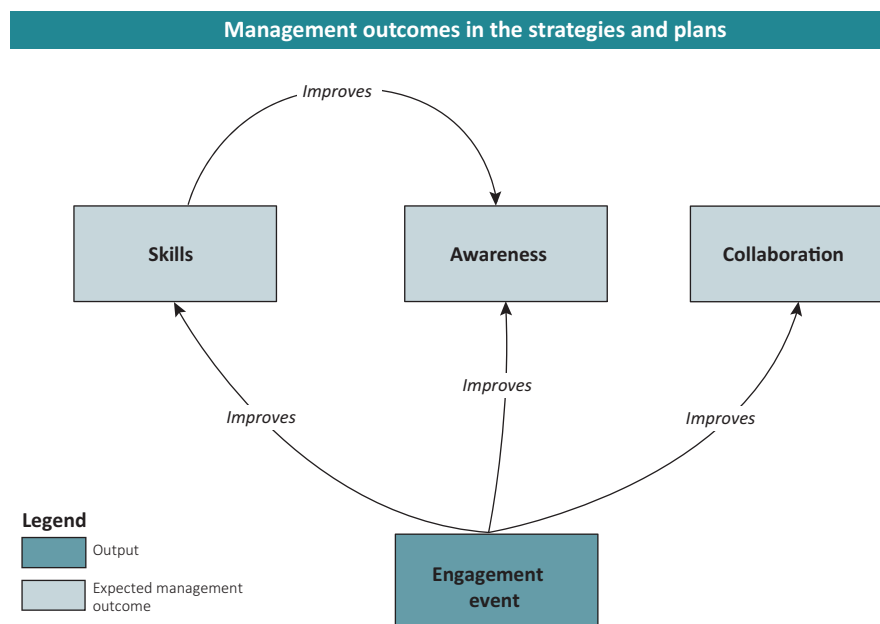
CBNRM group: Community-based NRM group.

Field day: An event devoted to a particular location(s) to discuss a specific topic(s).

Target audience: The audience for the engagement event. It may be geographically defined, based on group/organisation membership or be a sector of the community.

Training: Structured activities designed to improve or refresh existing skills or develop new ones.

Workshop: An educational event or series of meetings emphasising interaction and exchange of information among a (usually) small number of participants.



Logic diagram 28. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Name/title	Participants
Description	Select one from list	Select one from list	Location where the event was held	Provide the name of the event	Total number of participants who attended
Valid values	Conference Field day Meeting Presentation Training Workshop	Attend Coordinate Establish Sponsor Support	Point	Text field	

Title	Event length	Number of events	Target audience	Focus
Description	Length of the event, to the nearest hour	Where events have identical values for all other attributes (e.g. location, type, year completed) they can be captured together	Select multiple from list	Record the primary focus for the event
Valid values	Hours	Events	Agency staff CBNRM group General community Indigenous Land managers Schools Youth Other	Conservation management/ techniques Data management and reporting General Occupational health and safety Survey and monitoring Recruitment Planning Consultation Collaboration

4.5 Partnership

Scope

This output records the number of formal partnerships established between organisations and/or individuals that are established, maintained or modified.

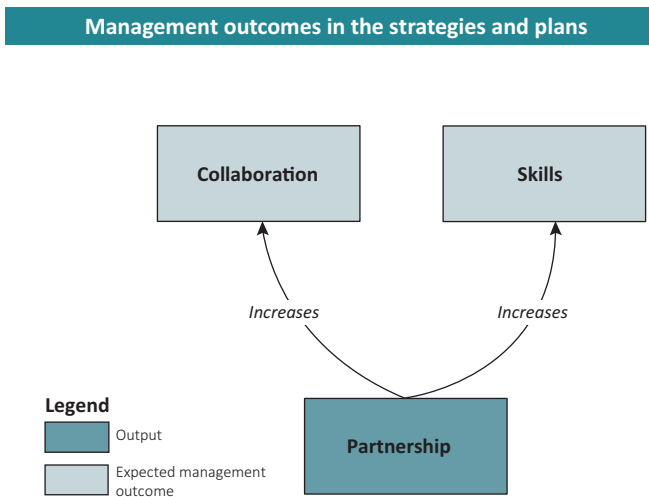
These partnerships can provide an opportunity to engage with industry and the community to support the achievement of both short-term outputs and long-term condition change objectives.

Terminology

Letter of agreement: A letter outlining the conditions of a partnership.

