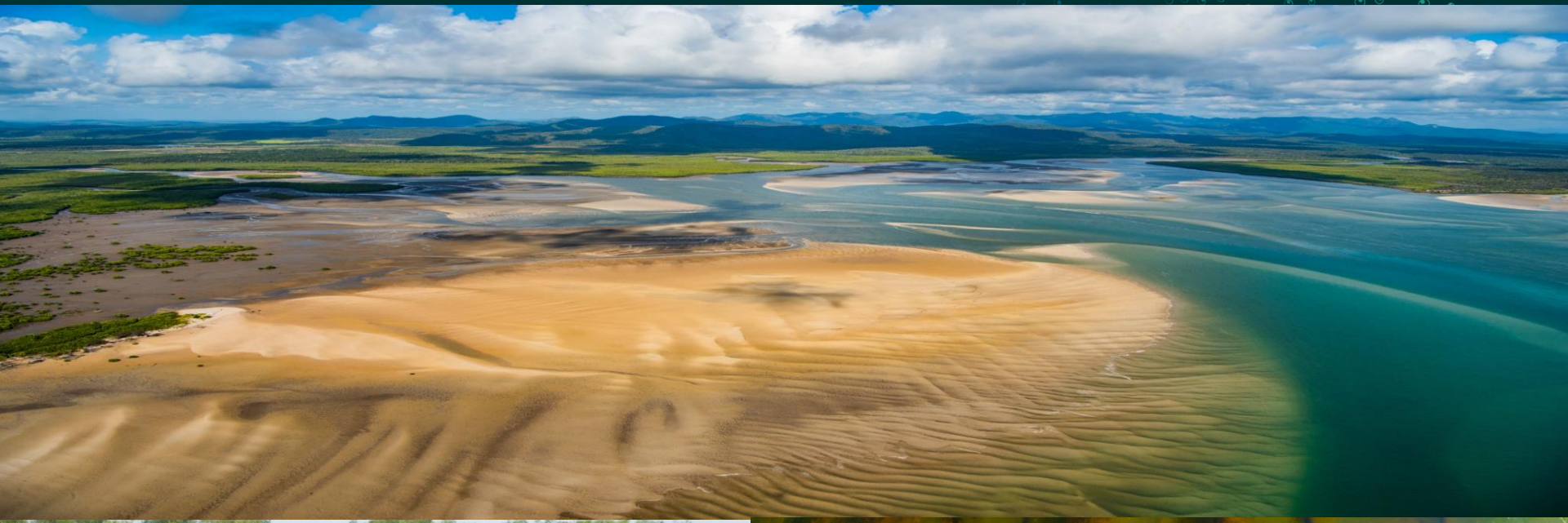
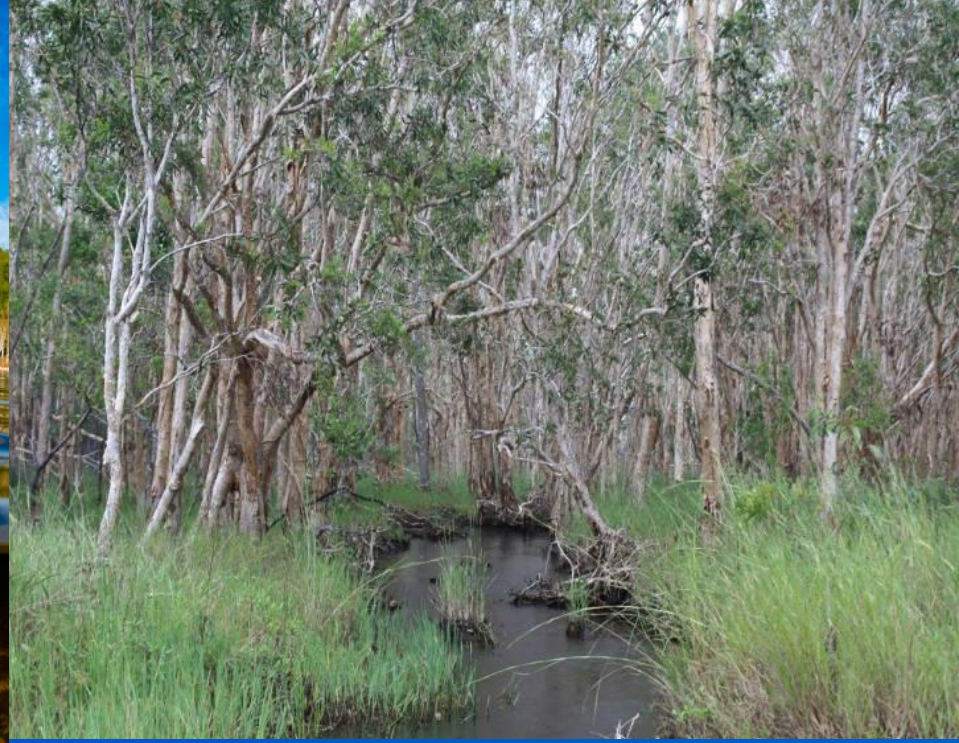
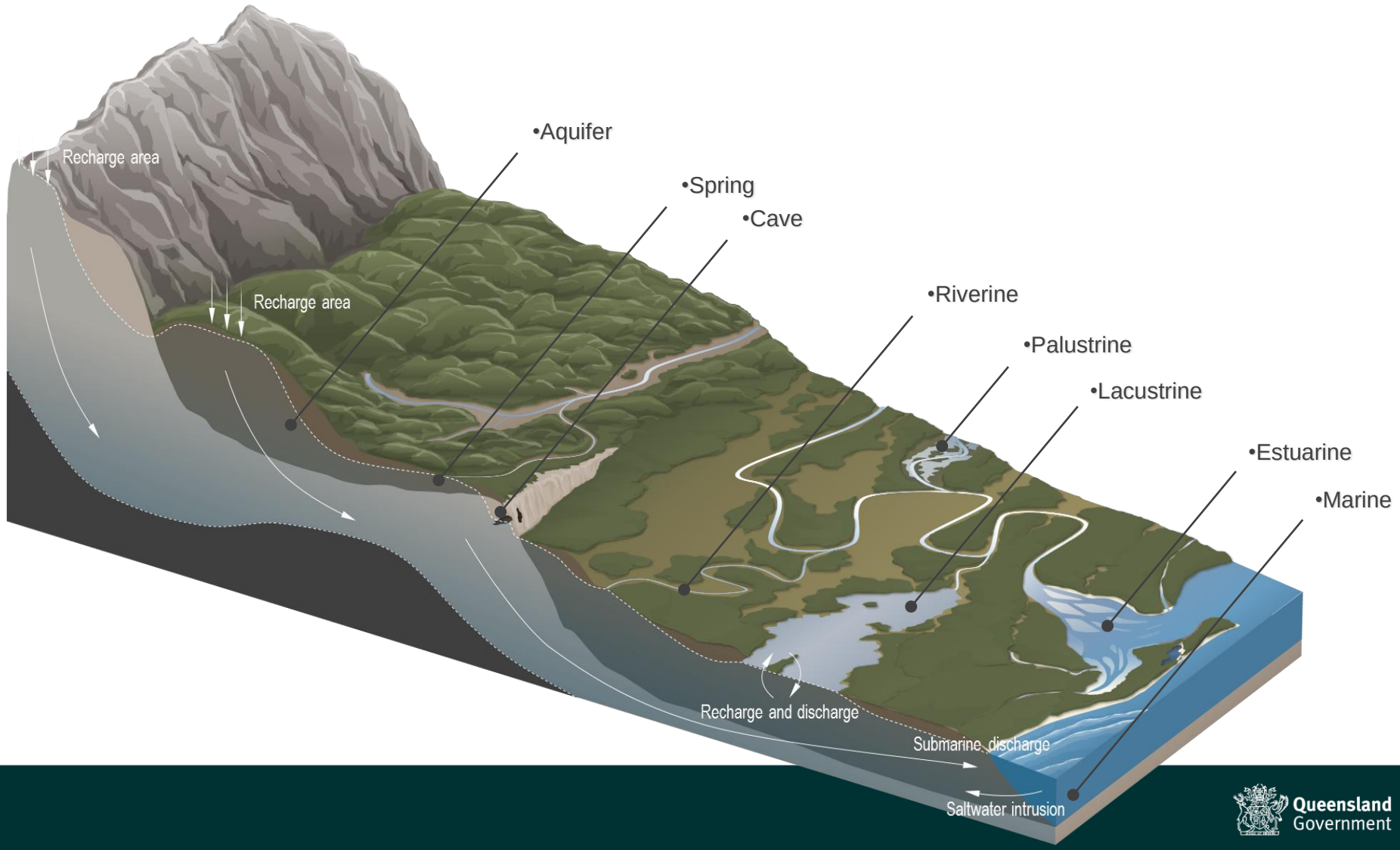
The Pumicestone – a catchment like no other

