Australian Government
Great Barrier Reef Marine Park Authority

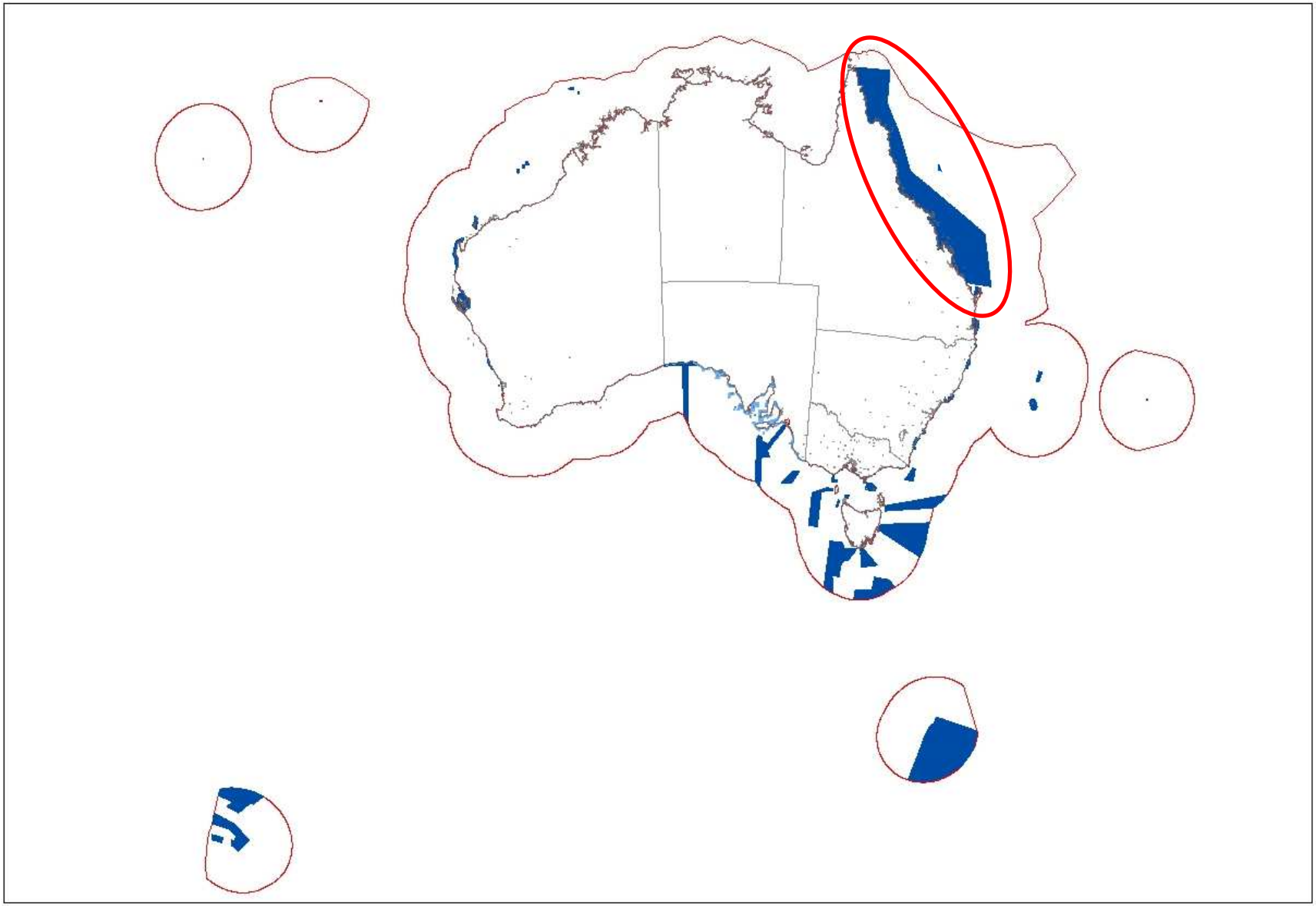
# THE GREAT BARRIER REEF MARINE PARK:

## *- Lessons learnt in managing a large multiple use, ecosystem-based MPA*

### *(including management effectiveness)*

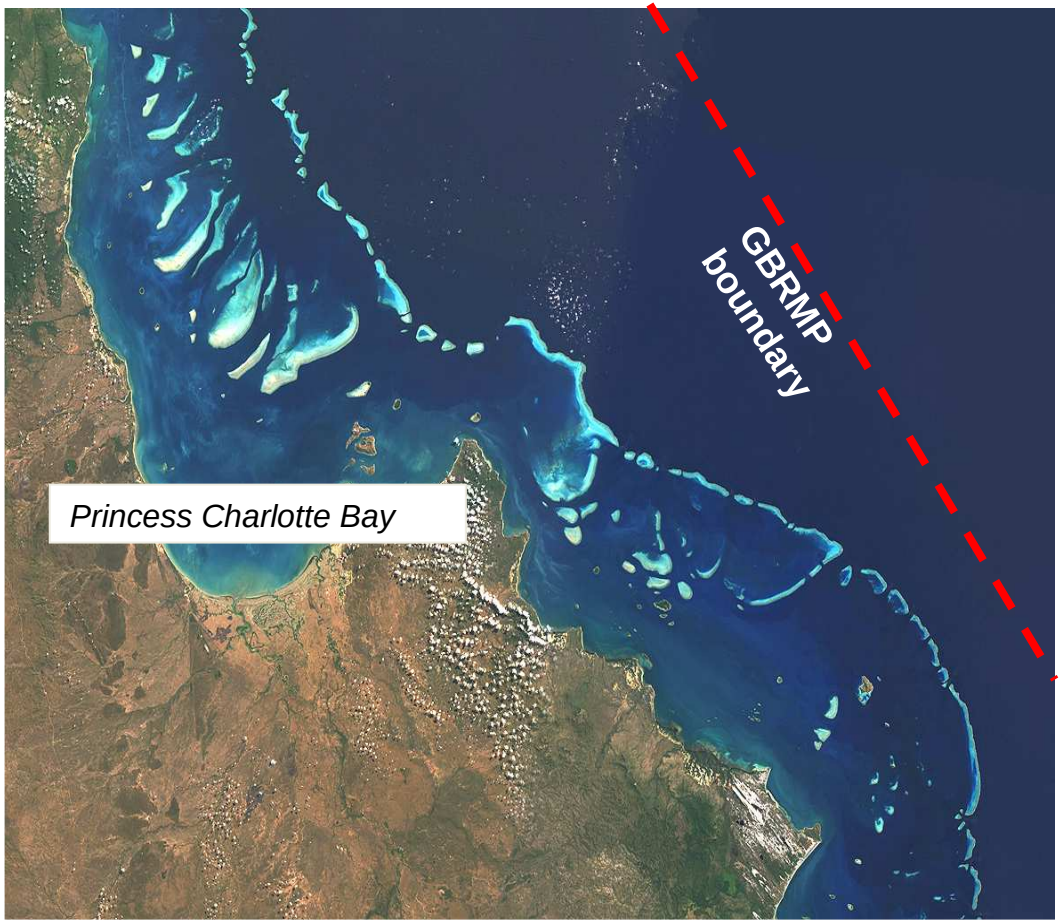
**Jon Day**
**GBRMPA**

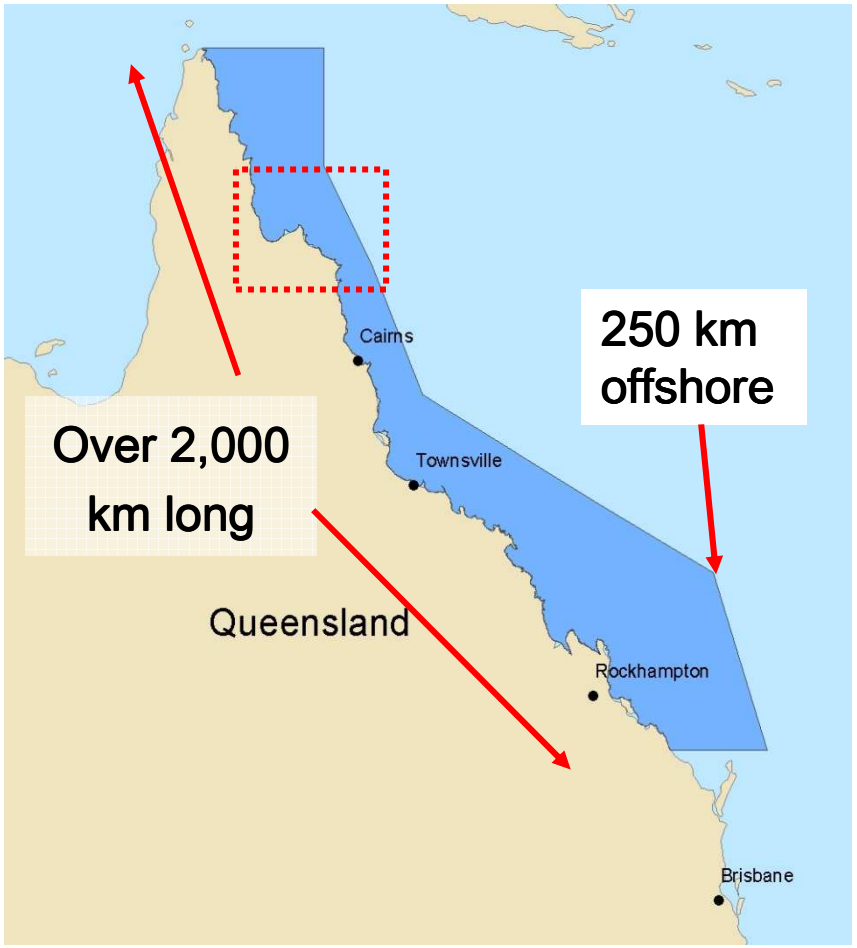
# Australia's Federal Marine Protected Areas



## GREAT BARRIER REEF

- *Federal Marine Park up to low water mark*
- *complementary State Marine Park in inter-tidal waters*




- *~ 3,000 separate reefs*
- *over 900 islands*

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**The Great Barrier Reef is <u>not</u> a typical MPA in terms of its size or its complexity….**

**.... but the experience gained in the GBR over past 35 years is useful for ecosystem-based management and MPA management at large-scales elsewhere….**

# Great Barrier Reef Marine Park

***GBR is more than just coral reefs…***

- ***…only 7% of the MPA is coral reef!***

- **Seagrass, shoals and sandy or muddy seabed** *(up to 200m deep)* **61%**
- **Continental slope** *(200 - 1000m deep)* **15%**
- **Deep oceanic waters** *(deeper than 1000m)* **16%**
- **Islands** *(- 74 are Commw'lth islands)* **1%**

# A multiple use Marine Park

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## All reasonable activities are allowed in certain zones, including:

- commercial fishing, including trawling in some areas
- recreational fishing
- shipping/ports
- tourism
- aquaculture
- defence training
- indigenous hunting
- research/monitoring
- permitted works, including dredging

# Stakeholder interests in GBR


[Commonwealth stakeholders = State stakeholders]

# GBR – worth >AUD $5 billion p.a



# The GBR remains 'under pressure'…

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**Pressures include:**

- **Downstream effects of landuse (water quality issues)**
- **Increasing fishing effort and impacts**
- **Increasing coastal developments**
- **Shipping & pollution incidents**
- **Increasing tourism and recreation**
- **Climate change (coral bleaching, acidification etc)**

# Complementary management

- Federal & State (Queensland) Government agencies cooperate for field management
- State agencies include:
  - *Queensland Parks & Wildlife Service*
  - *Queensland Boating & Fisheries Patrol*
  - *Queensland Water Police*
- Federal agencies include:
  - *Customs*
  - *Coastwatch*
  - *Australian Federal Police*
  - *Commonwealth Department of Public Prosecutions*
  - *Australian Maritime Safety Authority*

# Requirements for effective marine conservation

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Great Barrier Reef
Marine Park Authority

- **Effective marine conservation requires a lot more than just MPAs**
- **Essential requirements for effective marine conservation include:**
  - **regulation of land-based and maritime sources of pollution;**
  - **direct regulation of marine resource use;**
  - **establishment/management of effective network of MPAs; and**
  - **integrated coastal zone/ocean management.**

# Integrated coastal zone/ocean management (ICZOM)

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- **The term 'integrated' needs to include:**
  - **Inter-governmental – *all jurisdictions***
  - **Intra- agency – *consider adjacent waters***
  - **Land-water interface - *integration across land-water boundary is essential***
  - **Inter-sectoral – *across different user groups (minimise segregated "sector" management).***
  - **Inter-disciplinary – *ecological, social, economic & cultural***
  - **Inter-generational**