Memorandum of understanding: Document that formalises a partnership or arrangement between two or more parties.

Partnership: An association of two or more organisations that has been formalised through arrangements such as a memorandum of understanding or committee/working group terms of reference.



Logic diagram 29. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Parties	Duration
Description	Select one from list	Select one from list	Identify a location to 'represent' partnership operations	Identify the organisations or individuals who are parties to the partnership	Duration of the partnership, where considered permanent 99 years should be used
Valid values	Agencies/ corporates Community groups Mixed	Establish Maintain Modify	Point	List	Years

4.6 Plan

Scope

This output records the number of plans or strategies (e.g. management plan, strategy, engagement) that have been developed or reviewed.

Plans and strategies must be for a defined location. The scale, however, may vary and should include individual property management plans or site designs through to regional strategies and plans (e.g. stream flow management plan, environmental watering plan, seasonal watering plans). The content may also vary from plans dealing with a specific topic (e.g. irrigation) to plans and strategies dealing with social and cultural themes that impact on or are impacted by environmental values.

Related outputs: Assessments conducted or agreements developed in association with the plan or strategy should be recorded as a separate output.

Terminology

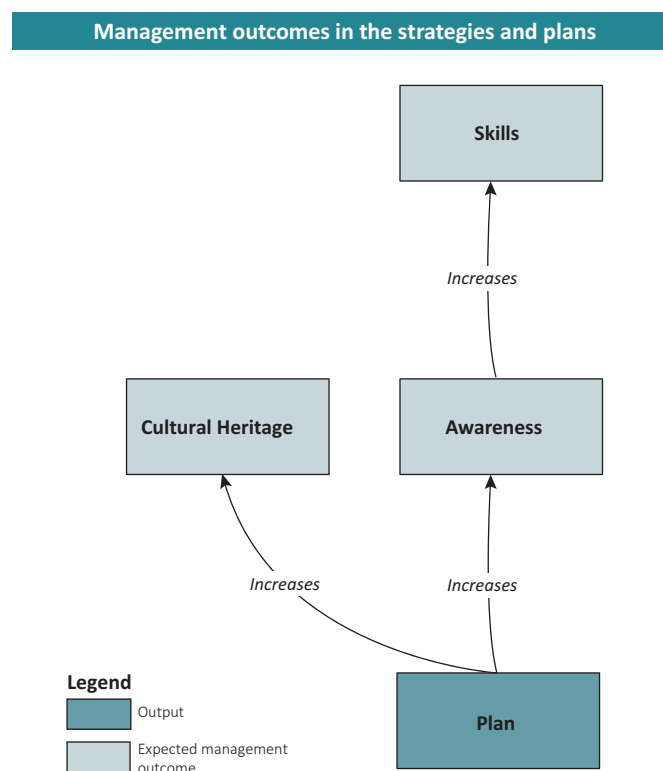
CBNRM group: Community-based NRM group.

Engagement plan: A plan for engagement with stakeholders.

Property: A plan associated with a landowner's property for the management of that land (e.g. whole farm plan, irrigation or dry-land).

Management plan: A plan guiding overall management of an area (e.g. wetland or environmental watering plan).

Strategy: A plan defining an agency's strategy or direction, and the allocation of resources to pursue this strategy.



Logic diagram 30. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Name/title
Description	Select one from list	Select one from list	Area covered by the plan	Unique identifier for plan/strategy recorded in the outputs
Valid values	Engagement Property Management Strategy	Establish Modify Review	Polygon	Full title of plan/strategy

Title	Year commenced	Duration	Focus	Target audience
Description	Commencement date (month/year)	Duration of the plan (years)	Select multiple from list	
Valid values	Month/year	Years	Conservation Culture/heritage Fire Fish Flora Irrigation Management practices Fauna Other	Agency staff CBNRM group General community Indigenous Land managers Schools Youth Other

4.7 Publication

Scope

This output records the number of publications established, maintained or modified (e.g. standards, flyers, newsletters). It includes visual and audio-based communication material.

This output is not intended to capture every publication that an organisation may deliver, only those that are considered to make a noteworthy contribution towards a desired management outcome.

