Supplementary material: List of organisations invited to participate in this research. Respondents either attended a workshop in Townsville on 25th March 2011 or Cairns on 01 April 2011, or were interviewed before the end of April 2011. Some organisations were represented by more than one respondent.

Stakeholder organisation	**Participation (Y/N)**
Agric-Science Queensland (DEEDI now QDAFF)	Y
Cairns and Far North Environment Centre (CAFNEC)	Y
Cairns Marine	Y
Cairns Regional Council	Y
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Y
EcoFishers Queensland	Y
Fisheries Research and Development Corporation (FRDC)	Y
Fisheries Queensland (DEEDI now QDAFF)	Y
Great Barrier Reef Marine Park Authority (GBRMPA)	N
Mackay Tourism	Y
North Queensland Dry Tropics (NQDT)	N
Ocean Watch	Y
Queensland Centre of Excellence for Climate Change (DERM now DEHP)	Y
Queensland Parks and Wildlife Service (DERM now DEHP)	Y
Queensland Seafood Industry Association (QSIA)	Y
Queensland Tourism Industry Council (QTIC)	Y
Sunfish	Y
Terrain NRM	N
The Association of Marine Park Operators (AMPTO)	N
Traditional Owners	N
Tourism Queensland	Y
Tourism Whitsundays	N
Townsville City Council	N
WWF Australia	N

Supplementary material: Projections of climate change effects on coral reef and coastal ecosystems based on empirical observations of impacts from climate variability and extreme events.

Climate change	**Impact on ecosystems**	**References**
Ocean warming	Corals • Thermal tolerances of reef-building corals exceeded annually by ~2020 • Increased frequency and intensity of coral bleaching and associated mortality (similar to 1998 event). • Heat-sensitive corals more susceptible • Survival and recovery possible, especially of fast-growing species, but reduced growth, calcification and fecundity, and greater incidence of disease. • Significant changes in community structure. Fish • Impacted by changes to coral habitats (cover and structure). • Coral-dependent species most heavily affected. • Coral-associated species experience lagged but long-term effects. • Herbivores and invertivores may benefit initially but will be affected in the long term by changes to reef structure. • Direct temperature effects may increase growth and productivity in some species (larval phases). • Increased variability in recruitment. • Already evidence of distributional shifts. • Unlikely temperature has lethal effects. • Changes to fish community composition. • Loss of biodiversity. Mangroves (air temperature increases) • Increased productivity and expanded ranges if temperatures do not exceed thresholds.	Hoegh-Guldberg, 1999 Hughes et al., 2003 Graham et al., 2006 Graham et al., 2007 Gilman et al., 2008 Munday et al., 2008 Pratchett et al., 2008 Wilson et al., 2009 Fulton 2011 Pandolfi et al., 2011 Anthony et al., 2012
Acidification (more impacts post-2050)	Corals • Reduced calcification rates for corals and other calcifying organisms. • Decreased growth rate. • Reduced skeletal density. Greater risk of storm damage. • Possible erosion by reef grazing fish and invertebrates and decline in structural complexity. • Reduced potential for recovery Fish • Impacted by changes to coral habitats, as above. • Possible direct effects on fish embryos, larvae and juveniles	Hoegh-Guldberg et al., 2007 Munday et al., 2008 De'ath et al., 2009 Pandolfi et al., 2011

Variable rainfall	• Increased incidence of floods and droughts • Increased exposure to freshwater run-off during flood events • Potential exposure to nutrient-enriched water • Potential exposure to increased siltation Corals (where nutrient and siltation loads increase) • Increased sensitivity to bleaching • Promotes algal growth in contexts of reduced grazing • Reduced potential for recovery Fish (where run-off and nutrient loads increase) • Potential increases in planktonic food availability in inshore reefs • Increased abundance of estuarine species, e.g., barramundi, mud crab. Mangroves and seagrasses • Expected to impact mangrove growth and spatial distribution. Decreased precipitation could decrease productivity, growth and seedling survival leading to composition change, diversity loss, and reduced mangrove area. Increased rainfall could increase growth, area, and diversity of species. • Declining water quality identified as a cause of seagrass loss	Robins et al., 2005 Mumby et al., 2006 Hoegh-Guldberg et al. 2007 McKinnon et al. 2007 Munday et al., 2008 Gilman et al., 2008 Waycott et al., 2009 Wooldridge, 2009 Gillson, 2011 Pandolfi et al., 2011 Marshall and Marshall, 2012
Increased intensity of cyclones	• Impacts are highly localized Corals • Coral cover loss (more than bleaching events) • Increase in algal cover. • Upheaval or displacement of large coral heads. • Recovery on exposed sites is slow. Fish • Temporary decline of some reef-associated species though evidence is mixed (no decline in Coral Trout abundance following TC Hamish). • Some increase in abundance of scavengers. • Temporary increase in biodiversity in some cases. • Decline in Coral Trout catches (~ 30% following TC Hamish). • Recovery possible, but takes up to a year. Mangroves • Increased damage through defoliation and tree mortality. • Affected by soil erosion and deposition.	Gilman et al., 2008 Munday et al., 2008 Wilson et al., 2009 Tobin et al., 2010 Sweatman et al., 2011 Woolsey et al., 2012 Marshall and Marshall, 2012

Sea-level rise	Corals • Reefs may 'drown' under rapid SLR (~0.5m by 2100) Fish • Unlikely to be affected by SLR <1m Coastal habitat • General decline in wetland communities • Identified as the greatest climate change-related threat to area and health of mangroves and other tidal wetlands • Mangroves able to migrate inland if not constrained by coastal development	Hoegh-Guldberg et al. 2007 Gilman et al., 2008 Munday et al., 2008 Traill et al., 2011

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