Mike Ronan, Manager Wetlands,
Department of Environment and Science





The catchment, from headwaters to floodplains.



Connectivity can be…

Ultimately everything is connected…

Catchment values









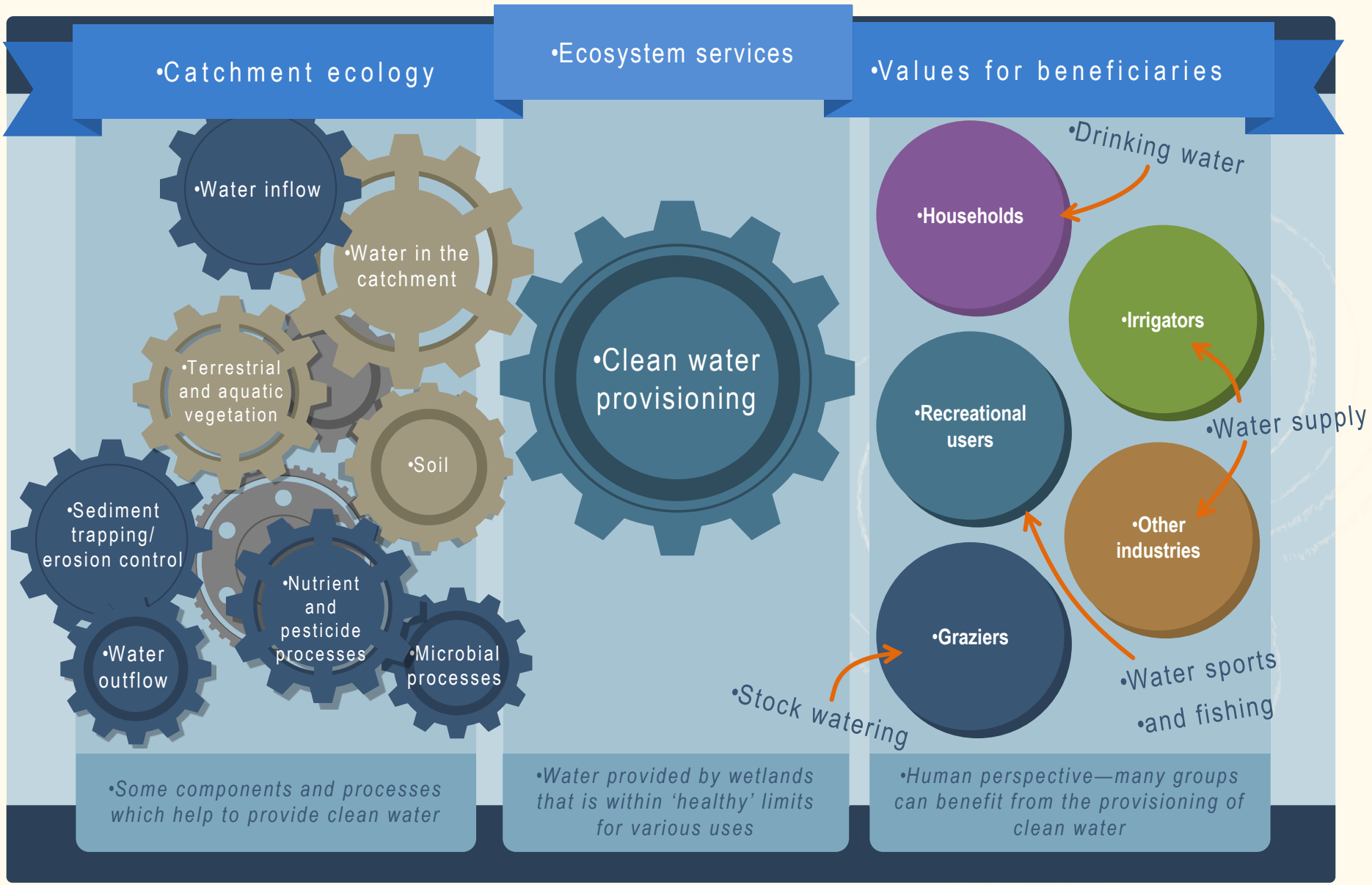


How do we derive benefits from catchments?

• Perspectives

•Where do values come from?