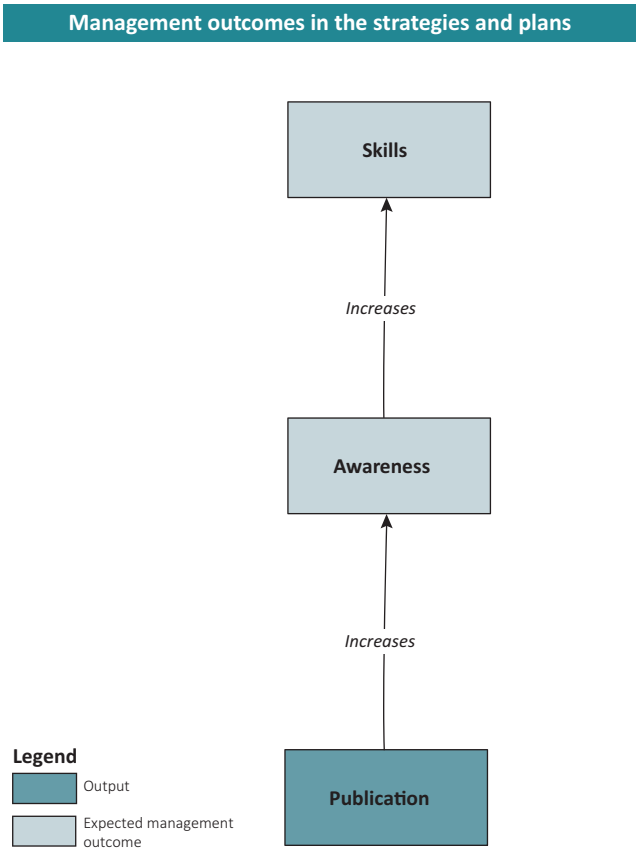
Terminology

Publication: The preparation and issuing of a material or other work for public consumption.

Written: Printed or online publications.

Audio: Material disseminated through radio, podcasts, etc.

Visual: Material disseminated through television, online videos, DVDs, etc.



Logic diagram 31. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Specific type	Frequency	Target audience
Description	Select one from list	Select one from list	Identify a location to 'represent' publication's target audience	Select one from list	Select one from list	
Valid values	Written Audio Visual	Establish Maintain Modify	Point	Fact sheet Media release Newsletter Newspaper Report Social media Standard Website Television Video Radio DVD Flyer/ Pamphlet Booklet Podcast Other	Once Ad hoc Annually Monthly Quarterly	Agency staff CBNRM group General community Indigenous Land managers Schools Youth Other

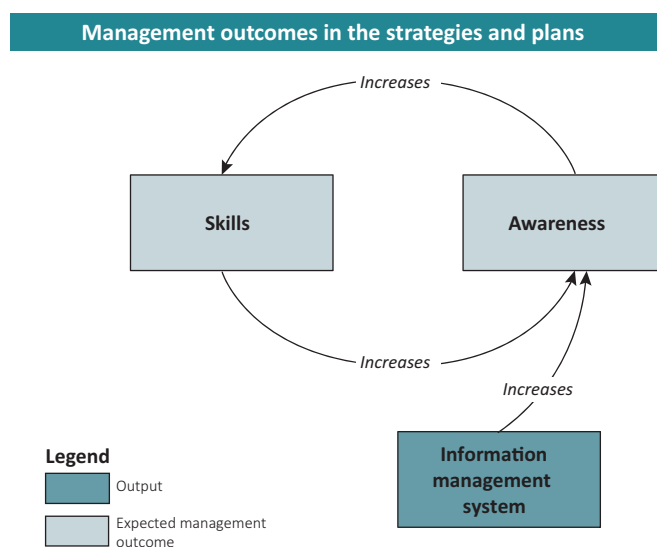
4.8 Information management system

Scope

This output records the number of information management systems or applications that are established, maintained or modified.

Information management systems are used to store and disseminate output/outcome-related data to assist with planning and other decision-based activities.

Note: This output is not intended to capture every database or decision support system, only those that are considered to make a noteworthy contribution towards a desired management outcome.



Logic diagram 32. Generalised program logic that clarifies the relationship of this output with expected management outcomes (linked directly or indirectly). Conceptual models should clarify the assumptions and associated confidence in the relationships.

Data reporting

In addition to the Common attributes detailed in Table 2 (pages 5–6), the following attributes must be collected and reported for each output delivered.

Specific attributes

Title	Output type	Activity type	Spatial object	Name/title	Owner
Description	Select one from list	Select one from list	Identify a location that 'represents' the output's application	Provide the name of the system	List who will own and maintain the system
Valid values	Database Decision support	Establish Maintain Modify	Point	Text	Text

Appendix 1 Glossary

These proposed terms and definitions are the current agreed definitions which have been based DELWP MER Framework.