# Advantages of multiple use approach

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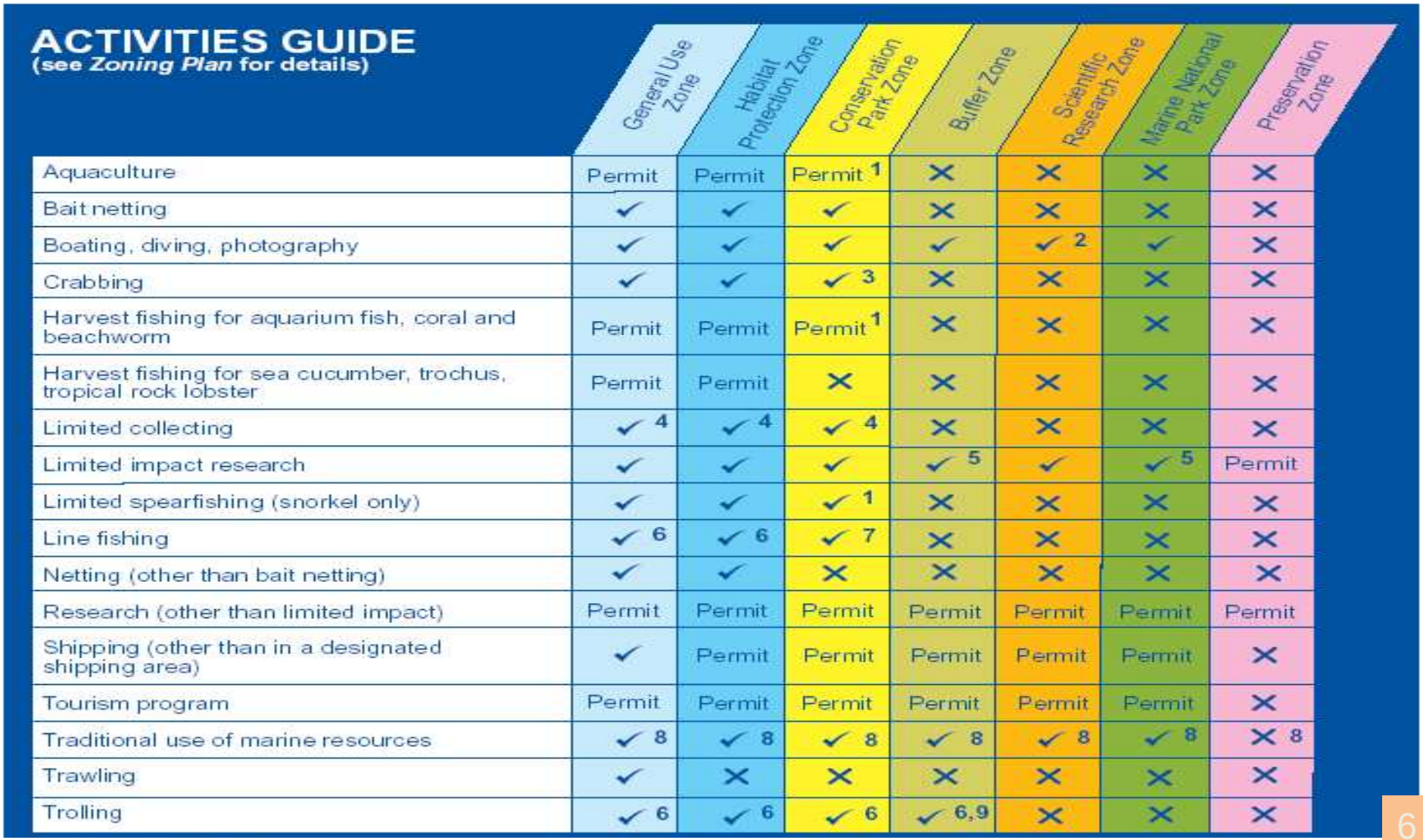
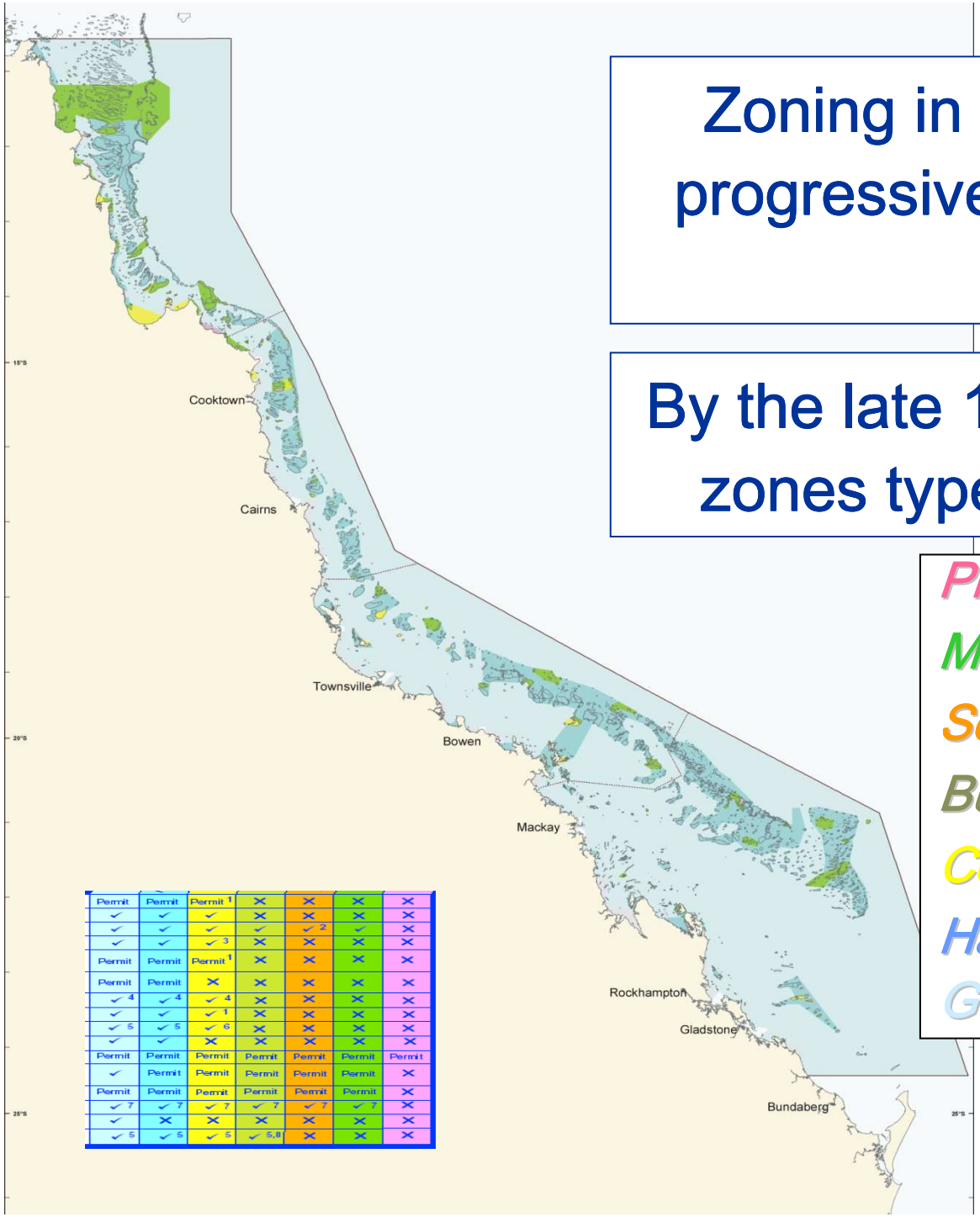
- A broad area, managed as an integrated whole, is preferable to a series of isolated protected areas surrounded by ‘a sea’ of unmanaged activities.
- Broad-area multiple use is more effective:
  - *Ecologically – recognises spatial scales at which ecosystems operate*
  - *Practically – easier to manage, it buffers and dilutes the impacts from the adjacent areas*
  - *Socially - can ensure all reasonable uses can occur and minimize conflicts*

# Ocean Zoning = a key marine management tool



**ACTIVITIES GUIDE**
(see *Zoning Plan* for details)

| | General Use Zone | Habitat Protection Zone | Conservation Park Zone | Buffer Zone | Scientific Research Zone | Marine National Park Zone | Preservation Zone |
|---|---|---|---|---|---|---|---|
| Aquaculture | Permit | Permit | Permit [1] | ✗ | ✗ | ✗ | ✗ |
| Bait netting | ✓ | ✓ | ✓ | ✗ | ✗ | ✗ | ✗ |
| Boating, diving, photography | ✓ | ✓ | ✓ | ✓ | ✓ [2] | ✓ | ✗ |
| Crabbing | ✓ | ✓ | ✓ [3] | ✗ | ✗ | ✗ | ✗ |
| Harvest fishing for aquarium fish, coral and beachworm | Permit | Permit | Permit [1] | ✗ | ✗ | ✗ | ✗ |
| Harvest fishing for sea cucumber, trochus, tropical rock lobster | Permit | Permit | ✗ | ✗ | ✗ | ✗ | ✗ |
| Limited collecting | ✓ [4] | ✓ [4] | ✓ [4] | ✗ | ✗ | ✗ | ✗ |
| Limited impact research | ✓ | ✓ | ✓ | ✓ [5] | ✓ | ✓ [5] | Permit |
| Limited spearfishing (snorkel only) | ✓ | ✓ | ✓ [1] | ✗ | ✗ | ✗ | ✗ |
| Line fishing | ✓ [6] | ✓ [6] | ✓ [7] | ✗ | ✗ | ✗ | ✗ |
| Netting (other than bait netting) | ✓ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| Research (other than limited impact) | Permit | Permit | Permit | Permit | Permit | Permit | Permit |
| Shipping (other than in a designated shipping area) | ✓ | Permit | Permit | Permit | Permit | Permit | ✗ |
| Tourism program | Permit | Permit | Permit | Permit | Permit | Permit | ✗ |
| Traditional use of marine resources | ✓ [8] | ✓ [8] | ✓ [8] | ✓ [8] | ✓ [8] | ✓ [8] | ✗ [8] |
| Trawling | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| Trolling | ✓ [6] | ✓ [6] | ✓ [6] | ✓ [6,9] | ✗ | ✗ | ✗ |




Zoning in GBRMP has been progressively developed since 1980s

By the late 1990s, seven marine zones types were applied …

*Preservation Zone* – *'no go'*

*Marine National Park* - *no-take*

*Scientific Research*

*Buffer Zone* – *trolling only*

*Conservat'n Park* – *limited fishing*

*Habitat Protection* – *no trawling*

*General Use* – *all reasonable uses*


# Revised Zoning Plan

*1 July 2004*

| | *Revised ZP* | *Old ZP* |
|---|---|---|
| *Preservation Zone* | 0.2% | (0.1%) |
| *Marine Nat'l Park* | 33.3% | (4.6%) |
| *Scient. Research* | 0.05% | (0.01%) |
| *Buffer Zone* | 2.9% | (0.1%) |
| *Conservat'n Park* | 1.5% | (0.6%) |
| *Habitat Protect'n* | 28.2% | (15.2%) |
| *General Use* | 33.8% | (77.9%) |

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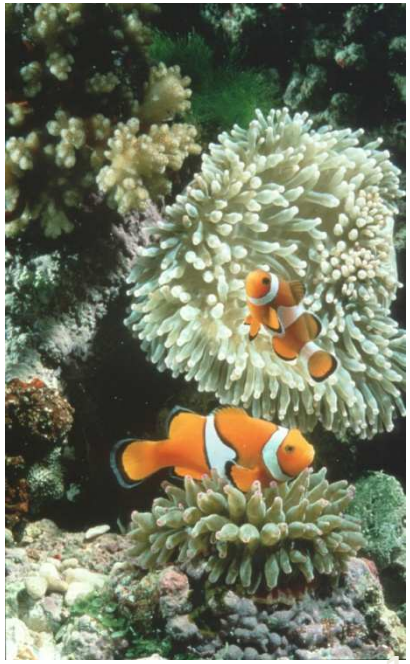
# Ocean zoning is not the only management 'tool' we use…

- ***Legislation***
- ***Permits***
- ***Education***
- ***Surveillance & enforcement***
- ***Other spatial layers (not all shown on ZPs)***
  - ***Shipping lanes***
  - ***Defence areas***
  - ***Plans of Management***
  - ***Indigenous hunting agreements***
- ***Temporal closures (eg. fish spawning)***
- ***Economic instruments (eg. Environmental Management Charge)***
- ***Industry Codes of Practice***



# Management of fisheries

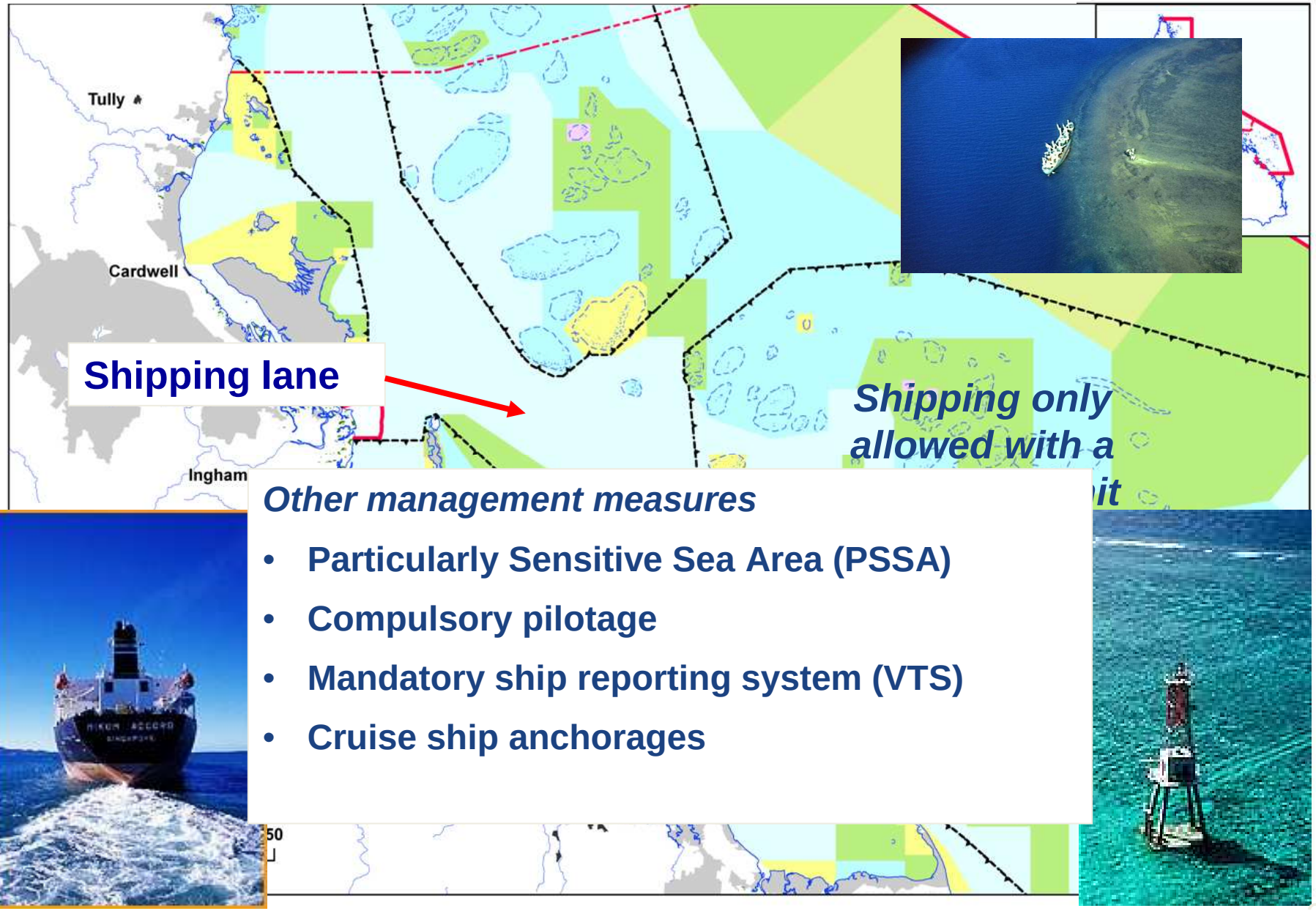

Zones regulate where fishers, commercial or recreational, can or cannot fish

Zones define what types of fishing can occur in certain zones (e.g. trawling)