Clean Water

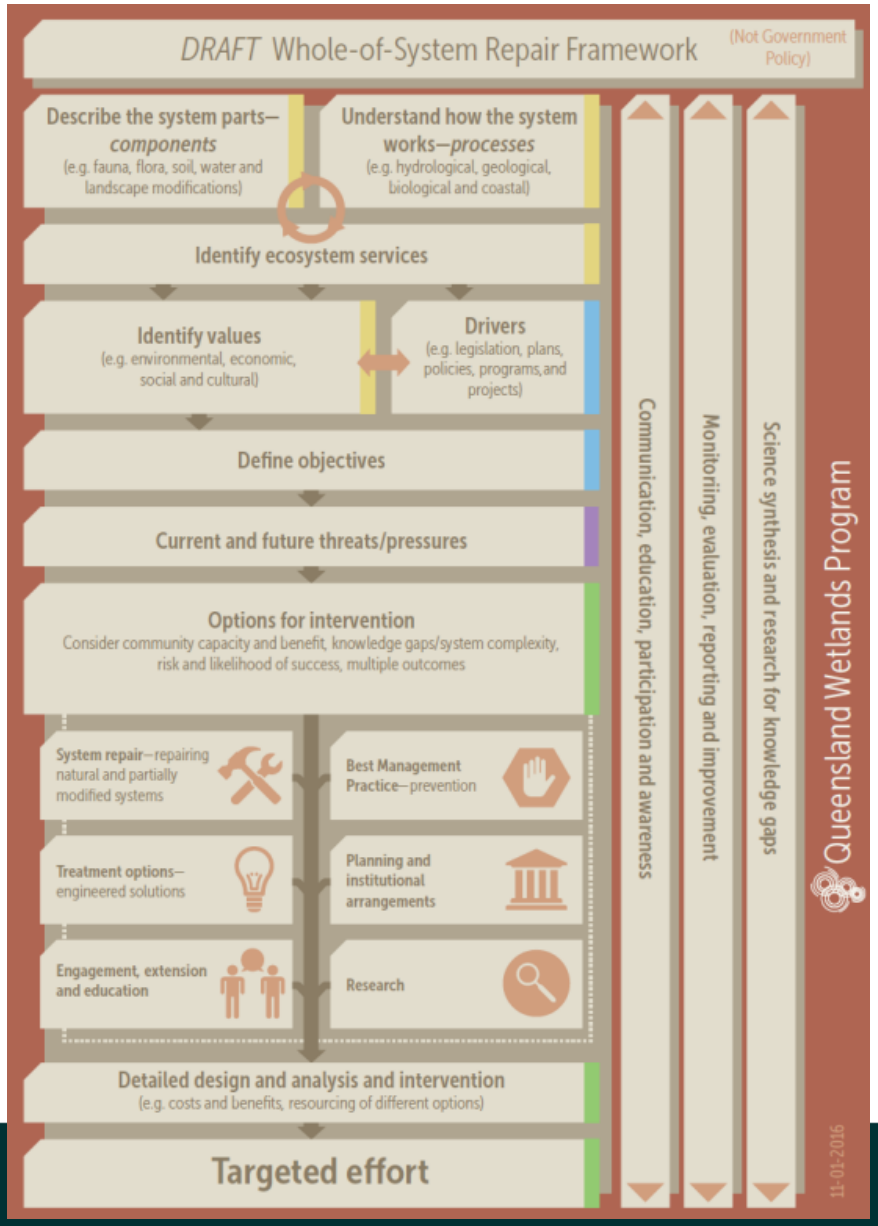

•Catchment ecology
•Ecosystem services
•Values for beneficiaries
•Water inflow
•Water in the catchment
•Terrestrial and aquatic vegetation
•Soil
•Sediment trapping/ erosion control
•Nutrient and pesticide processes
•Microbial processes
•Water outflow
•Clean water provisioning
•Drinking water
•Households
•Irrigators
•Recreational users
•Water supply
•Other industries
•Graziers
•Stock watering
•Water sports
•and fishing
•Some components and processes which help to provide clean water
•Water provided by wetlands that is within 'healthy' limits for various uses
•Human perspective—many groups can benefit from the provisioning of clean water

•Ecosystem services on the GBR

•(Stoeckl et al 2011; UNEP-WCMC 2011; GBRMPA 2012)

Supporting	Regulating	Provisioning	Cultural
• Nutrient cycling/food webs • Habitat provision • Ecosystem health (resilience) • Primary production • Pollination • Soil formation	• Coastal protection/flood control • Water regulation/purification • Waste treatment • Erosion control & soil stabilisation • Carbon cycling • Recharge/discharge • Temperature and pH regulation • Pest/disease regulation	• Water • Food & fibre • Raw materials • Genetic materials • Fishing • Aquaculture • Ports and shipping • Aquarium and ornamental trade • Energy resources (oil reserves) • Medicinal products	• Recreation • Tourism • Cultural heritage & identity • Research opportunities • Icon status • Aesthetic value • Education • Existence/bequest value • Spiritual, religious and/or personal connection • Inspiration

Whole of catchment management framework



Stages:

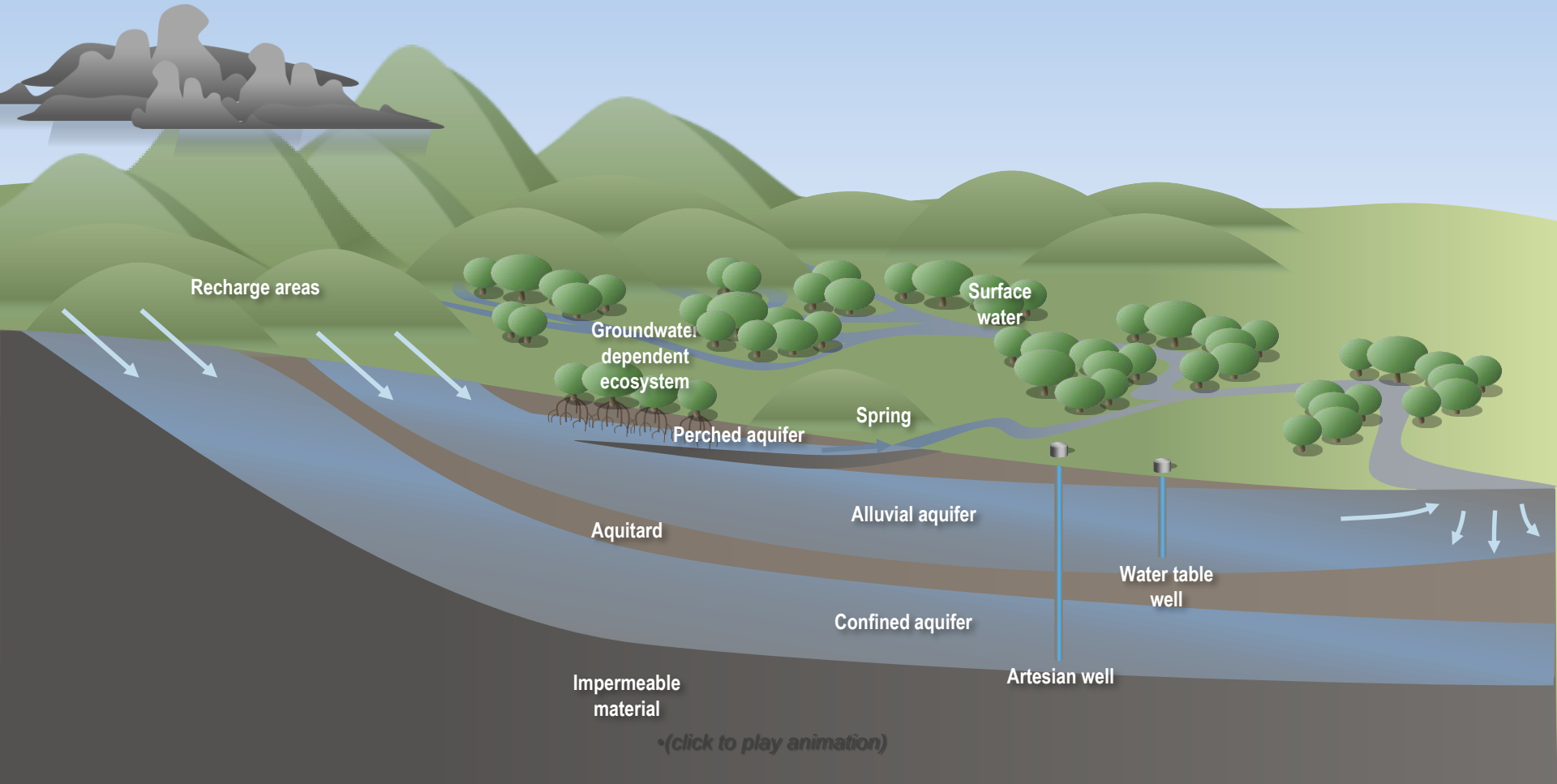
- ***Building understanding***
- Defining objectives
- Determining threats/pressures and capacity/constraints
- Options for intervention and implementation.

Integrates the following:

- Science synthesis and research for knowledge gaps
- Monitoring, evaluation, reporting and improvement
- Communication, capacity building, education, participation and awareness.