Planning term	Definition
Activity/action	The process of using labour and materials to produce outputs.
Condition/quality/health	The qualitative state of something described using specific criteria. In the program logic the word 'condition' describes the qualitative endpoint for environmental policy. These condition outcomes may also include social and economic criteria.
Condition change (long-term outcome)	The proposed impact of planned outputs in the long term; not measureable within the timeframe of actions related to a specific plan or strategy (see long term).
Goal/objective	A qualitative description of what is desired in the long term.
Input	Effort, materials, equipment and funds put into natural resource management to deliver outputs.
Land water and biodiversity	A subset of the environment that refers to land, water in the environment, and plants and animals.
Long term	A period of time – usually 5 to 20+ years.
Maintenance	Keep (something) at the same level or rate.
Management	Activities done as part of specific plans or strategies.
Management outcomes	The impact of planned outputs measured at the end of the timeframe described by a specific plan or strategy (usually 5+ years).
Management site	Planning for the delivery of management outcomes and associated output(s) occurs at a management site. The interpretation of 'management site' may vary depending on the investment program (e.g. Victorian river reach, private property boundary).
Modification	Make partial or minor changes to (something), typically so as to improve it or to make it less extreme. Natural resource/s A subset of the environment that describes soil, water in the environment, plants and animals. As used here, it excludes minerals (<i>Mineral Resources (Sustainable Development) Act 1990</i>) and petroleum (CaLP Act). Natural resource condition The qualitative state of a natural resource at a particular time covering a defined area and described using specific criteria.
Natural resources management	Any activity relating to the management, use, development or conservation of natural resources.
Output	The measureable result (good or service) of activity over a fixed period of time delivered to a standard.
Program logic	A conceptual model that shows the rationale behind a program/ project or strategy – what are understood to be the cause-and-effect relationships between activities, outputs, management outcomes and resource condition change.
Target	Quantitative description of desired outcome over a defined period.
Water resources	The quality, quantity, or rate of flow, of water (CaLP Act).

Appendix 2 Expected management outcomes

Expected management outcome title	Description
1 Vegetation structure and diversity	<ul style="list-style-type: none"> • Influence the structure and diversity of remnant native indigenous vegetation • Directly influenced through supplementary planting or thinning a change in protection status, fire regime change and indirectly through weed control, fencing, grazing regime and animal or over abundant wildlife control, or through outputs which encourage regeneration • Does not include non-native vegetation (e.g. pasture established to improve soil stability or plantations for productivity) • Direction of change – increase or maintain vegetation structure or diversity
2 Vegetation extent	<ul style="list-style-type: none"> • Influence the extent of native indigenous vegetation outside remnant patches • Directly influenced through the establishment of native vegetation (revegetation or regeneration) or indirectly through fencing or grazing regime change • The focus of this management outcome is on extent; vegetation structure and diversity will also be affected but does not need to be recorded separately • Does not include non-native vegetation (e.g. pasture established to improve soil composition or plantations for productivity outcomes) • Direction of change – increase vegetation extent
3 Habitat available	<ul style="list-style-type: none"> • Changes in the immediate availability of habitat features for targeted species • Altered through the changes to the natural and man-made features that directly provide or enhance habitat in aquatic and terrestrial environments (e.g. logs, nest boxes) or through changes to the existing habitat features (e.g. removal of fish barriers). Or can be indirectly influenced through stabilisation of soil (e.g. pile fields) • Direction of change – increase or maintain availability of habitat
4 Species control	<ul style="list-style-type: none"> • Control the abundance, distribution and/or viability of undesirable flora and fauna at a specific location (generally pests or overabundant wildlife) • Altered directly through the control of pest animals, barriers such as fences and waterway structures, weed control and grazing regime • Indirectly altered through overabundant native species control • Information on target species is captured in output data • Direction of change – increase or maintain control of undesirable species
5 Species recovery	<ul style="list-style-type: none"> • Influence the distribution and/or viability of desirable flora and fauna (generally native species) • Altered directly through captive breeding, capture/release and propagation. Indirectly altered through weed control to reduce competition and pest animal control to reduce predation/competition • Information on target species captured in output data • Direction of change – increase or maintain desirable species
6 Water quality	<ul style="list-style-type: none"> • Influence characteristics of water quality (e.g. chemical, temperature, biota, turbidity) • Altered directly through the modification of water storages to influence temperature profiles (e.g. dams, weirs), installation of reuse systems or sediment transport (e.g. constructed wetland). Indirectly through the provision of flushing flows or sediment traps • Does not include vegetation (use with caution as water quality changes are usually longer-term condition change) • Direction of change – increase or maintain water quality