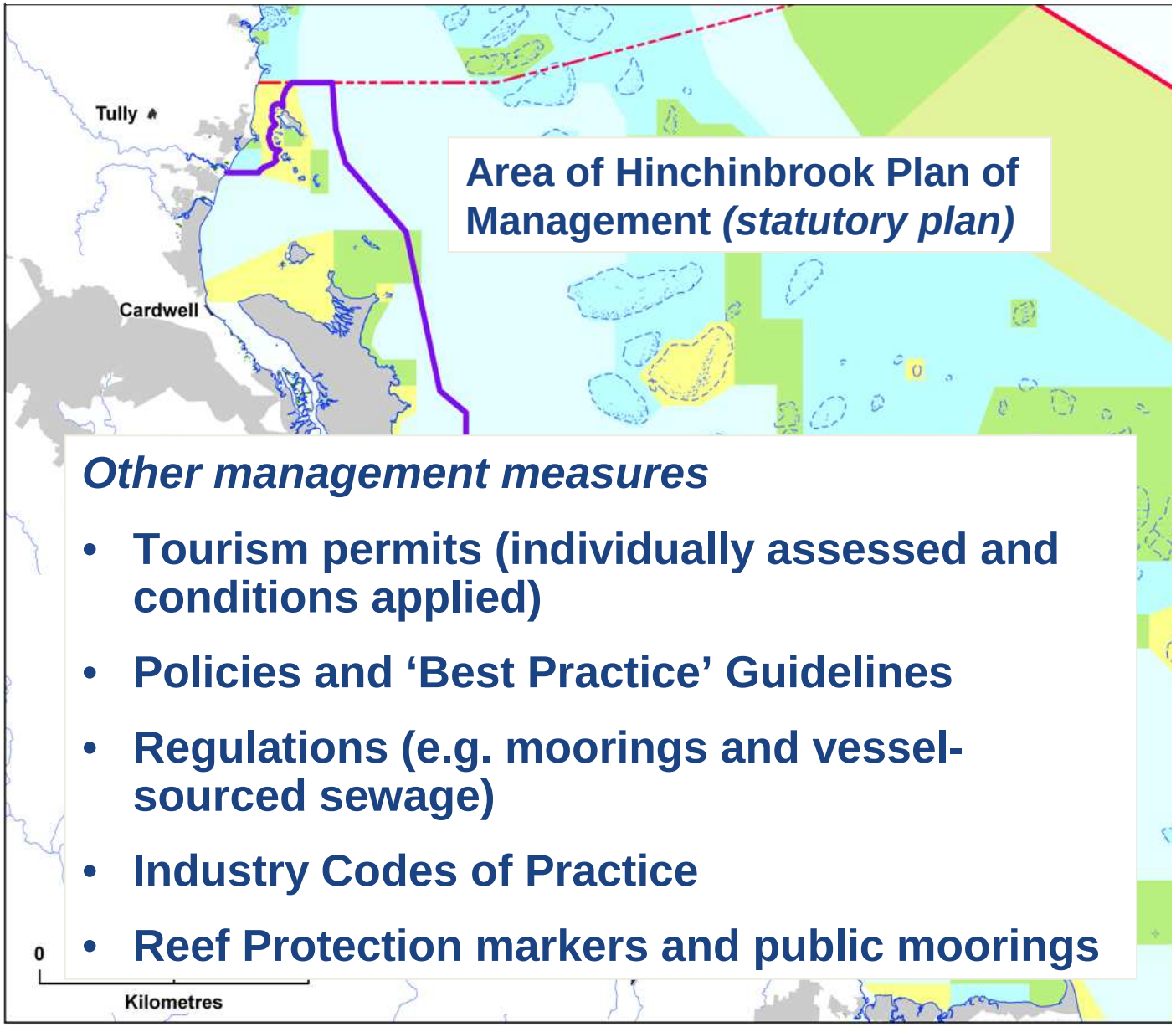
***Main* management measures**

- Queensland Fisheries Management Plans and policies
- Seasonal closures
- Bag limits
- Size limits
- Gear restrictions

# Management of shipping



# Tourism and recreation

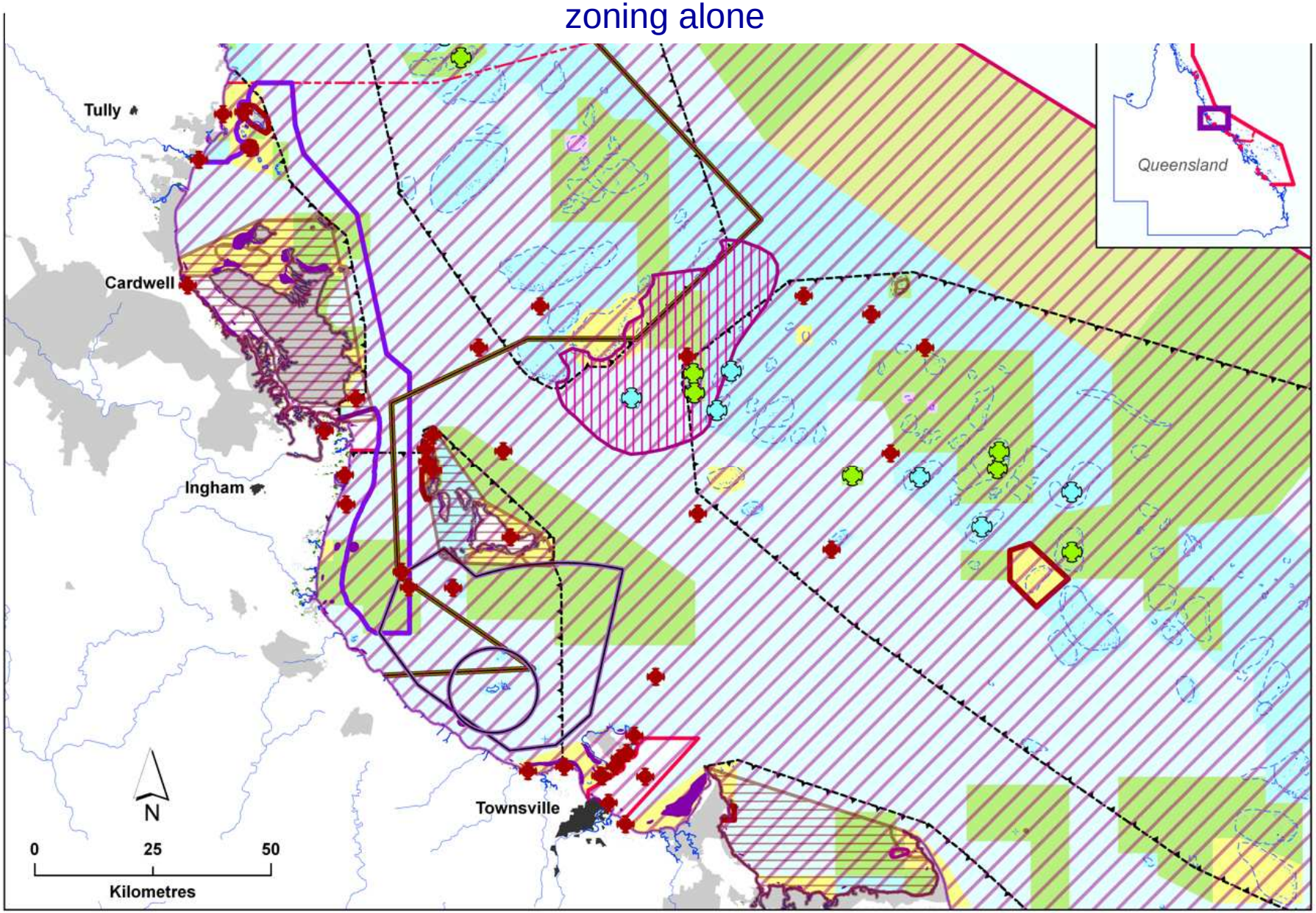



*Other management measures*

- Tourism permits (individually assessed and conditions applied)
- Policies and 'Best Practice' Guidelines
- Regulations (e.g. moorings and vessel-sourced sewage)
- Industry Codes of Practice
- Reef Protection markers and public moorings

# Defence Training

# **Combining most spatial layers of management** – too complex for zoning alone



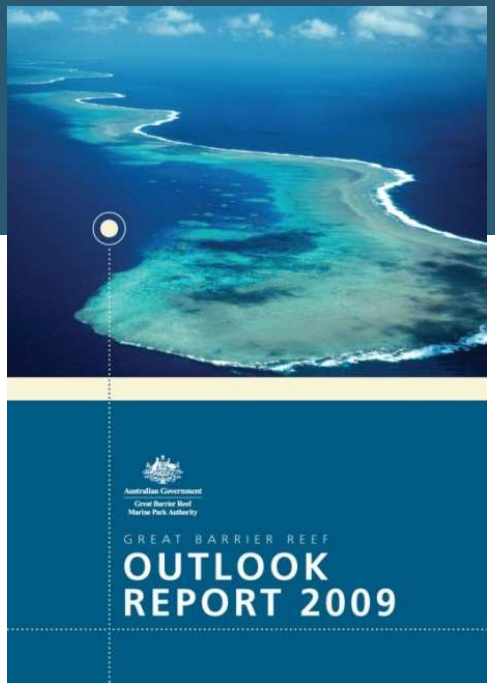
# Managing in ever-changing environment

Need to be aware of changes in most marine areas:

- rapidly changing patterns of use
- technological change
- social- economic changes
- political change
- dynamic systems → natural changes

**Hence need for adaptive management and some flexibility in decision making**

# Outlook Report




- **Prepared by the Great Barrier Reef Marine Park Authority**
- **Launched by Minister Sept 2009**
- ***Great Barrier Reef Marine Park Act* sets out legal requirements (eg. five yearly)**
- **Report does <u>not</u> contain recommendations**

# Eight assessments req'd by legislation

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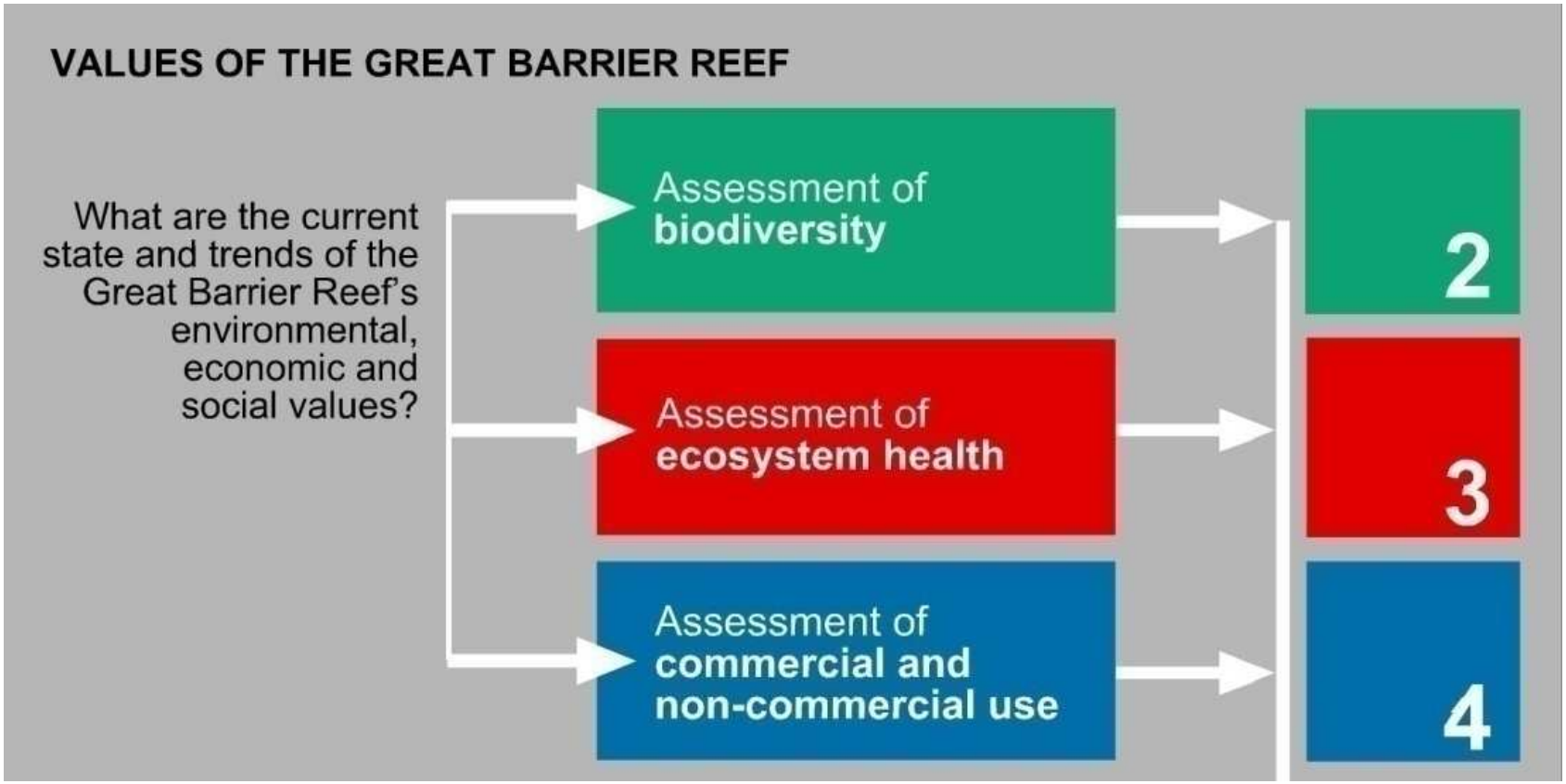
- 3 assessments relating to Values



# - 4 assessments about Pressures and responses

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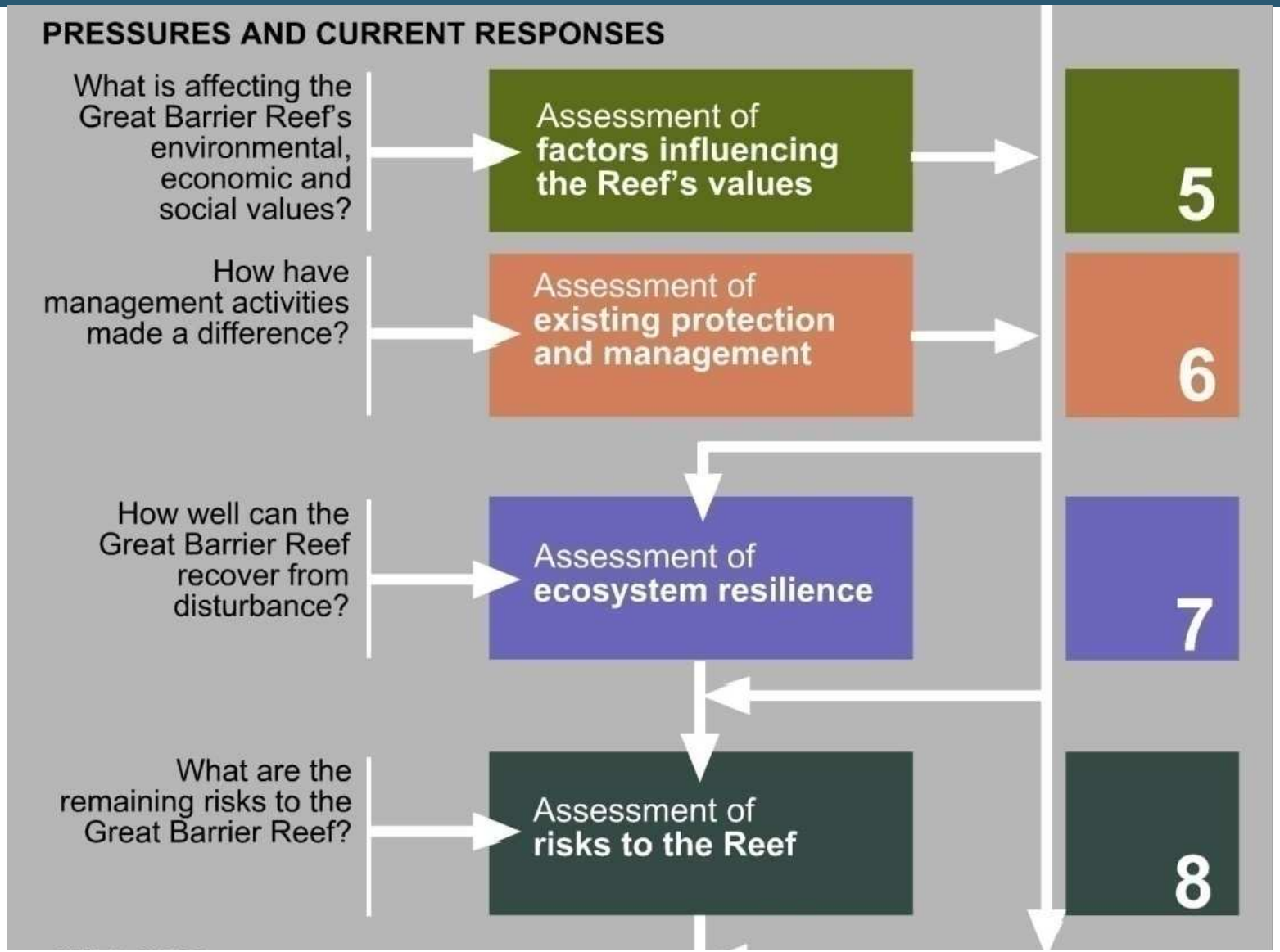

