

Threats to the Ecosystem	Risk Parameter		Logic for parameter listing	Risk Value
	Likelihood	Consequence		
Anchoring on coral by small vessels	Almost certain	Minor	Frequency of inappropriate small (less than 10 m) boat anchoring occurs periodically - generally dependent on weather and holidays. Some localised more serious impacts expected but, at a reef-wide scale, the extent of damage is very small.	Medium
Artificial barriers to riverine and estuarine flow (e.g. dams, weirs, breakwalls and gates)	Almost certain	Minor	Dams and weirs exist on nearly every major waterway system entering the Great Barrier Reef. Variable water flows have local impacts	Medium
Boat strike leading to death in species of conservation concern	Likely	Minor	There are frequent small vessel strikes on turtle and dugong (although many remain unreported). Non-natural mortality of species of recognised conservation interest, particularly dugong and turtles, reduces the ability of local populations to recover.	Medium
Clearing or modifying wetlands, mangroves and other coastal habitats	Almost certain	Moderate	Clearing of mangroves, wetlands and other coastal habitats occurs regularly along the Great Barrier Reef coast. Modification of mangroves, wetlands and other coastal habitats at the local level alters coastal processes, can threaten species of conservation interest, affect fish and invertebrate life cycles and reduce the quality of water entering the ecosystem.	High
Climate change induced altered cyclone activity	Possible	Moderate	There is usually a cyclone affecting the Great Barrier Reef and adjacent coast each year but not at any one location more than about 1 in 10 years Cyclones regularly devastate coral and other communities at a local level and there is no evidence of changes in frequency.	Medium
Climate change induced altered ocean currents	Unlikely	Major	Changes in ocean currents as a consequence of climate change are not expected in the near future. Altered ocean processes can affect life cycles, including recruitment, of many species.	Medium
Death of discarded species during fishing or collecting	Almost certain	Moderate	For every one tonne of fisheries catch retained, there are almost two tonnes not retained. The effects are widespread.	High
Dredging and dumping of spoil	Likely	Minor	Major dredging events (more than 500,000 m ³) occur within the Great Barrier Reef every year. Nature and scale of dredging can result in significant localised effects.	Medium
Extraction of detritivores by fishing (eg. prawns and sea cucumbers)	Almost certain	Minor	The extraction of prawns and, to a lesser extent sea cucumbers, is ongoing. Detritivores play an important role in maintaining the healthy ecological processes.	Medium
Extraction of filter feeders by fishing (eg. scallops)	Almost certain	Minor	The extraction of filter feeders, such as scallops, is ongoing. Demersal filter feeders play an important role in maintaining the healthy ecological processes	Medium
Extraction of herbivores by fishing	Unlikely	Major	Fishing for herbivorous fish is not a regularly occurring activity on the Great Barrier Reef. If fishing targeted herbivorous fish then wide spread effects are likely to occur	Medium
Extraction of lower order predators by fishing (eg. coral trout)	Almost certain	Minor	Line fishing and netting for lower order predators (such as coral trout, mackerel) occurs regularly. There are significant differences between populations in "no take" zones compared to those where fishing is allowed - with flow-on effects through the ecosystem. Recovery would be prompt.	Medium
Extraction of top order predators by fishing (eg. sharks)	Almost certain	Major	Netting for sharks is undertaken within the Great Barrier Reef region on a regular basis. Top predators are a key component in keeping an ecosystem healthy and the ecological impacts of their removal are not well understood.	Very High
Fishing in unprotected fish spawning aggregations	Likely	Moderate	Most fish spawning aggregations are protected but fishing can still occur in unprotected aggregations. Fishing in a spawning aggregation can significantly impact a fish population in a localised area.	High
Grounding of large vessels	Possible	Moderate	Groundings of large vessels (more than 50 m) do not occur every year. Long recovery periods for grounding scars can be expected but the area affected is very small.	Medium
Grounding of small vessels	Likely	Insignificant	There are many small (less than 10 m) vessel groundings each year. Some localised impacts expected but, overall, the extent of damage is very small.	Low
Illegal fishing or collecting (foreign or domestic)	Almost certain	Moderate	Despite strong enforcement programs, illegal fishing is known to occur. Illegal fishing is affecting fish populations within some no-take areas. For some species (e.g. coral trout), recovery would be rapid.	High