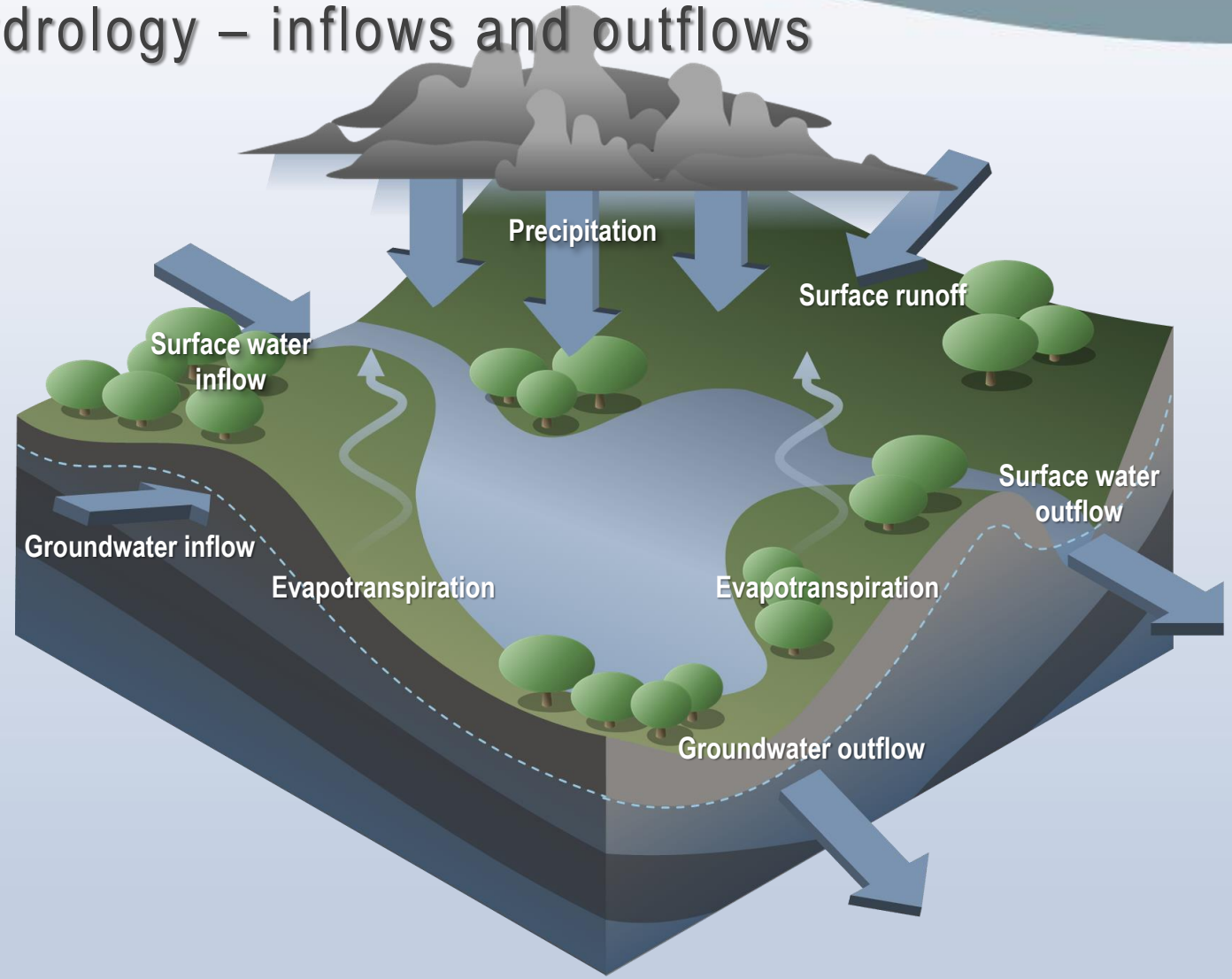
Water processes

Water processes in the landscape



Water processes

Hydrology – inflows and outflows

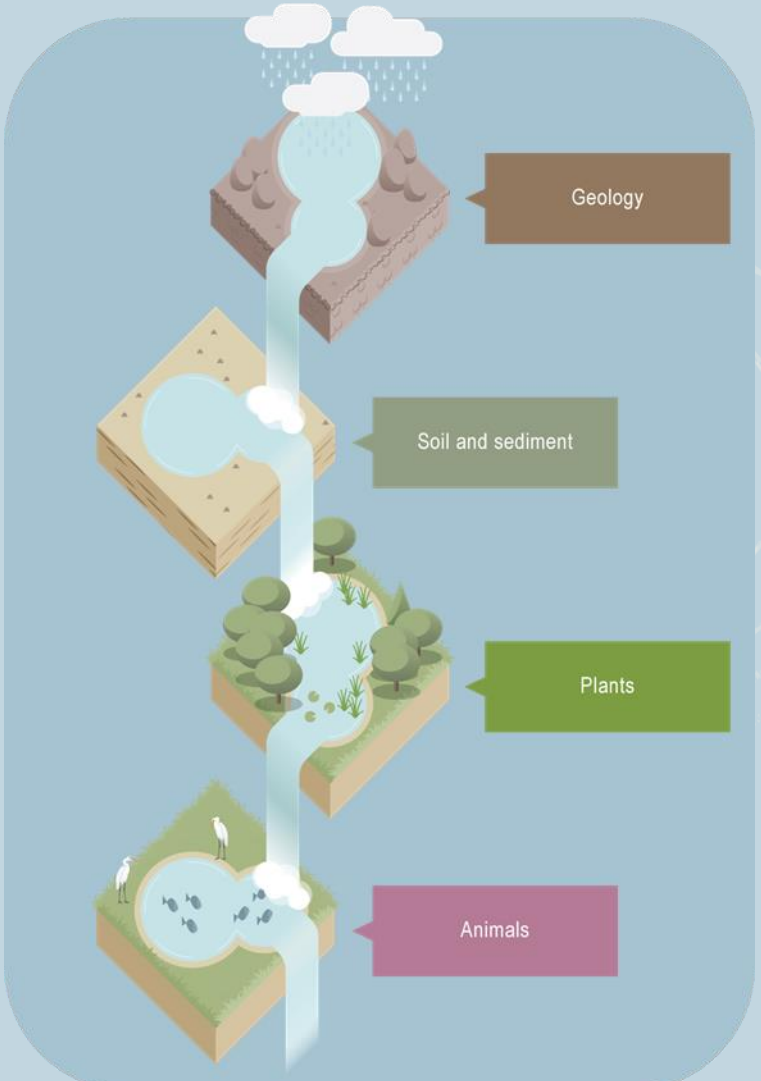


Ecology

Components and processes

The ecology of catchments is made up of many parts or ecosystem components. The interaction between these parts - processes. Ecosystems are complex, and components can interact with each other in a variety of ways.

It is important to remember that components and processes can alter over time in response to changes in inputs, conditions, or pressures and threats.



Water

Water has many characteristics which can influence the components and processes of a catchment.

The chemistry and energy of water can determine how living organisms use an area, and can affect how water moves in and out of a catchment.

The turbidity or clarity of water affects light availability for aquatic biota such as plants and algae. Nutrients and pollutant concentrations within water affect the lifecycles of plants and animals.

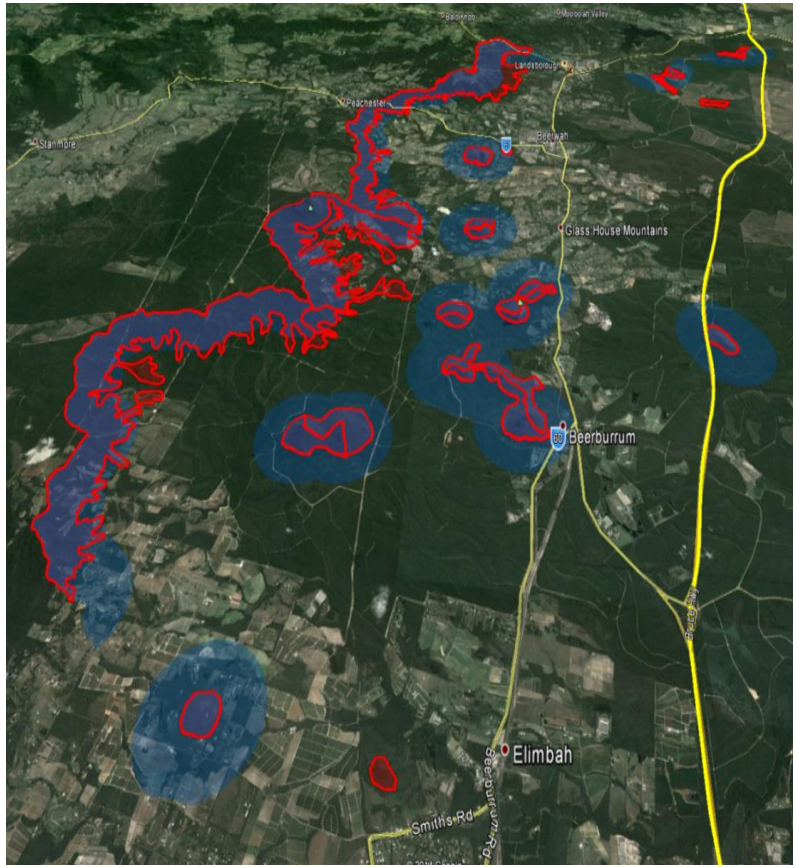
A healthy catchment is dependant on healthy water.