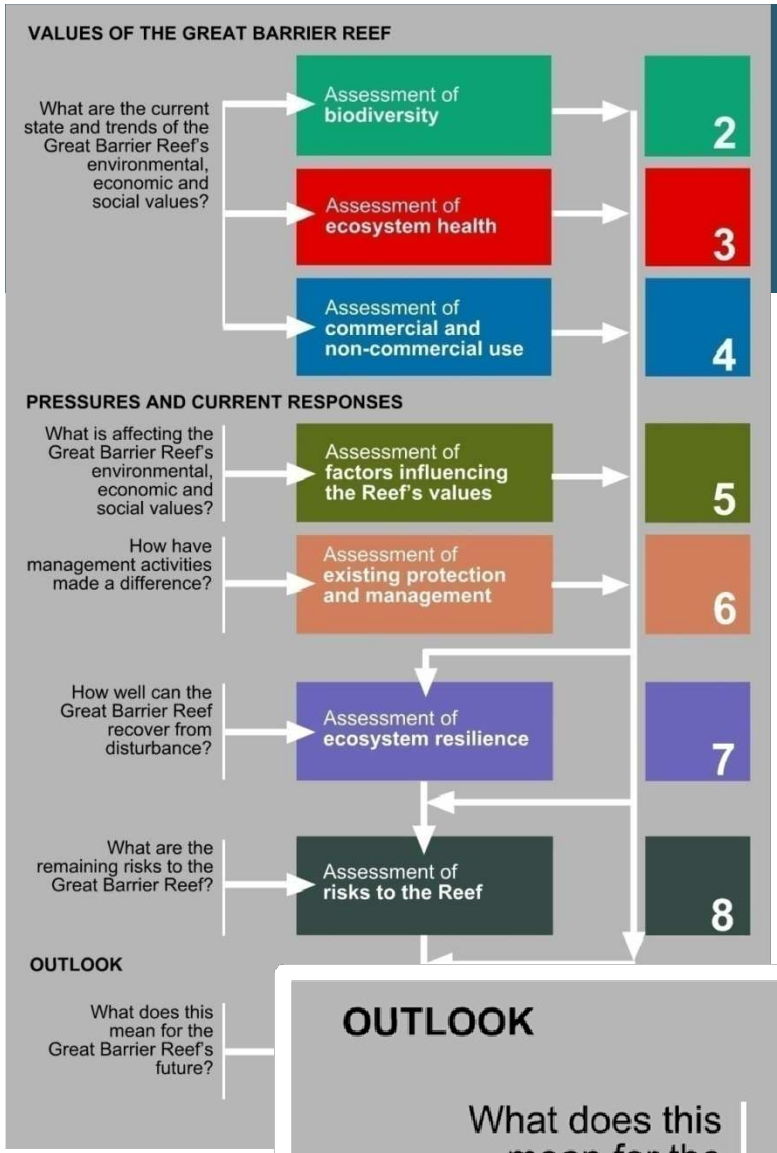


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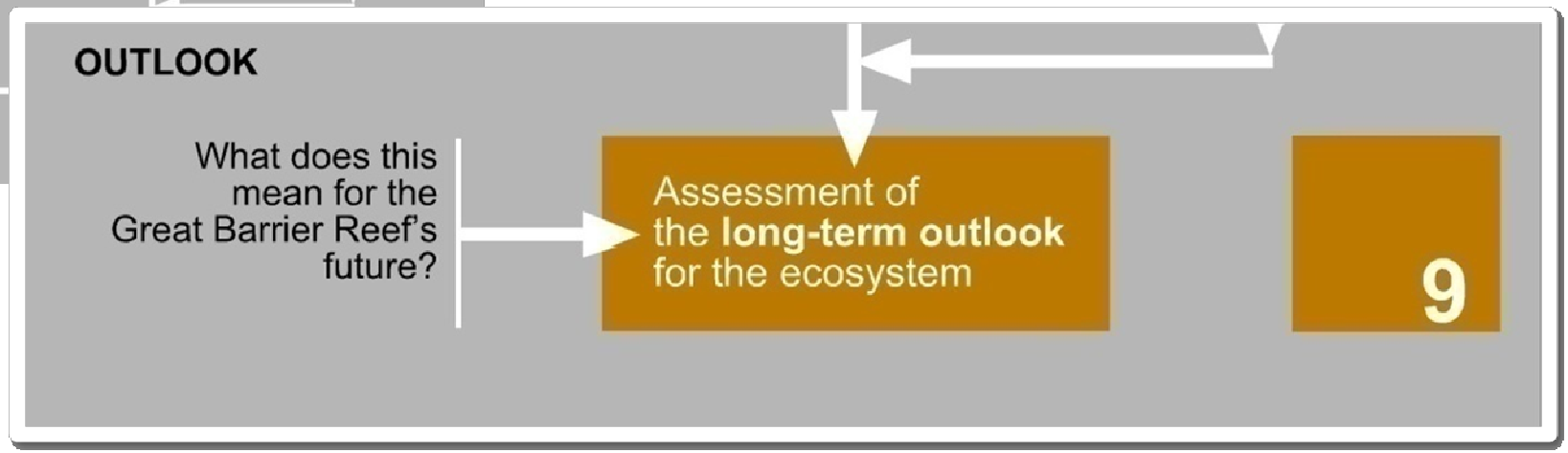
# OUTLOOK

## What do these assessments mean for the future of the Great Barrier Reef ecosystem?



# Developing the Outlook Report

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Great Barrier Reef Marine Park Authority

## Led by GBRMPA:

### Contributions from:

- Australian and Queensland Government agencies
- Researchers, industry and communities
- Local Marine Advisory Committees
- Reef Advisory Committees
- Outlook Reference Group
- GBR Outlook Forum
- 4 external peer-reviewers


# Presentation of assessment

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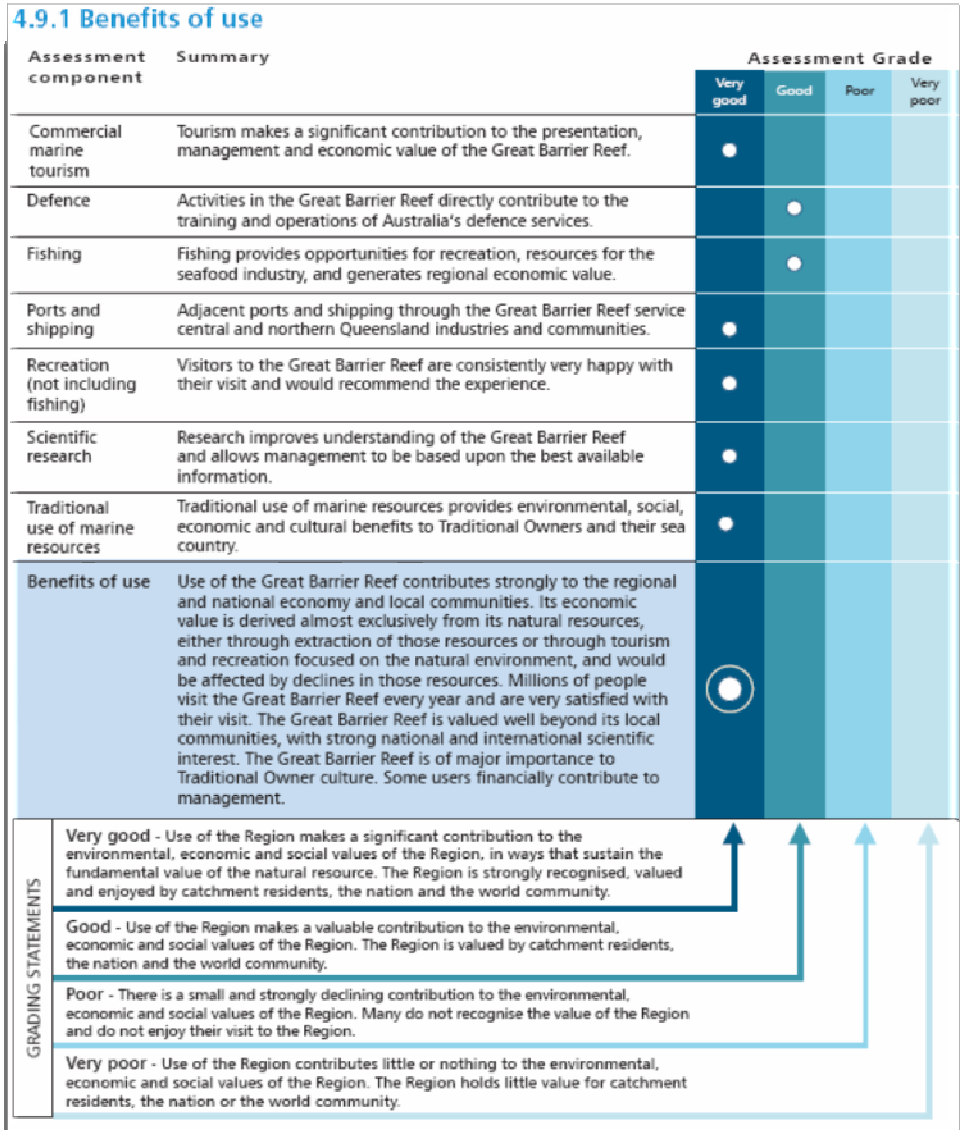

### 4.9.1 Benefits of use

| Assessment component | Summary | Assessment Grade: Very good | Good | Poor | Very poor |
|---|---|---|---|---|---|
| Commercial marine tourism | Tourism makes a significant contribution to the presentation, management and economic value of the Great Barrier Reef. | ● | | | |
| Defence | Activities in the Great Barrier Reef directly contribute to the training and operations of Australia's defence services. | | ● | | |
| Fishing | Fishing provides opportunities for recreation, resources for the seafood industry, and generates regional economic value. | | ● | | |
| Ports and shipping | Adjacent ports and shipping through the Great Barrier Reef service central and northern Queensland industries and communities. | ● | | | |
| Recreation (not including fishing) | Visitors to the Great Barrier Reef are consistently very happy with their visit and would recommend the experience. | ● | | | |
| Scientific research | Research improves understanding of the Great Barrier Reef and allows management to be based upon the best available information. | ● | | | |
| Traditional use of marine resources | Traditional use of marine resources provides environmental, social, economic and cultural benefits to Traditional Owners and their sea country. | ● | | | |
| Benefits of use | Use of the Great Barrier Reef contributes strongly to the regional and national economy and local communities. Its economic value is derived almost exclusively from its natural resources, either through extraction of those resources or through tourism and recreation focused on the natural environment, and would be affected by declines in those resources. Millions of people visit the Great Barrier Reef every year and are very satisfied with their visit. The Great Barrier Reef is valued well beyond its local communities, with strong national and international scientific interest. The Great Barrier Reef is of major importance to Traditional Owner culture. Some users financially contribute to management. | ◉ | | | |

GRADING STATEMENTS

**Very good** - Use of the Region makes a significant contribution to the environmental, economic and social values of the Region, in ways that sustain the fundamental value of the natural resource. The Region is strongly recognised, valued and enjoyed by catchment residents, the nation and the world community.

**Good** - Use of the Region makes a valuable contribution to the environmental, economic and social values of the Region. The Region is valued by catchment residents, the nation and the world community.

**Poor** - There is a small and strongly declining contribution to the environmental, economic and social values of the Region. Many do not recognise the value of the Region and do not enjoy their visit to the Region.

**Very poor** - Use of the Region contributes little or nothing to the environmental, economic and social values of the Region. The Region holds little value for catchment residents, the nation or the world community.