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Incidental catch during fishing of species of conservation concern	Likely	Major	In the net, pot and trawl fisheries a number of species of recognised conservation interest are caught each year. Non-natural mortality of species of recognised conservation interest, particularly dugong and turtles, reduces the ability of local populations to recover.	High
Increasing sea temperature	Almost certain	Catastrophic	Evidence is now irrefutable that sea temperature rise as a result of climate change is occurring. Rising sea surface temperatures (1 to 3 deg. C warmer than the present average temperature by 2100) will lead to repeated, intense and/or sustained bleaching which will kill coral and thus alter the ecological balance of coral reef habitats with flow-on effects to other habitats.	Very High
Ingestion of or entanglement in marine debris causing death in species of conservation concern	Likely	Moderate	There are frequent reports of species of recognised conservation interest dying because of litter they have ingested or because of entanglement in debris. Non-natural mortality of species of recognised conservation interest, particularly dugong and turtles, reduces the ability of populations to recover.	High
Introduction of exotic species and diseases from aquaculture operations	Possible	Moderate	Establishment of exotic pests and diseases as an outcome of escape has occurred only rarely in the Great Barrier Reef . The introduction could have significant effect on a local or wider area.	Medium
Introduction of exotic species and diseases through use of imported bait	Unlikely	Moderate	Exotic pests as an outcome of escape of introduced species has occurred only rarely in the Great Barrier Reef . The introduction could have significant effect on a local or wider area.	Low
Introduction of exotic species and diseases through vessel ballast water discharge	Possible	Moderate	Ballast water is regularly exchanged in Great Barrier Reef waters. The introduction could have significant effect on a local or wider area.	Medium
Introduction of exotic species and diseases through vessel hull fouling	Possible	Moderate	Exotic pests as an outcome of vessel hull fouling have, in the past, been introduced into the Great Barrier Reef. The introduction could have significant effect on a local or wider area.	Medium
Large chemical spill	Unlikely	Major	Major chemical spills (not oil) arising from vessel collision or grounding are very unlikely events. Effects of a major chemical spill (e.g. one of more than 10 tonnes) similar to, and possibly exceeding, oil spills can be anticipated.	Medium
Large oil spill	Unlikely	Major	There has been only one major oil spill (>20 tonnes) in the Great Barrier Reef in the last 20 years. A major oil spill (eg. one of more than 10 tonnes) will cause extensive damage to all parts of the affected ecosystem with very long-lasting effects.	Medium
Nutrients from catchment runoff	Almost certain	Major	Continuous flow from some river systems with most nutrients introduced in wet season flood events. Impact (at 2007 levels) is significant, especially in inshore areas, with lengthy recovery periods envisaged.	Very High
Ocean acidification	Almost certain	Catastrophic	Evidence is now irrefutable that increasing ocean acidity as a consequence of climate change is occurring. Implications of increasing ocean acidity (e.g. a pH decrease of at least 0.4 by 2100 as currently predicted) for organisms that produce calcium carbonate skeletons will be profound.	Very High
Outbreak of coral disease	Possible	Minor	A range of coral disease is now present on the Great Barrier Reef. A lack of knowledge and management experience may mean that an outbreak could cause damage at a local or, perhaps, wider level.	Low
Outbreak of crown-of-thorns starfish	Possible	Major	The crown-of-thorns-starfish outbreaks appear to follow a cycle of about ten years, generally moving from north to south along the Great Barrier Reef. Past outbreaks have affected large areas of the Great Barrier Reef, more so in areas open to fishing or areas exposed to degraded water quality.	High
Outbreak of <i>Drupella</i> species	Possible	Minor	A major outbreak of <i>Drupella</i> has not been recorded on the Great Barrier Reef to date. Damage from <i>Drupella</i> is not known to be impacting the Great Barrier Reef except at a very few local areas.	Low
Pesticides (including herbicides) from catchment runoff	Almost certain	Major	Continuous flow from some river systems with most pollutants introduced in wet season flood events. Impact (at 2007 levels) is significant, especially in inshore areas, with lengthy recovery periods envisaged.	Very High
Physical impacts of fishing	Almost certain	Minor	Trawling can occur in only 34 per cent of the Great Barrier Reef Marine Park. Trawling occurs in dynamic sandy and muddy habitats that are likely to be disturbed naturally.	Medium

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Physical impacts of snorkelling and diving activity	Almost certain	Insignificant	Diving and snorkelling are ongoing and occur regularly. Impact is widespread but very small and very localised.	Low
Poaching and illegal harvesting of species of conservation concern	Likely	Moderate	Very hard to quantify but illegal harvesting occurs many times per year. Non-natural mortality of species of recognised conservation interest, particularly dugong and turtles, reduces the ability of local populations to recover.	High
Sea level rise	Likely	Catastrophic	Evidence is now irrefutable that sea level rise as a result of climate change is occurring Rising sea level (currently rising at 3mm per year) could lead to large redistributions of coastal and island habitats and the animals and plants that depend on them.	Very High
Sediments from catchment runoff	Almost certain	Moderate	Continuous flow from some river systems with most sediments introduced in wet season flood events. Effect (at 2007 levels) is widespread and impacts are increasing in inshore areas.	High
Small chemical spill	Almost certain	Insignificant	Small chemical spills (cleaners, paints, cooking products, etc) from ships and small vessels are commonplace. Low volume of spills (eg. less than 10 litres) and dilution effects (other than in confined areas) will reduce impact to a very low level.	Low
Small oil spill	Almost certain	Insignificant	Small oil spills (cooking oil, bilge oil, outboard fuel, etc) from ships and small vessels are commonplace. Low volume of spills (eg. less than 10 litres) and dilution effects (other than in confined areas) will reduce impact to a very low level.	Low
Traditional hunting of species of conservation concern	Likely	Minor	Traditional hunting of dugongs and marine turtles occurs on a regular basis. Traditional hunting, particularly given the increase in cooperative management arrangements now in place, affects local areas.	Medium
Waste discharge from a vessel (including litter and sewage)	Almost certain	Minor	Litter and sewage outfall from ships and small vessels is ongoing. Low volumes, dilution effects and limited sewage discharge near reefs means effects are minimal.	Medium