Source: Gayle Stewart

What is “Walking the Landscape”

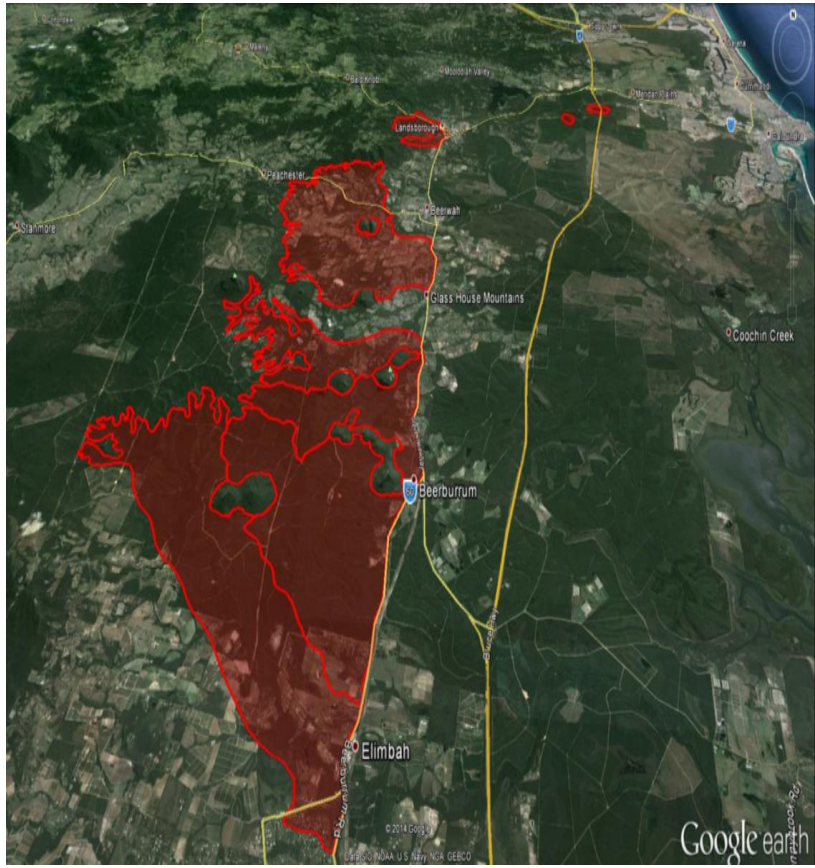
- ***A systematic and transparent science synthesis process that integrates existing data*** *such as geology, topography, hydrology, soils, vegetation, land use and hydrological features with a wealth of catchment* ***information and knowledge from a range of experts****, through* ***facilitated workshops,*** *promoting* ***shared understanding****.*

- *Takes its name from the facilitated workshop process where a* ***multidisciplinary team*** *including natural resource managers, local and state governments, community groups, industry, traditional owners, ecologists, engineers and universities, “walk the catchment”, in a virtual sense, using their knowledge of the catchment.*

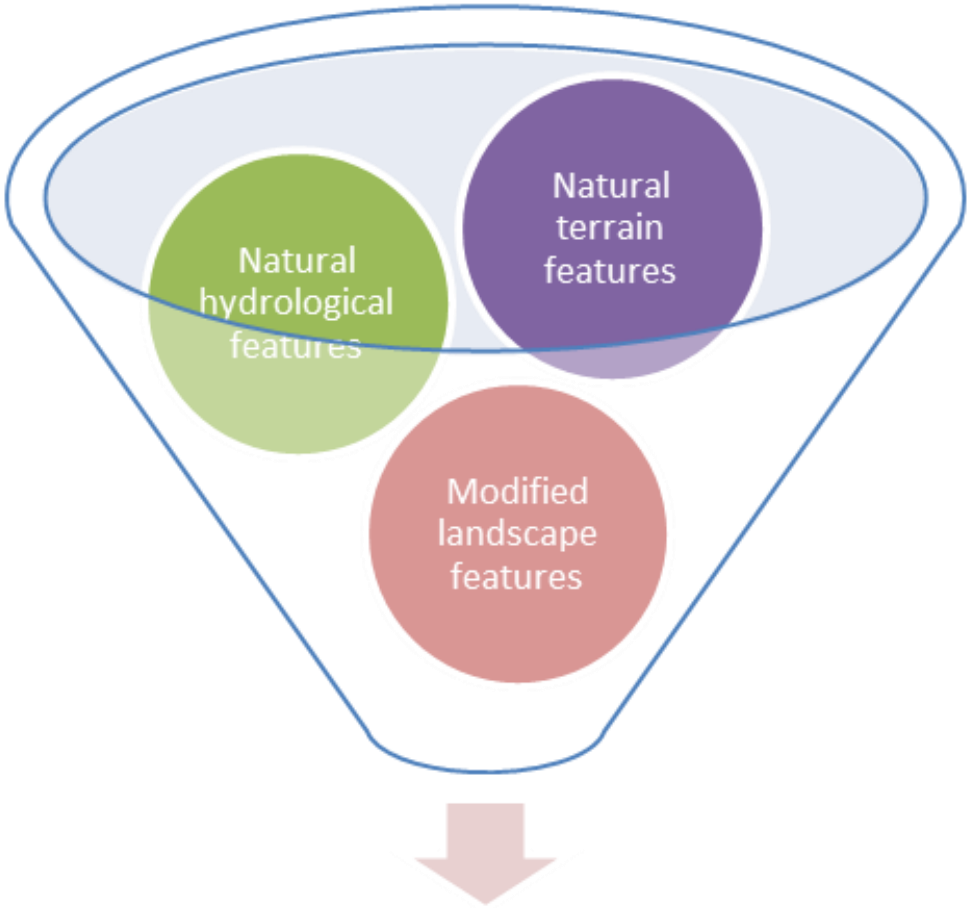


What is “Walking the Landscape”

- ***Minimal value judgement***.
- *Information is captured in a form which **can be updated** (maps, tables, conceptual models) and **displayed** in a way which is **easily understood** and links directly to underlying data (map journals, on-line mapping and conceptual models).*
- *All products are **checked at multiple stages** and approved for release.*
- *Can be **run at any scale** but should capture whole of hydrological system which affects an asset.*
- *Developed by the **Queensland Wetlands Program.** Significant input form **GBRMPA** and **Queensland Herbarium***