- Grade for each assessment component
- Overall grade for each criteria
- Based on Grading Statements

# Overall conclusion

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*"The **outlook for the Great Barrier Reef ecosystem is at a crossroad**, and it is decisions made in the next few years that are likely to determine its long-term future.*

*Unavoidably, future predictions of **climate change dominate most aspects of the Great Barrier Reef's outlook** over the next few decades.*

*The extent and persistence of the damage to the ecosystem will depend to a large degree on the amount of change in the world's climate and on the resilience of the Great Barrier Reef ecosystem in the immediate future."*

**Outlook for the Great Barrier Reef ecosystem**
**Assessment Grade = Poor**

# Good news - recovery

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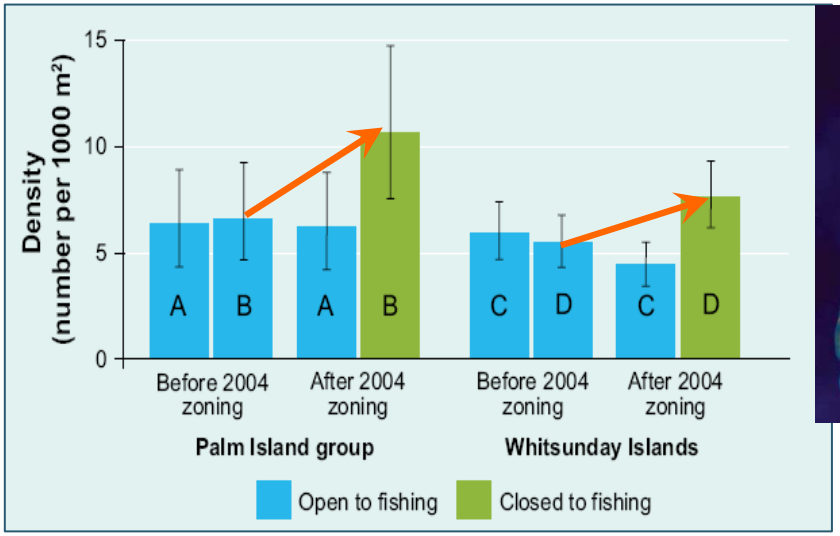
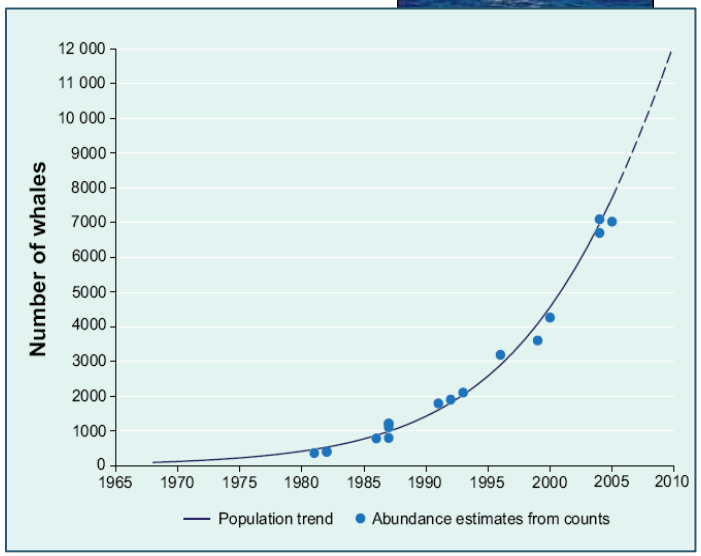