Expected management outcome title	Description
7 Environmental water	<ul style="list-style-type: none"> • Changes to the availability and delivery of water to meet environmental objectives • Altered through direct changes to water regimes or installation of in-stream structures (e.g water regulators), water storages, channels and pumps • Direction of change – increase or maintain delivery of environmental water
8 Soil stability	<ul style="list-style-type: none"> • Changes to the extent, risk or severity of erosion or sedimentation • Altered through the installation of terrestrial and aquatic sediment control structures, establishment/maintenance of vegetation (reducing bare ground), earthworks (removing sand slugs) and indirectly through agricultural practice change, provision of flushing flows to reduce sedimentation • Direction of change – increase, maintain or reduce soil stability
9 Soil properties	<ul style="list-style-type: none"> • Influence the soil properties and processes, e.g. chemistry (salinity), organic matter, biology, compaction • Can be altered directly through including soil treatment and agricultural practice change • Direction of change – increase or maintain soil properties
10 Extreme event preparedness	<ul style="list-style-type: none"> • Influence the social and ecological risks associated with extreme events (e.g. wildfire, flood) • Achieved directly through the installation of levees (flood mitigation), modification of vegetation and the alteration of fire regimes (intensity and/or frequency) at a location or indirectly through the construction of fire breaks, roads and crossings which help wildfire suppression • Does not include climate change or drought • Direction of change – increase or maintain preparedness for extreme events
11 Awareness	<ul style="list-style-type: none"> • Influence the awareness and understanding by the target audience through the provision of information • Achieved directly through events, publications, plans, agreements, information management systems and/or signs aimed at raising awareness and assessments which provide information for decision-making • Direction of change – increase or maintain awareness of target audience
12 Skills	<ul style="list-style-type: none"> • Influence the ability of the target audience to develop skills and adopt behaviour change • Achieved through the delivery of training and field events and indirectly through farm planning • Direction of change – increase or maintain skills of target audience
13 Collaboration	<ul style="list-style-type: none"> • Influence the collaboration between organisations and/or individuals • Achieved directly through the establishment events and assessments • Does not include management agreements • Direction of change – increase or maintain collaboration
14 Governance	<ul style="list-style-type: none"> • Influence the formal governance structures and processes surrounding natural resource management (between parties) • Achieved directly through clearer definition of expectations and priorities and regulatory approaches such as leases, advice and approvals, partnerships • Direction of change – increase or maintain governance

Expected management outcome title	Description
15 Amenity	<ul style="list-style-type: none"> • Influence the desirability or functionality of a feature or facility of a building or place • Achieved directly through the delivery of visitor facilities and roads and indirectly through the management of aesthetic environmental characteristics (e.g. vegetation, waterway structures) • Direction of change – increase or maintain amenity
16 Accessibility	<ul style="list-style-type: none"> • Changes to the ease with which people can access a particular location or facility • Achieved directly through the delivery of appropriate visitor facilities, roads, crossings and dredging (i.e. earth works) to retain recreational and commercial access in marine environments • Does not include non-human accessibility • Direction of change – increase or maintain accessibility
17 Productivity	<ul style="list-style-type: none"> • Changes to the efficiency of production (i.e. ratio of inputs to production) • Achieved directly through agricultural practice change, thinning of vegetation or establishment of vegetation for production outcomes (e.g. shelter belts) and indirectly through water storage structures • Direction of change – increase or maintain productivity
18 Farm water	<ul style="list-style-type: none"> • Influence the efficient use of farm water • Achieved directly through the installation of more efficient systems for irrigation (water storage, irrigation infrastructure, channel, pump) • Does not include outputs delivered to influence groundwater (i.e. water logging) • Direction of change – increase or maintain availability of farm water
19 Groundwater	<ul style="list-style-type: none"> • Influence the depth to groundwater • Achieved directly through the installation of pumps and drains and indirectly through the establishment of vegetation • It should be noted that the depth to groundwater can be both a threat and a value depending on the landscape context • Direction of change – increase, maintain or reduce depth to groundwater
20 Cultural heritage	<ul style="list-style-type: none"> • Changes to management, access or impacts to protect and avoid damage to cultural heritage values • Achieved directly through fencing, pest plant and animal control, track rationalisation, assessments and Cultural Heritage Management Plans • Direction of change – maintain cultural heritage

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