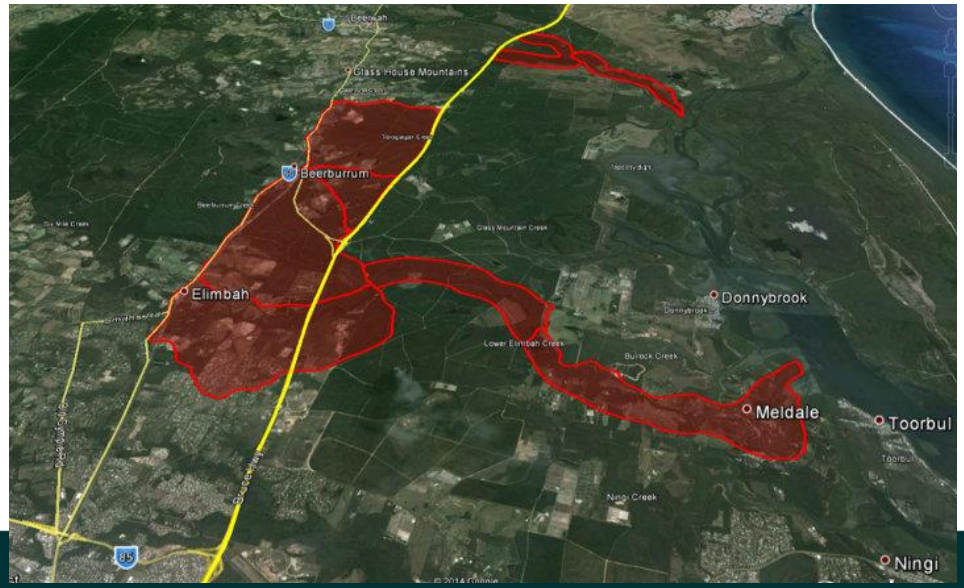


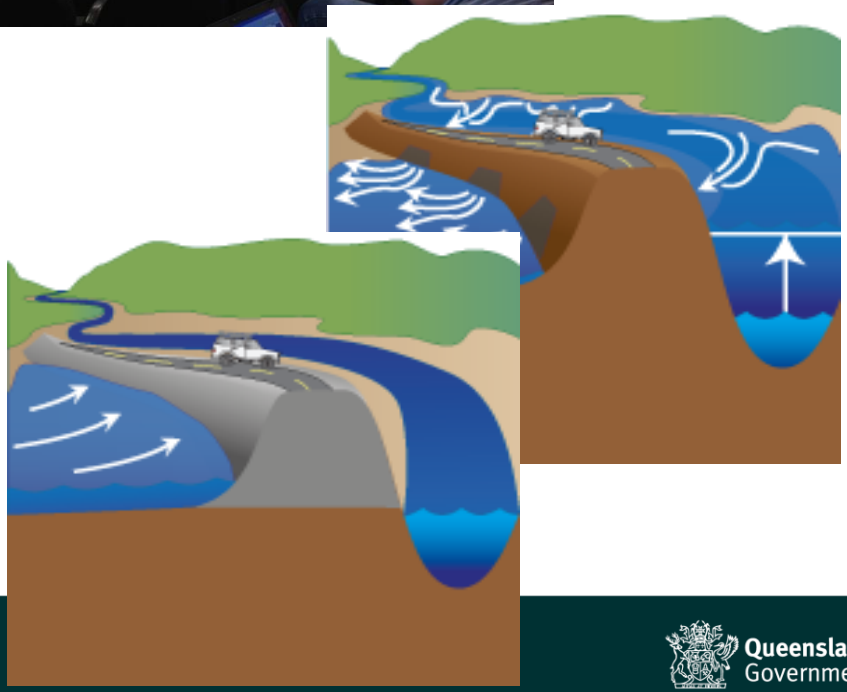
How Water Moves



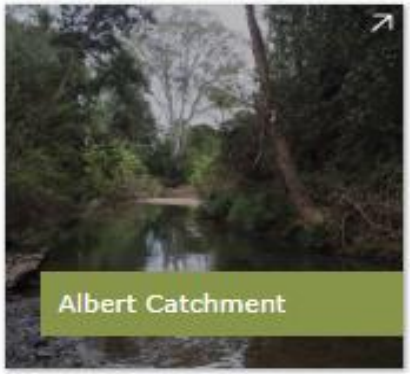
how water moves

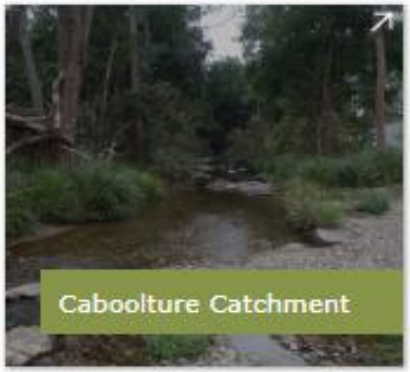
Walking the Landscape

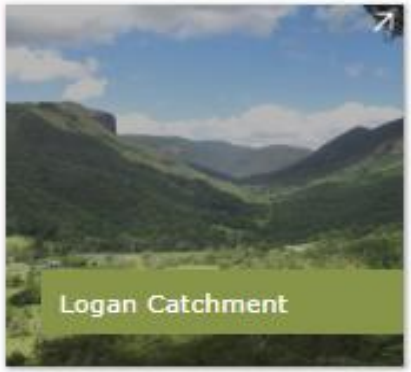




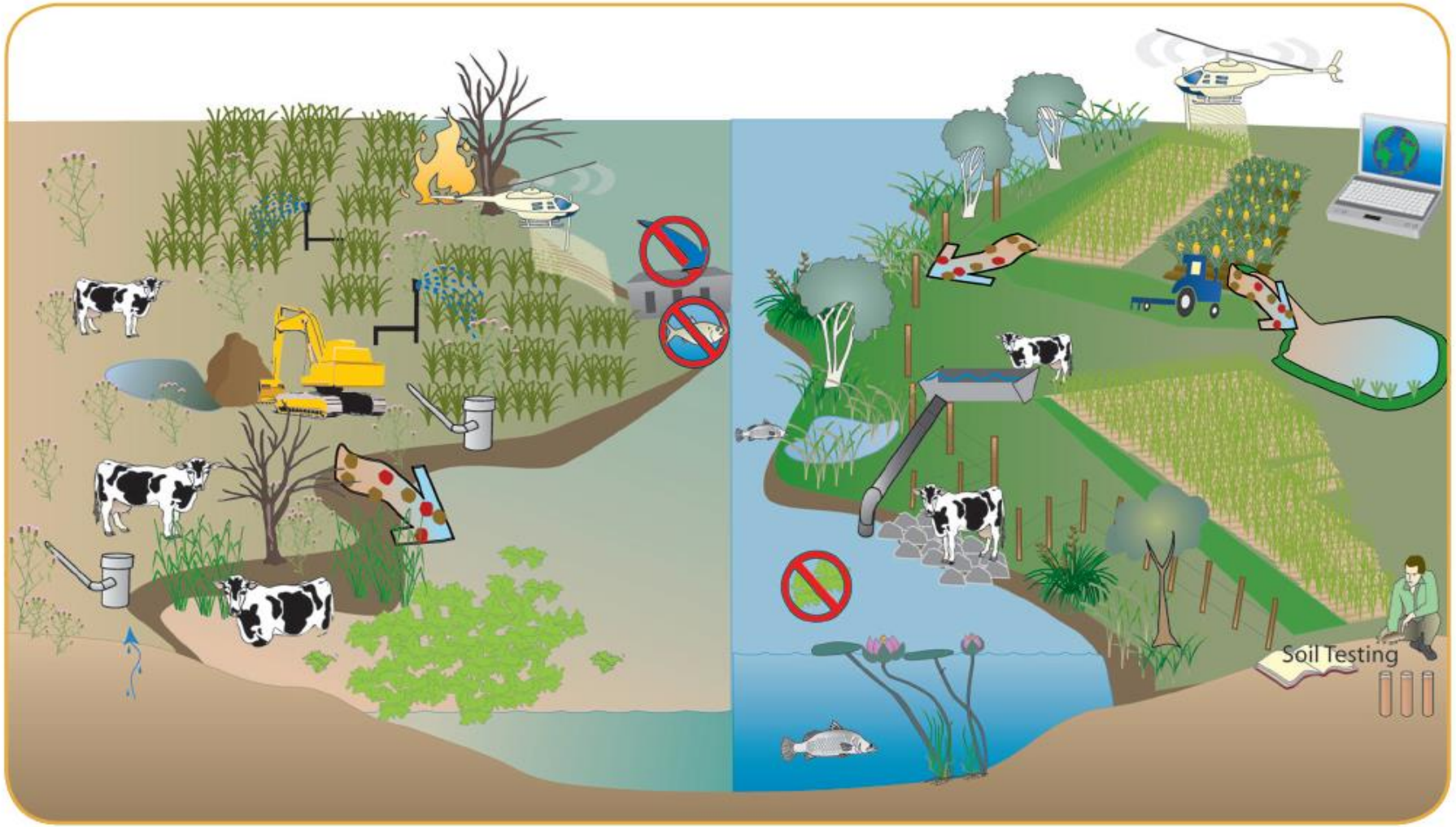
Catchment Stories







Management Tools - Managing farms for healthy catchments



•The Ramsar Convention

Queensland Wetlands Program

The *Convention on Wetlands of International Importance* (Ramsar Convention) - aims to conserve wetlands worldwide

•Queensland's 5 Ramsar sites

Criteria for listing

•Group A: sites containing representative, rare or unique wetland types:

- Criterion 1

•Group B: Sites of international importance for conserving biological diversity

- Criterion 2
- Criterion 3
- Criterion 4

•Species and ecological communities

- Criterion 5
- Criterion 6

•Waterbirds

- Criterion 7
- Criterion 8

•Fish

- Criterion 9

•Other taxa

•What are Ramsar criteria?

Ramsar sites are selected for listing based on the Ramsar criteria.

There are nine criteria based on whether the sites:

a) contain representative, rare or unique wetland types, OR

b) are of international importance for conserving biological diversity.

The Ramsar Convention in Australia

•The Australian National Guidelines for Ramsar Wetlands

The Australian Government provides a framework for implementing the Ramsar Convention.

The framework includes a number of guidelines:

- •1. Describing ecological character
- •2. Boundary description and mapping