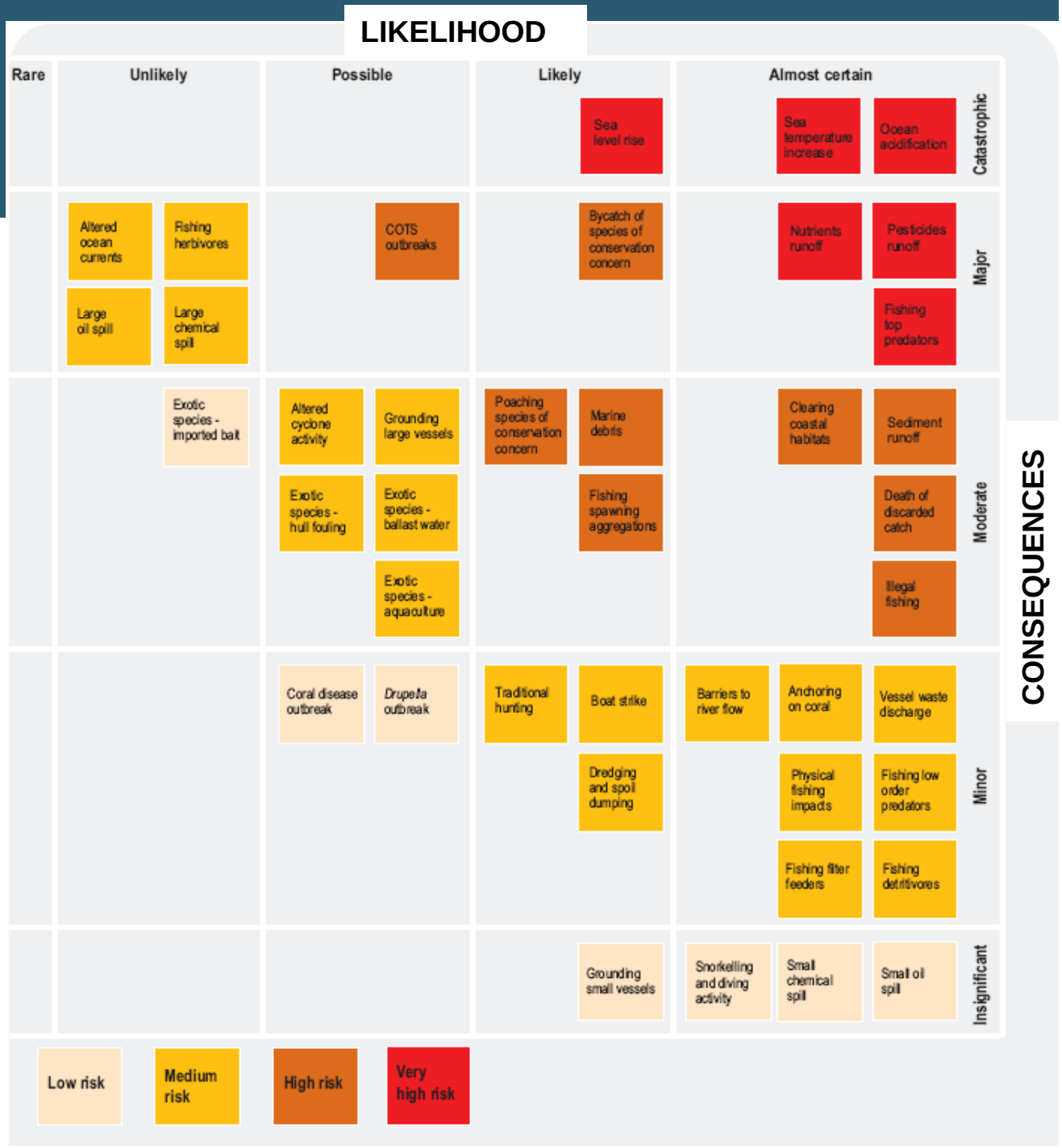

***The number and size of coral trout is increasing rapidly in zones closed to fishing.***




***Humpback whales appear to be recovering at their maximum rate, 45 years after whaling stopped.***

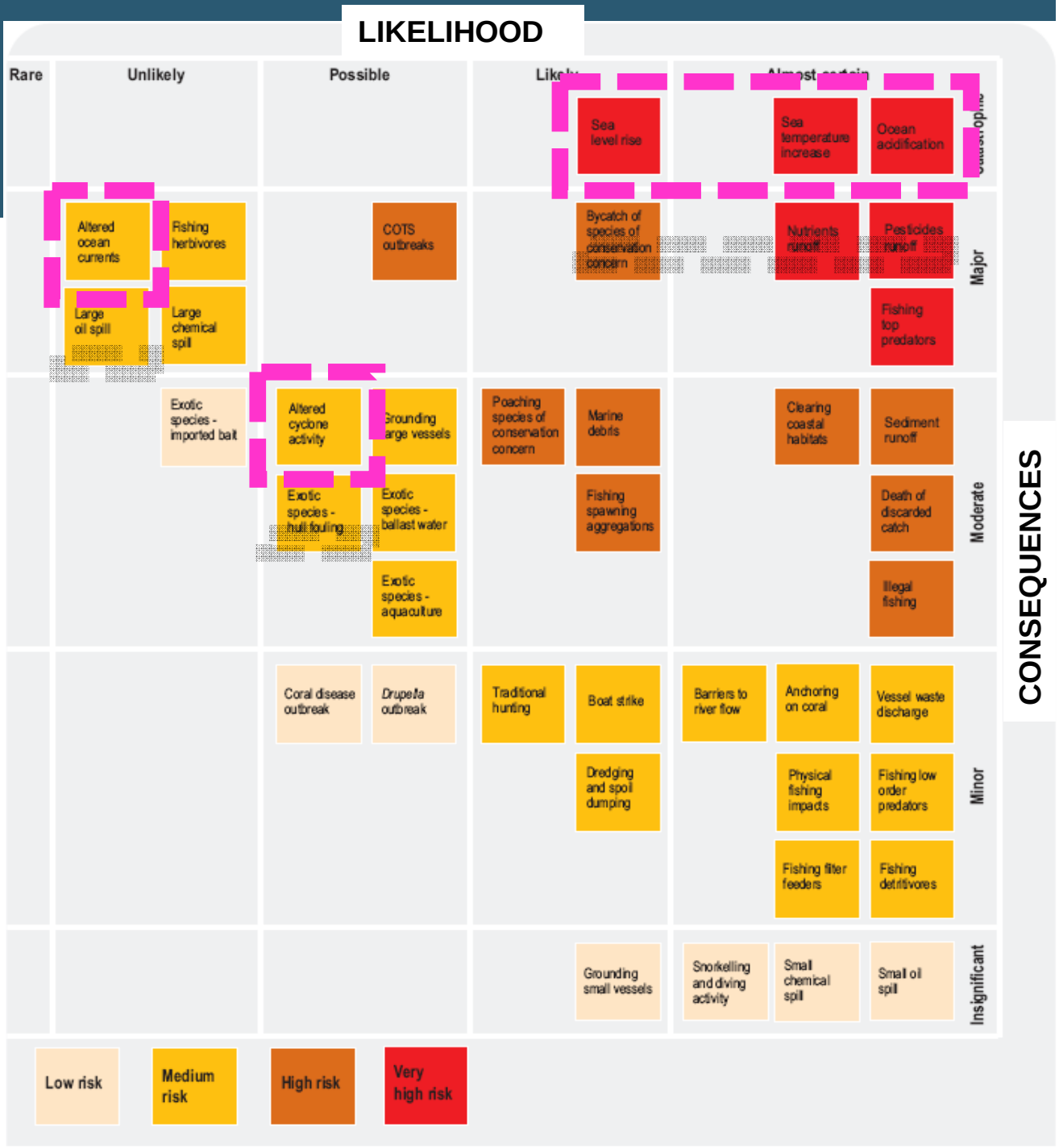
# Risk matrix

## Likelihood vs consequences for 41 key risk types



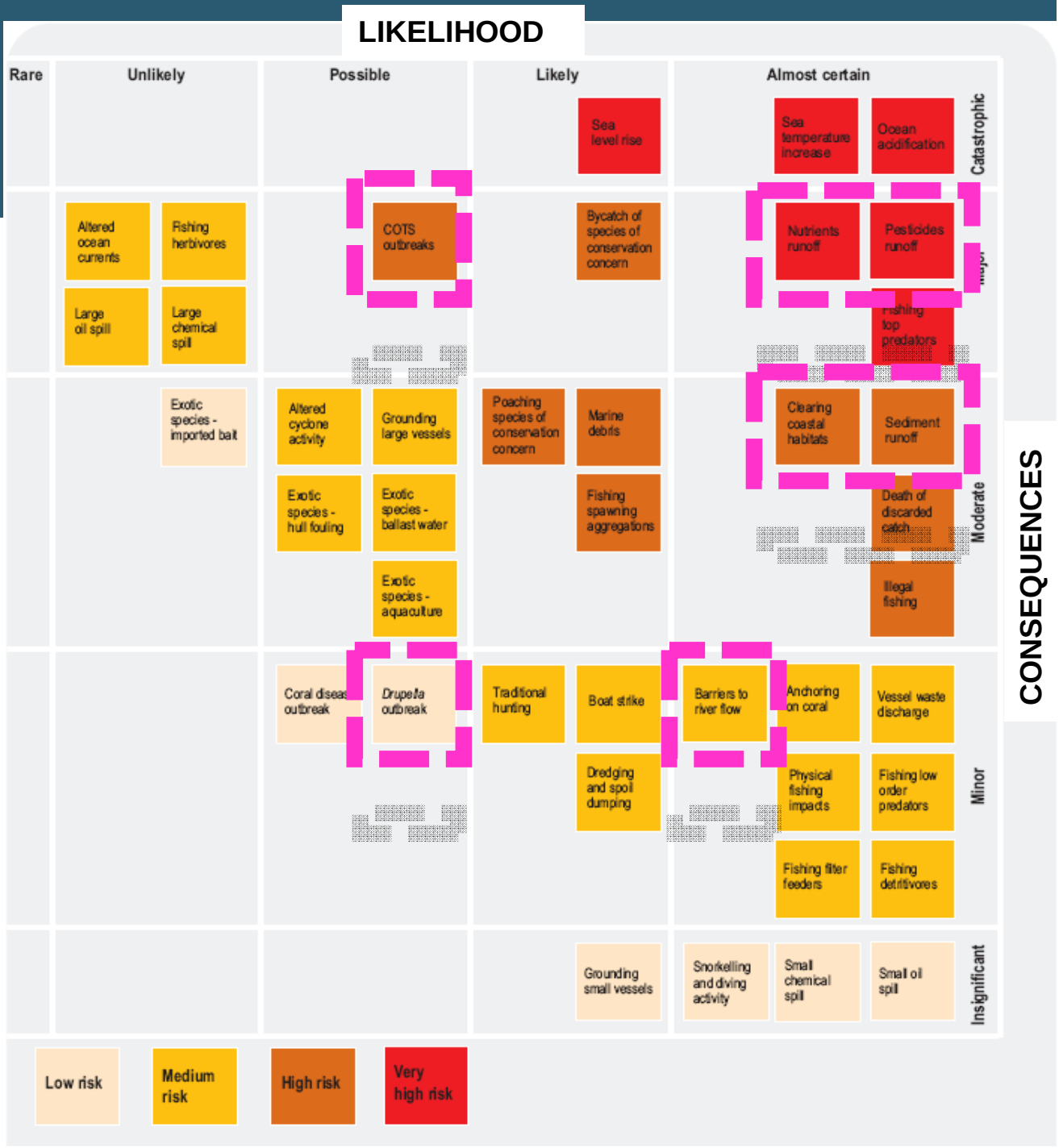
# Priority issues

## Climate change



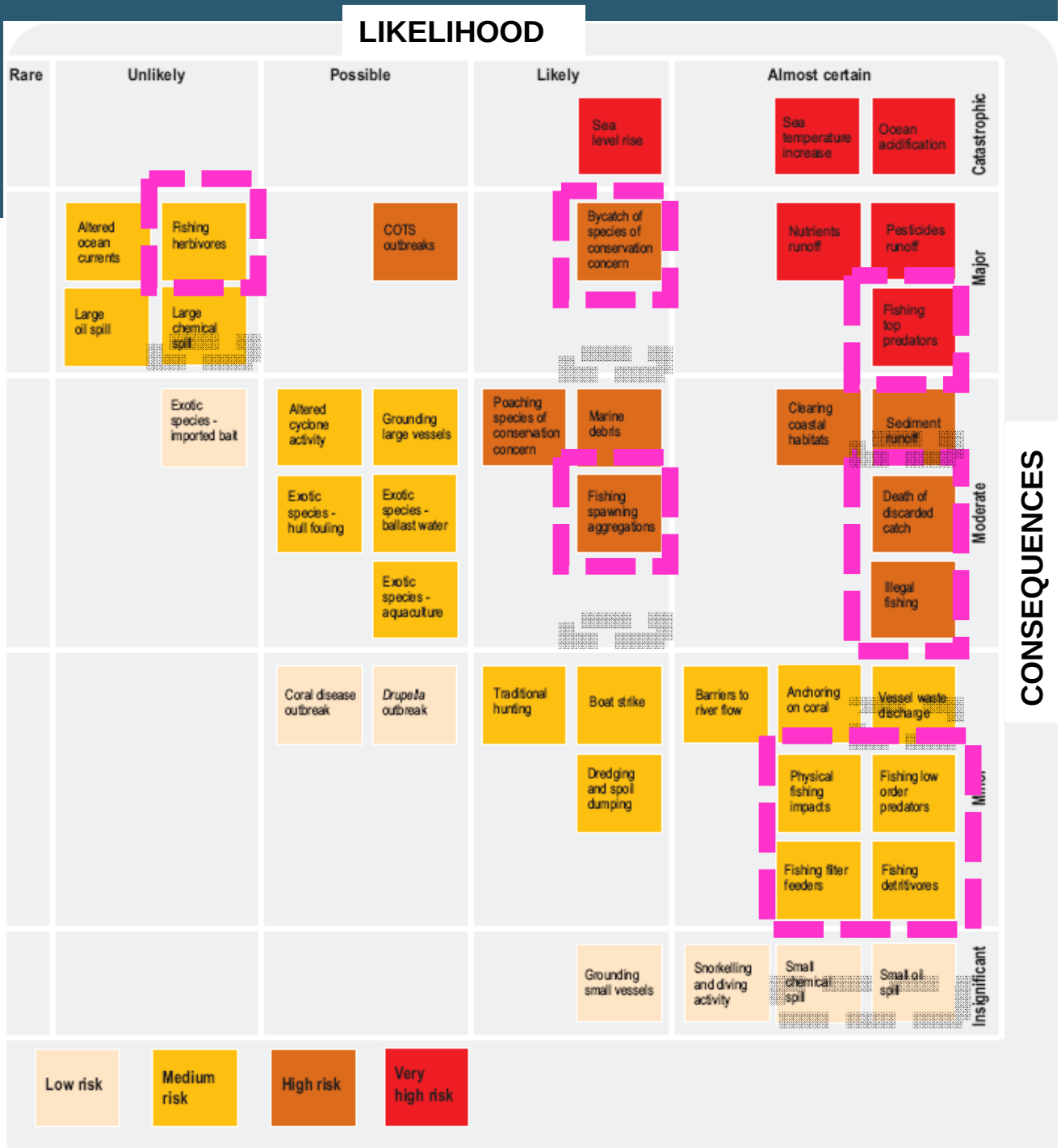
# Priority issues

## Continued declining water quality from catchment runoff



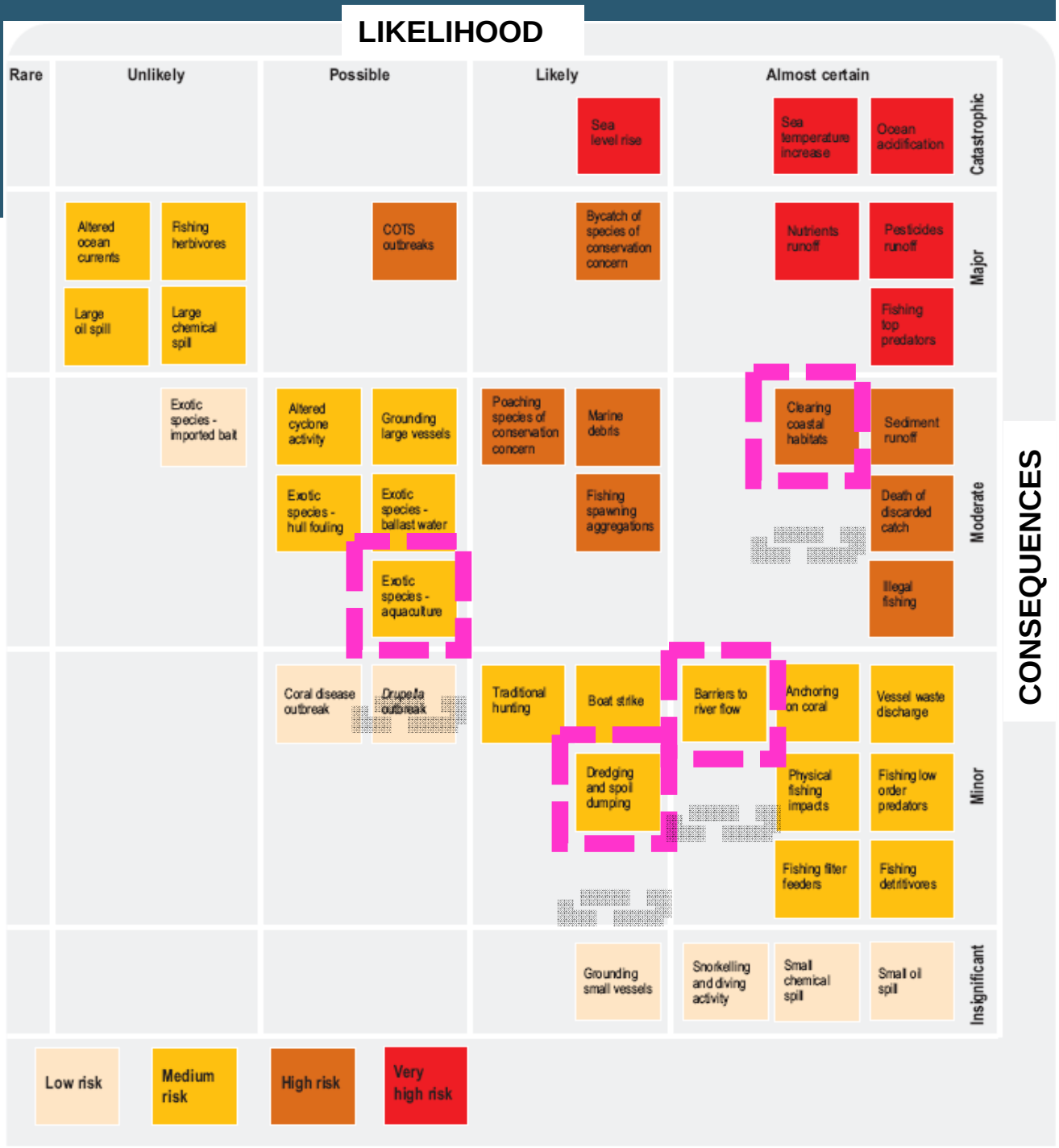
# Priority issues

## Impacts from fishing and illegal fishing and poaching



# Priority issues

## Loss of coastal habitats from coastal development



# Climate change

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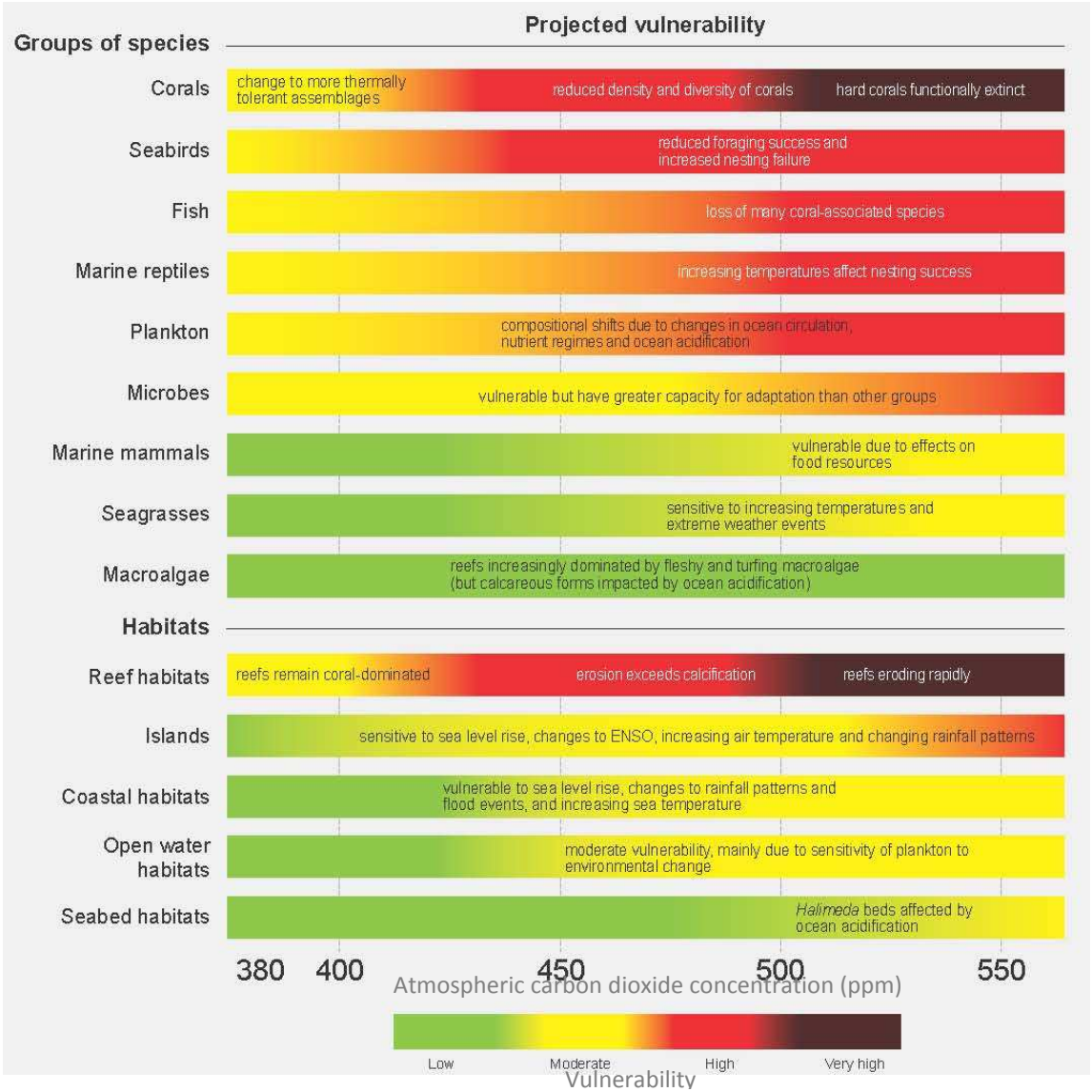


## Highest risks:

- **Increasing sea temperature**
- **Ocean acidification**
- **Rising sea level**

***Almost all Great Barrier Reef species will be affected by climate change, some seriously.***

# Direct use - extractive

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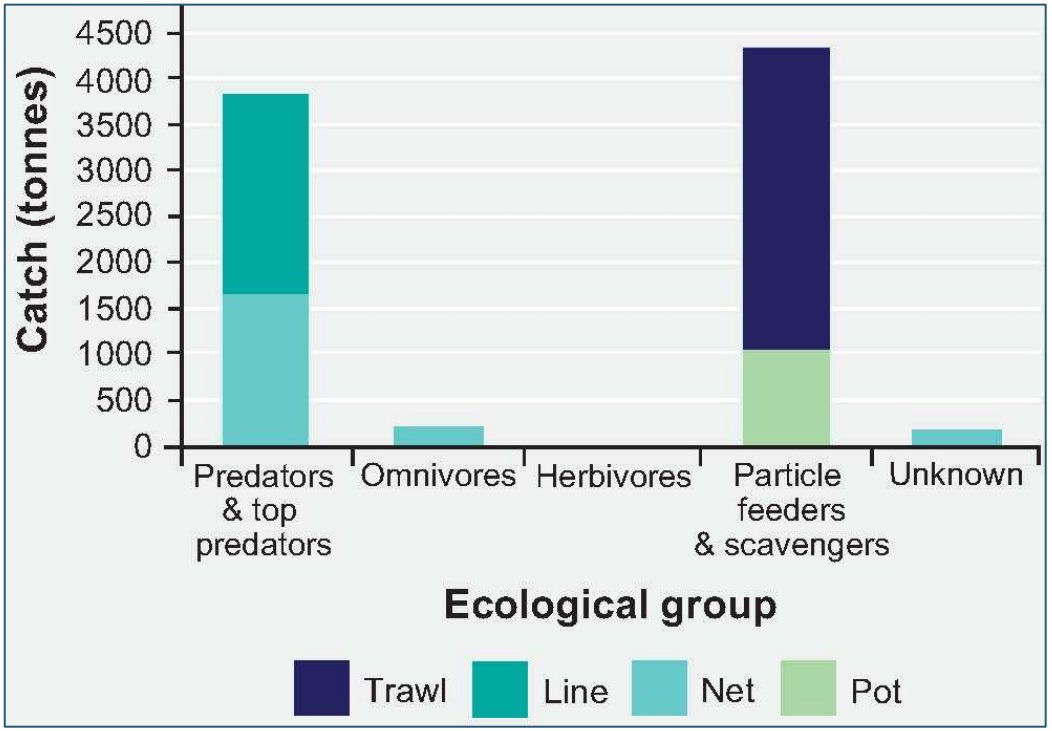
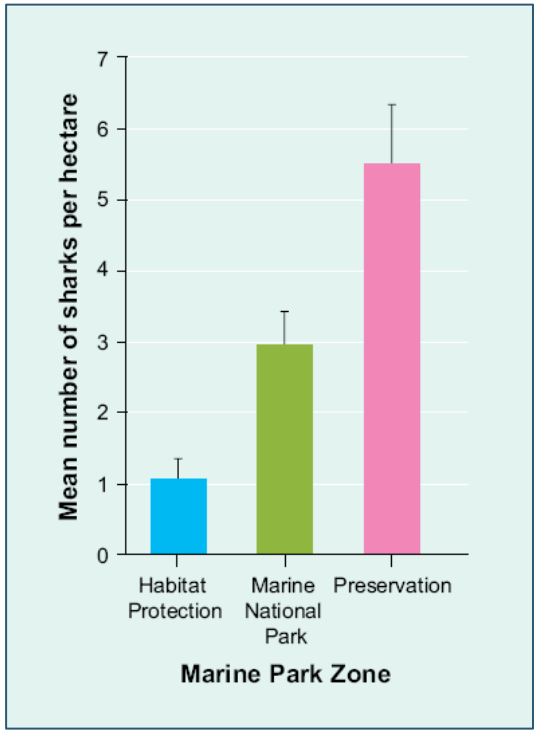
## Highest risks:

- Fishing top predators (e.g. sharks)
- By-catch of species of conservation concern



# Direct use - extractive

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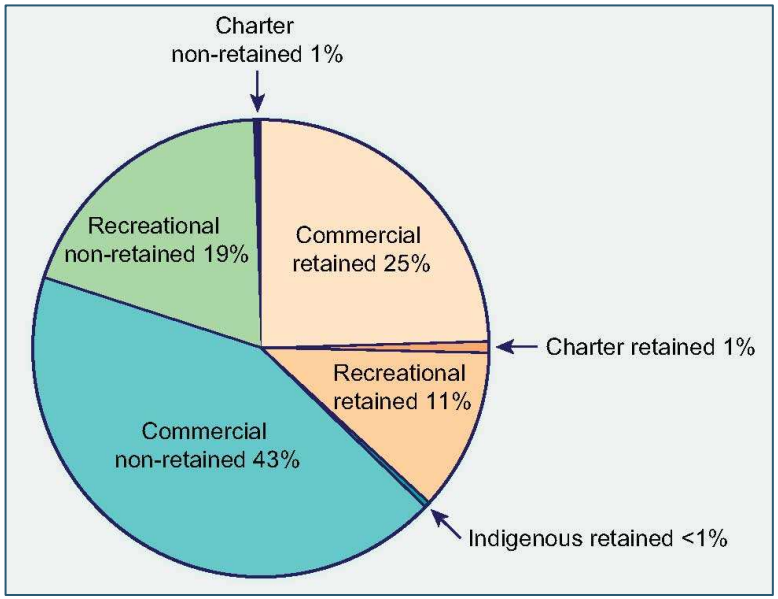
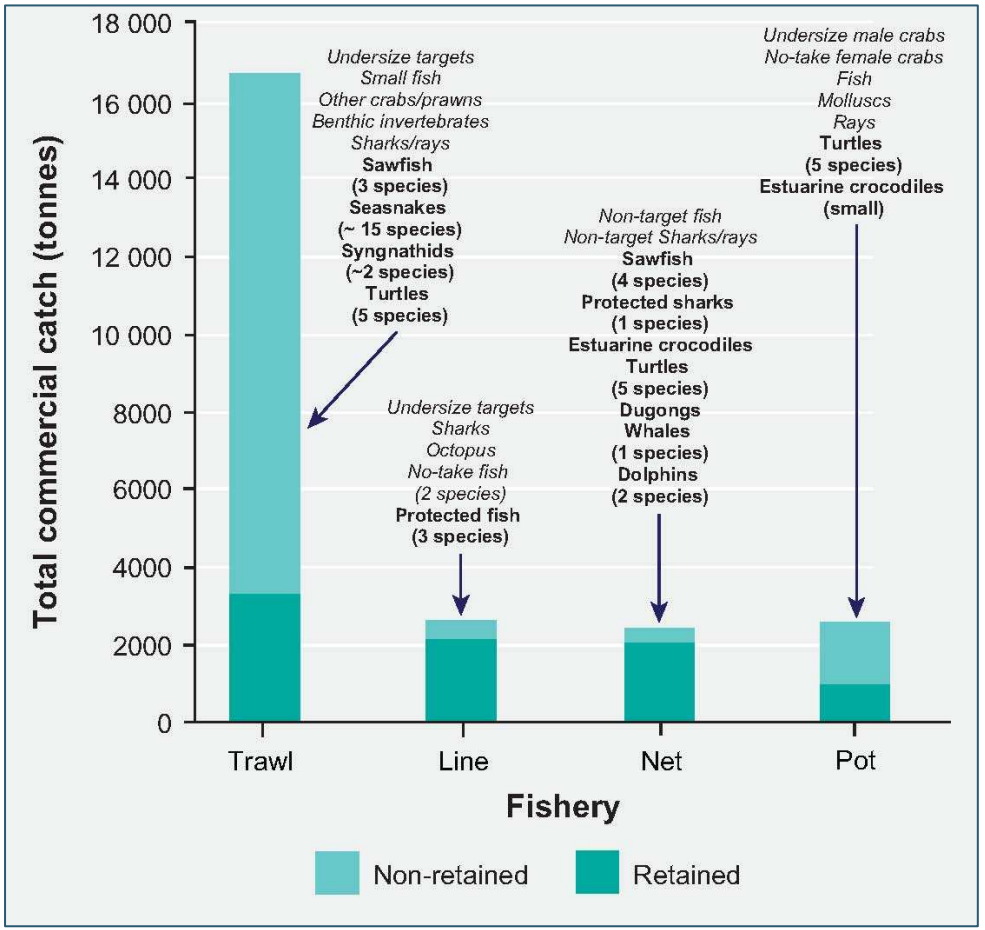
Great Barrier Reef Marine Park Authority

## Highest risks:

- By-catch
- Death of discarded catch
- Fishing in fish spawning aggregations



# Coastal development

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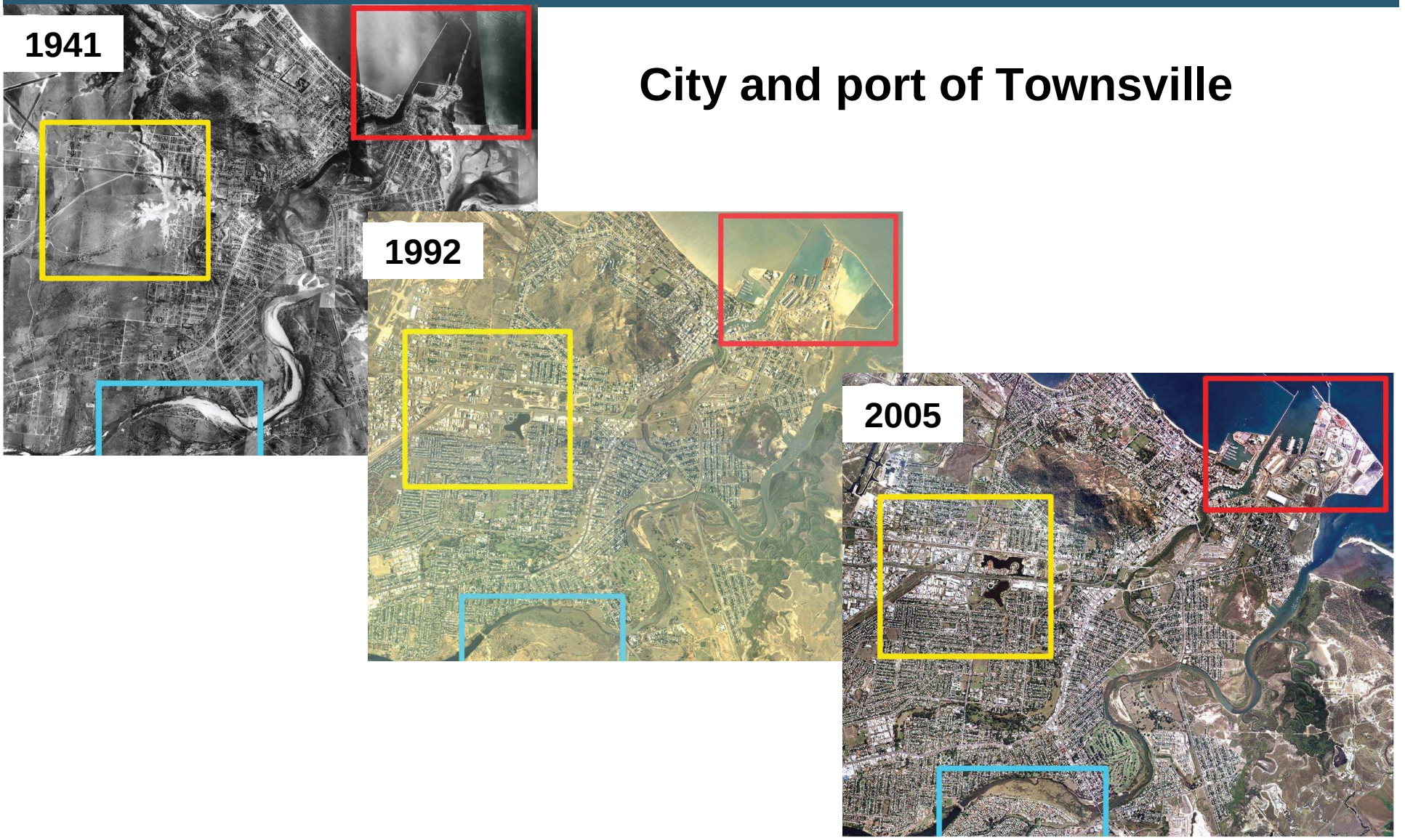
## City and port of Townsville



# Existing protection and management

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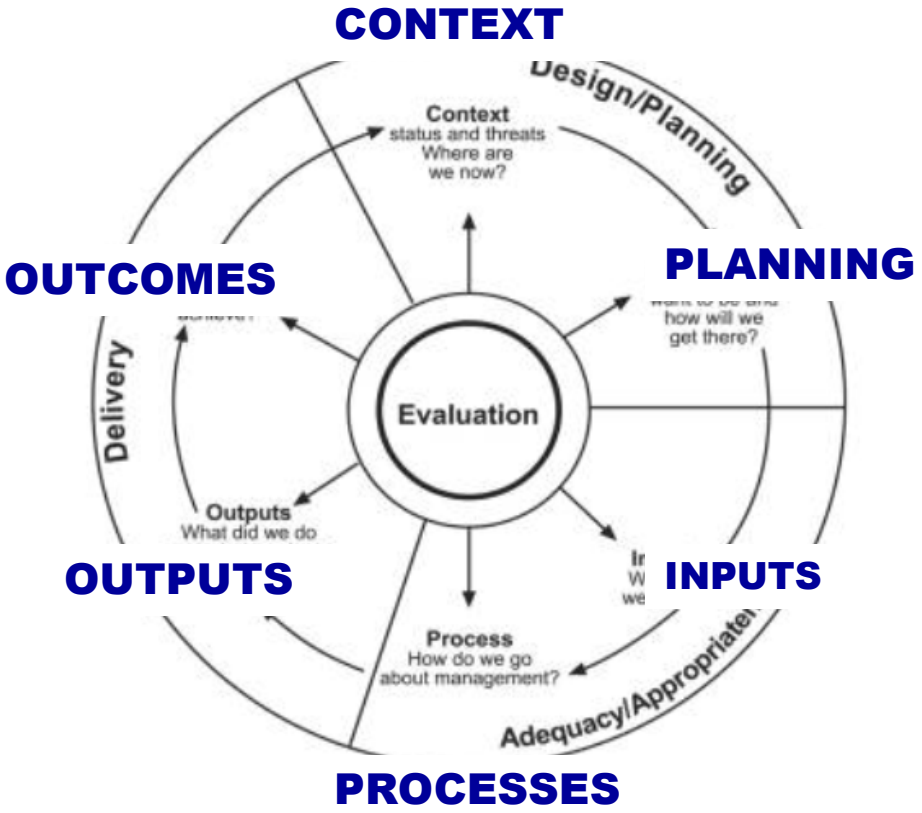
- All management, not just by GBRMPA
- Independent assessment (by 2 internationally recognised experts)
- High level review of 12 key management topics
- Input from Queensland and Australian Government agencies



# 12 management topics

UNDER EMBARGO UNTIL TABLED IN AUSTRALIAN PARLIAMENT

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- biodiversity protection
- heritage

- water quality
- climate change
- coastal development

- commercial marine tourism
- defence
- fishing (commercial and recreational)
- ports and shipping
- recreation (not including fishing)
- scientific research
- traditional use of marine resources


Context
Planning
Inputs
Processes
Outputs
Outcomes
Coastal development
Water quality
Fishing
Climate change
Traditional Use (some)
Recreation (not incl fishing)
Biodiversity protection
Heritage
Ports and shipping
Commercial marine tourism
Defence
Scientific research (some)
Management effectiveness
Very good
Good
Poor
Very poor

# Outlook Report

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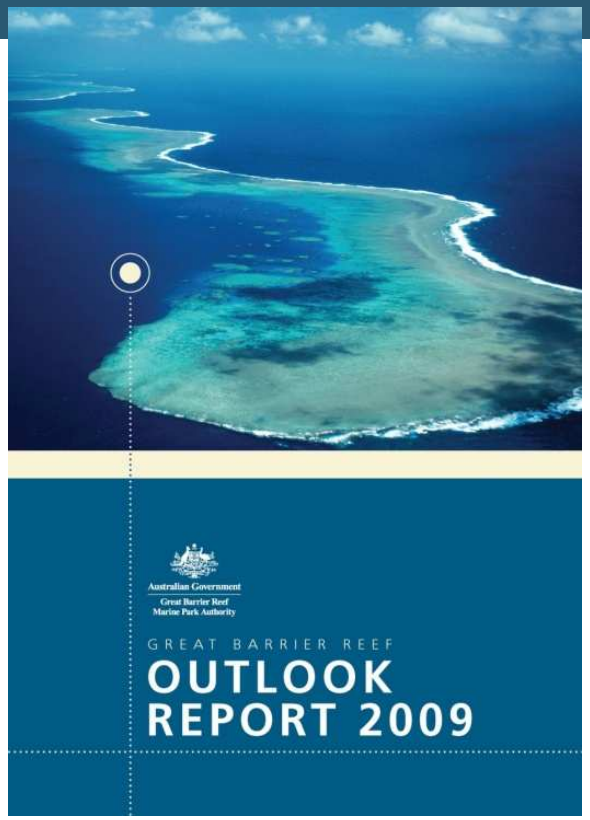
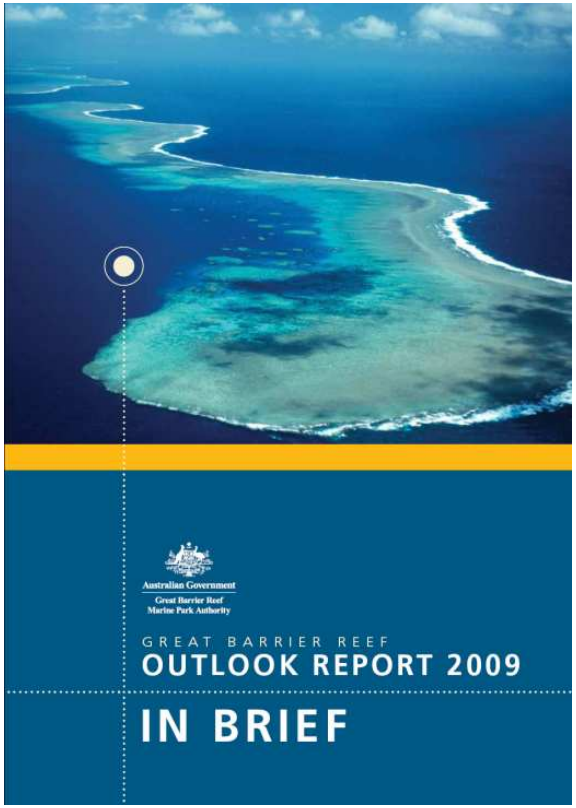
Great Barrier Reef
Marine Park Authority





GREAT BARRIER REEF
OUTLOOK REPORT 2009
Information Sheet

## Overview

**What is the Outlook Report and why was it produced?**
A recommendation of the 2006 *Review of the Great Barrier Reef Marine Park Act 1975* was to prepare a five-yearly Outlook Report for the Great Barrier Reef. The aim of the Outlook Report is to provide a regular and reliable means of assessing performance in an accountable and transparent manner.

The Report assesses the current state of the Great Barrier Reef ecosystem's environmental, social and economic values, examines the pressures and current responses and finally considers the likely outlook.

**How were the assessment topics chosen?**
The assessment topics are the eight assessments required by the Act, with each assessment forming a chapter of the Report. For each of the assessments required under the Act, a set of Assessment Criteria allow an ordered analysis of the available evidence. An overall grade for each Assessment Criterion is provided, based on a series of grading statements. This approach has been developed specifically for the Great Barrier Reef Outlook Report to meet the legislative requirements. It is intended that future Outlook Reports will follow the same process so that changes and trends can be tracked over time.

**How was it developed?**
The Outlook Report was prepared by the Great Barrier Reef Marine Park Authority using the best available information as at December 2008. No new research was undertaken as part of developing the Report; rather, the evidence used was derived from existing research and information sources. A number of Australian and Queensland Government agencies, researchers, industry representatives, interest groups and the community contributed to the development of the Report.