- •3. Notification of change or potential change in ecological character
- •4. Site nomination

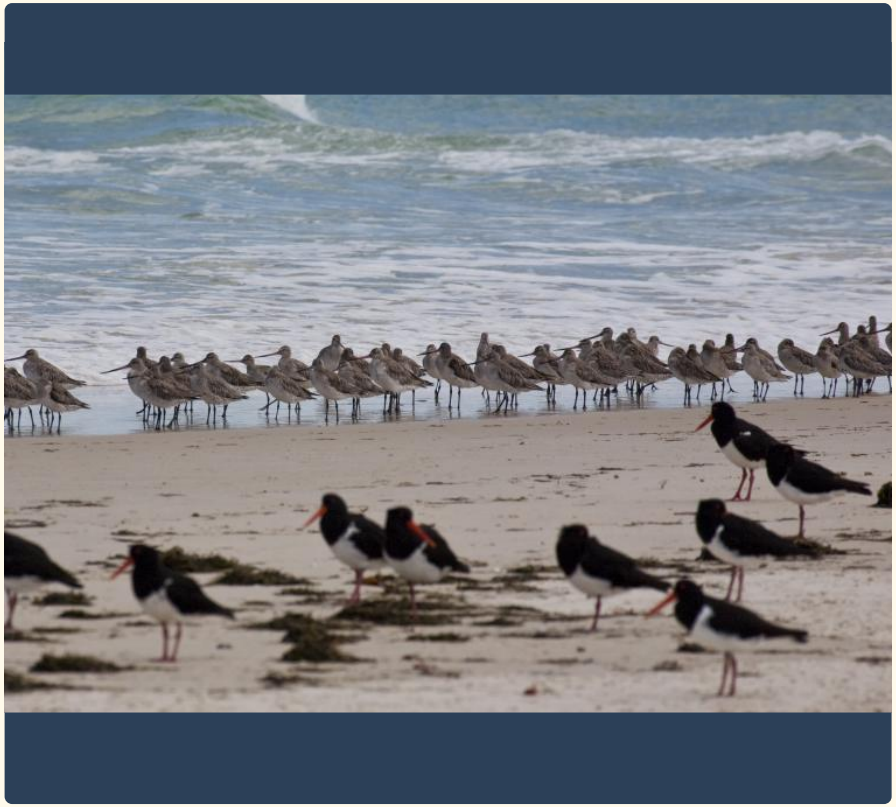
•Matters of National Environmental Significance

•Significant impact criteria

An action is likely to have a significant impact on ecological character if it may result in:

1. Areas of the wetland being destroyed or substantially modified
2. A substantial and measurable change in the hydrological regime of the wetland
3. The habitat or lifecycle of native species dependant upon the wetland being seriously affected
4. A substantial and measurable change in the water quality of the wetland
5. An invasive species that is harmful to the ecological character of the wetland being established in the wetland

Moreton Bay



- •Tourism
- •Key value-diversity and extent of wetland types
- •Critical nursery ground for fish and crustaceans
- •Dugongs, marine turtles and humpback whales
- •Archaeological sites
- •Extensive seagrass and mangrove habitat
- •Significant habitat for migratory shorebirds
- •>110,000ha
- •Acid frogs, Oxleyan pygmy perch and water mouse
- •Supports critical life stages for many species
- •Transition between tropical and temperate
- •Nationally and internationally threatened species
- •Perched wetlands
- •Diversity and large population of shorebirds
- •Seasonally >40,000 shorebirds
- •East Asian—Australasian Flyway Network site
- •Cultural and spiritual significance

- Pumicestone Catchment Story
- https://www.youtube.com/watch?v=0F2hy-EQNBg&feature=youtu.be