Two experts in protected area management, monitoring and evaluation, public policy and governance were commissioned to undertake an independent assessment of existing protection and management. Their report forms the basis of the assessment of existing measures to protect and manage the Great Barrier Reef ecosystem.

**Was it independently reviewed?**
Yes, four reviewers appointed by the Minister for the Environment, Heritage and the Arts independently reviewed the contents of the Report. These reviewers are recognised national and international experts in their fields.

**Are there recommendations?**
No. While the Outlook Report presents a comprehensive and frank assessment of the current state and likely future of the Great Barrier Reef, it does not offer recommendations for solutions to the issues raised. These responses will come

**What is the outlook for the Great Barrier Reef ecosystem?**
While the Great Barrier Reef is recognised as one of the world's best managed reefs and is likely to survive better under the pressure of accumulating risks than most reef ecosystems, the Outlook Report identifies that the current long-term outlook for the Great Barrier Reef is poor.

Unavoidably future predictions of climate change dominate most aspects of the Great Barrier Reef's outlook over the next few decades. Decisions made in the next several years are likely to determine its long-term future. The future outlook for the Great Barrier Reef will depend to a large degree, on the extent to which climate change is addressed worldwide and on the resilience of the ecosystem in the immediate future.

**What are the key threats to the Great Barrier Reef that have been identified in the Outlook Report?**
This first Outlook Report identifies climate change, continued declining water quality from catchment runoff, loss of coastal habitats from coastal development and a small number of impacts from fishing and illegal fishing and poaching as the priority issues reducing the resilience of the Great Barrier Reef.

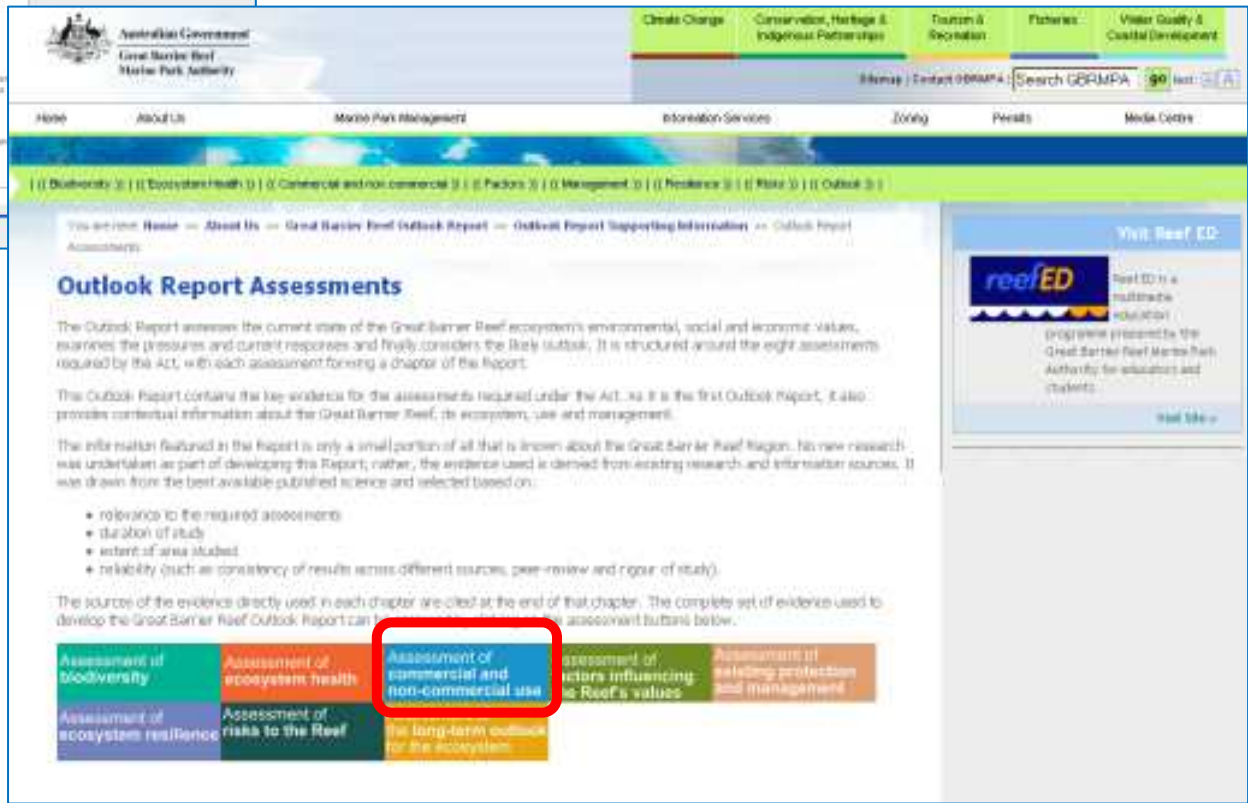
**Does this Report mean that zoning in the Marine Park will change?**
No. Zoning is one of many management arrangements to ensure the Great Barrier Reef Marine Park is used sustainably. The current Zoning Plan commenced on 1 July 2004 and the *Great Barrier Reef Marine Park Act 1975* states that it cannot be reviewed until at least July 2011. There is no planned review of, or statutory requirement to review the zoning of the Great Barrier Reef Marine Park in 2011. The decision to make changes after this time rests with the Australian Government's Environment Minister.

**How effective is the existing management of the Reef?**
The Great Barrier Reef Marine Park is a multi-use Marine Park and is considered by many to be a leading example of world's best practice management. However, the effectiveness of management is challenged because complex factors that have their origin beyond the Great Barrier Reef Region, namely climate change, catchment runoff and coastal development cause some of the highest risks to the ecosystem. These factors are playing an increasing role in determining the condition and future of the Great Barrier Reef.

Both the Australian and Queensland Government have direct legislative responsibilities to the Great Barrier Reef

# Outlook on-line

Australian Government
Great Barrier Reef Marine Park Authority


**Direct 'hyperlink' access to 600 evidence pages with citations**

# COMMERCIAL AND NON-COMMERCIAL USE

## CHAPTER FOUR

Almost all commercial and non-commercial uses of the Great Barrier Reef Region are dependent on the biodiversity and health of its ecosystem. Use occurs across the ler and breadth of the ecosystem with most use and impact concentrated inshore, near developed coasts and on coral reef habitats. The current state and trends of most use are known, with fluctuations largely determined by global factors such as fuel prices, human health issues and economic development. There are some concerns about localised impacts and effects on some species with potential flow on effects to some ecological processes.

Uses of the Great Barrier Reef are economically important to regional communities and tourism is economically important nationally. They provide income to and employm for local industries and are an integral component of coastal communities. Traditional Owner aspirations are being increasingly recognised and formalised in law. Howeve they are also being increasingly impacted by other activities occurring in the Great Barrier Reef and along the adjacent coastal zone.

Declines in many coral reef ecosystems around the world are likely to increase the commercial and noncommercial value placed on components of the Great Barrier Reef potentially alter use patterns in the future. Overall trends of use of the Great Barrier Reef are difficult to predict because each use is shifting at different rates and in respc to different drivers. The future cumulative effects of all use and the ecosystem-level impacts are poorly understood.



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Chapter 4 [4.1Mb]

# Fishing

## State and trends

- Reef recollections: an oral history of the Great Barrier Reef: fishing [1.1Mb]
- Fisheries: location of operations
- Fisheries: catch information
- Commercial line fishing: spatial distribution of 2007 catch (grids)
- Commercial trawl fishing: spatial distribution of 2007 catch (grids)
- Commercial net fishing: spatial distribution of 2007 catch (grids)
- Commercial crab fishing: spatial distribution of 2007 catch (grids)
- Commercial fishing: regional representation of net, trawl, line, crab catch in 2007
- Commercial fishing otter trawl catch trends
- Commercial fishing line (combined) catch trends
- Commercial fishing net catch trends
- Commercial fishing crab (pot) catch trends
- Commercial fishing spanner crab catch trends
- Participation in recreational fishing
- Recreational fishing - National Survey
- Recreational fishing effort proxy on GBR Coast
- Recreational fishing effort proxy on GBR Coast II
- Recreational fishing estimated GBR area catch
- Recreational fishing use (CapReef)
- Charter fishing regional charter catch
- The national recreational and indigenous fishing survey
- FAO global trends in wild catch
- World crude oil prices 1997 to 2008

## Management

- Commercial fishing: total gross value product (GVP) versus primary licences per fishery for 2007
- Fisheries: legislative management arrangements
- Fisheries: other management tools
- Fisheries: information systems
- The Great Barrier Reef Marine Park Zoning Plan
- Implementation of WTO conditions and recommendations from the latest EPBC assessment: progress by fishery
- East coast fin fish fishery independent review
- Fish spawning aggregation protection

## Benefits

Fishing provides opportunities for recreation, resources for the seafood industry, and generates regional economic value.

- Value of GBR commercial fisheries
- Assessment of social characteristics of Queensland's recreational fishers

## Impacts

There is limited information about many targeted species and of the survival success of discarded species resulting in a poor understanding of the ecosystem e
fishing

# Main reasons for effective management

Australian Government
Great Barrier Reef
Marine Park Authority

- political support
- a sound governance/legislative framework
- ecosystem-level management (EBM)… including management influence over a wider context than just the Federal Marine Park
- well developed/integrated management with all relevant Federal & State agencies
- ZP provides sound objective framework for mgt
- widespread consensus that the GBR is important, with many industries depending upon its health
- effective research & monitoring programs, prioritised to provide information for management

# Key strategies to increase the resilience of the GBR

1. Improve water quality *(Reef Water Quality Protection Plan addressing runoff, land use, etc)*
2. Address coastal developments *to minimize downstream impacts*
3. Continue to protect biodiversity *(develop Biodiversity Strategy; demonstrating EBM)*
4. Ensure sustainable fisheries *(Queensland Fisheries Management Plans, WTOs)*
5. Develop sound policy re effects of climate change *(Climate Change Action Plan; Adaptation Plans, Bleaching Response)*

# The main factors for the success of the rezoning?

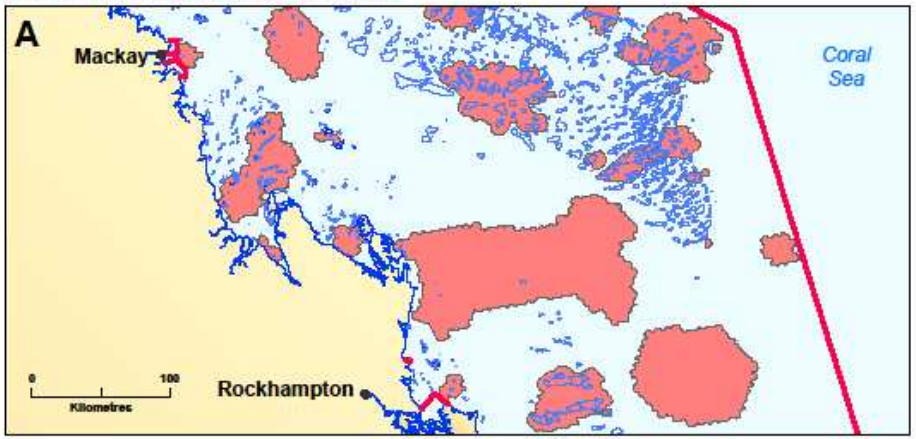
Australian Government
Great Barrier Reef Marine Park Authority

The successful rezoning outcome relied heavily on:

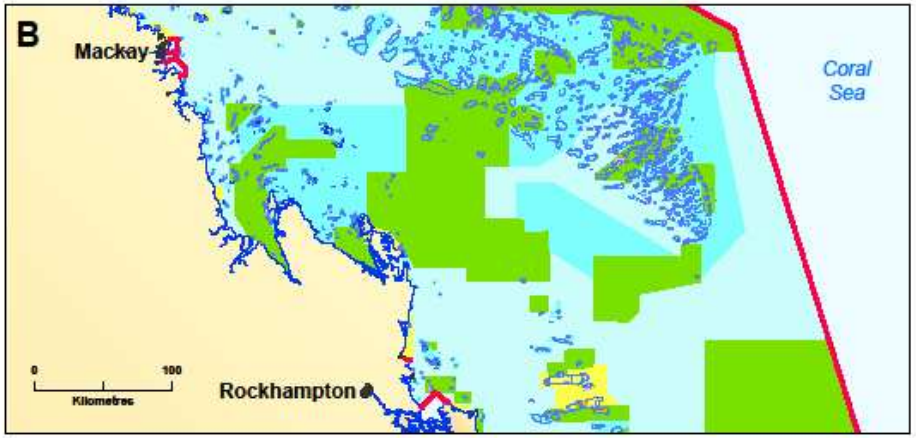
- Using best available scientific knowledge
- High level of public participation
- Effective leadership *(within agency & political)*
- Consequent socio-political support.

- All four aspects were essential, but the importance of the latter three cannot be emphasised enough.

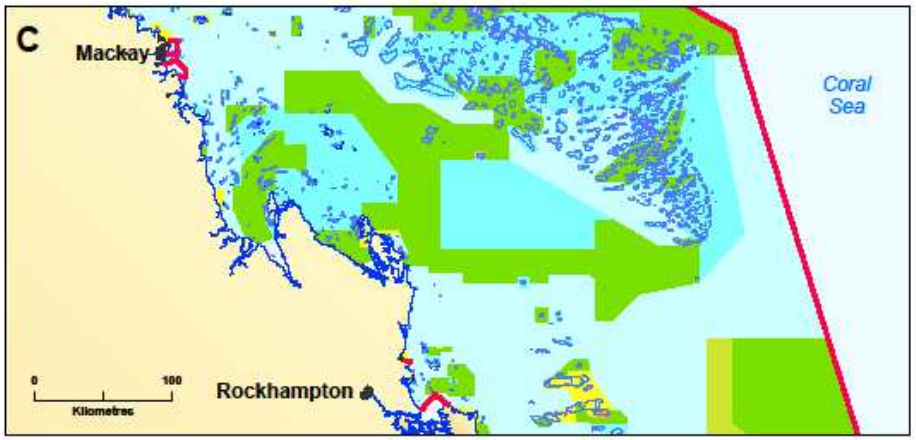
DRAFT - GBRMPA Internal Planning Purposes Only




**Best output from MarXan**




**Draft Zoning Plan**




**Final Zoning Plan**

# Further lessons for effective management

Australian Government
Great Barrier Reef Marine Park Authority

- **We manage the users, rarely the environment**
- ***"One size does not fit all"***
- **Need clear objectives (nested) for management *(how do you know if you are managing successfully?)***
- **It took decades to get to the level of protection currently in GBR**
- **It's not about percentages – rather a specific approach to management**

# Further lessons for effective management

Australian Government
Great Barrier Reef Marine Park Authority

- Shifting baselines
- EBM is not the same as EBFM
- Effective monitoring (LTMP) and enforcement/ compliance are important – but equally so are appropriate comms/ education and stakeholder engagement
- Set up costs are only the beginning – ongoing costs
- IUCN categories (supplementary guidelines for MPAs)

Australian Government
Great Barrier Reef
Marine Park Authority

# *Thank you*

For more information:

www.gbrmpa.gov.au