APPENDIX 2

Table A2.1. Data sets used and a description of the contribution of each data set to a component of ecosystem function.

Data set	Data Set Reference	Rationale	Comments
Gas Regulation			
Good Grass Cover	Scarth et al. (2006)	Grassy vegetation plays a role in evaporation and thermal balance (Reynolds and Frame 2005).	Future versions could include shallow seas to acknowledge role in the regulation of oxygen, carbon dioxide, methane, and also trace gases such as methyl sulphides which are very important for cloud formation, and gases of iodine and selenium which is the main distribution network for those micro nutrients to go inland (Neil Tindale *pers. comm*., 2007). Further investigations will occur into how soil impacts on gas regulation, particularly on carbon sequestration. Agricultural lands could also be included particularly where these soils are under trees and good grass cover.
Woody Vegetation	(Department of Natural Resources and Mines 2005)	Trees contribute to the improvement of air quality (Krieger 2001). Other scientific information suggests that streams are very important sites for carbon sequestration and for nitrogen regulation.	
Woody Vegetation on Streams	Mooney and Petter (unpublished manuscript)		
Wetlands		Wetlands contribute to the process of carbon sequestration by removing CO_2 from the atmosphere (Whiting and Chanton 2001).	
Shallow Sea	Mooney and Petter (unpublished manuscript)	Gas exchange of CO_2, O_2, and CH_4 occurs between the atmosphere and the ocean's surface (Scholes et al. 2003).	
Sea Surface	Mooney and Petter (unpublished manuscript)		
Tidal Zone	Mooney and Petter (unpublished manuscript)	Tidal zones contribute to gas regulation (Batker et al. 2005).	
Climate Regulation			
Good Grass Cover	Scarth et al. (2006)	The presence or absence of groundcover influences climate regulation and temperatures near the ground (Geiger 1965).	Aspect, hill slope, shade, and onshore sea breezes would have been included if data was available. Veg

Data set	Data Set Reference	Rationale	Comments
Woody Vegetation	Scarth et al. (2006)	Trees create an area where climate regulation occurs under the canopy (Geiger 1965).	mapping was used as a surrogate. There is evidence that modified systems such as cropping/irrigated land can have a cooling effect (Abel et al. 1997), as can water bodies and dams (Park 2001). The good grass cover and woody veg layers have been used as surrogates for climate regulation. This is distinct from gas and CO^2 regulation (Sturges et al. 2001), and other elements of climate regulation which are covered by other functions.
Rainfall	Mooney and Petter (unpublished manuscript)	Rainfall is an indicator of climate variability (Lough 1994).	
Sea Surface	Mooney and Petter (unpublished manuscript)	Oceans play a key role in the global carbon cycle and climate regulation (Chisholm et al. 2001).	
Disturbance Regulation			
Mangroves, Samphire and Salt Marshes	EPA (Young and Dillewaard 1999)	Mangroves provide buffers to floods and storm surges and protect coast lines from erosion (Tomlinson 1994). Mangroves provide storm protection (Bennett and Alcamo 2004). Salt marshes provide protection against disturbance events (Laegdsgaard 2006).	Evidence from the Millennium Ecosystem Assessment Report on Ecosystems and Human Well-Being suggests that reefs provide storm protection and can reduce impacts of hurricanes and tidal waves (Bennett and Alcamo 2004).
Good Grass Cover	Scarth et al. (2006)	Contributes to dune and bank stabilization (United States Army Corps of Engineers 1989).	
Land Below 5 Metres HAT	NASA Shuttle Radar Typography Mission (Rabus et al. 2003), with DNR&M for use in this project (P Scarth 2007, pers. comm., 22 March).	Coastal areas within this layer have been exposed to disturbances in the past. For example, there is geological evidence that a large tsunami previously hit the south east coast of Australia (Dawson and Shi 2000), indicating that this area is prone to possible further disturbances.	

Data set	Data Set Reference	Rationale	Comments
Coastal Dunes	Mooney and Petter (unpublished manuscript)	Dunes provide protection from coastal erosion processes including wind, waves and storm surges (Zimmermann et al. 2005).	
Floodplain and Coastal Deposits	Mooney and Petter (unpublished manuscript)	Floodplains reduce flooding by spreading and slowing stream flows (Murphy and Nance 2000), and absorbing and holding water during storms. This also recharges local aquifers, reducing downstream flooding (Rapport et al. 1998).	
High Rainfall	Mooney and Petter (unpublished manuscript)	High intensity rainfall leads to runoff, which can lead to flooding and cause erosion (Suppiah and Hennessy 1998). Therefore high intensity rainfall is representative of areas where disturbances are likely to occur.	
SEQ Water Bodies	Department of Environment and Resource Management (DERM 2008)	Lakes and dams store water and can reduce flooding by taking on excess flood waters and runoff thereby reducing their impact (Neal et al. 2007).	
Woody Vegetation	DNR&M (2005)	Trees provide disturbance regulation by providing shelter from strong winds and conserving soils (Abel et al. 1997).	
Woody Vegetation Less than 5 Metres HAT	Mooney and Petter (unpublished manuscript)		
Woody Vegetation on Slopes			
Woody Vegetation on Streams			
Wetlands	DERM (2008)	Wetland vegetation reduces the flow of floods and the wetlands store additional water flows (United States Environmental Protection Agency 2006).	
Islands	DERM (2008)	Islands can buffer mainlands from disturbances such as tsunamis (Hanson et al. 2002).	

Data set	Data Set Reference	Rationale	Comments
Sand and Mud banks	Mooney and Petter (unpublished manuscript)	Sand and mud banks provide protection from coastal erosion during wind, waves and storm surge events (Zimmermann et al. 2005).	
Tidal Zone	Mooney and Petter (unpublished manuscript)	Disturbances along coastal communities are likely to occur in tidal zones (below HAT) (McInnes et al. 2003).	
Water Regulation			
Good Grass Cover	Scarth et al. (2006)	Grass slows down water flows (Land Stewardship Project 2004).	
Good Quality Agricultural Land	Department of Primary Industries (DPI) and Department of Housing, Local Government and Planning (DHLGP, 1993).	Good Quality Agricultural Land includes soils of either high moisture content or high water holding capacity (Department of Primary Industries and Department of Housing, Local Government and Planning1993). Therefore this land provides the function of water regulation by absorbing excess water during high or extended rainfall periods or during flooding.	
Woody Vegetation	Scarth et al. (2006)	Plants absorb water from the soil and convert it into gas (transpiration), reducing soil water levels (Murphy and Nance 2000). Plays a very important filtering role.	
Woody Vegetation on Slopes	Mooney and Petter (unpublished manuscript)		
Woody Vegetation on Streams	Mooney and Petter (unpublished manuscript)		
Floodplain and Coastal Deposits	SEQ Geological Units Database: DNR&M (2002)	Floodplains regulate stream flow and can reduce flooding by slowing stream velocity during peak flows (Murphy and Nance 2000).	
Sand, Gravel above 5 Metres HAT	DNR&M (2002)	Sand and gravels are highly porous and can store and transmit water (Murphy and Nance 2000).	

Data set	Data Set Reference	Rationale	Comments
Wetlands	Environmental Protection Agency (EPA 2008)	Wetland vegetation reduces the flow of floods and the wetland stores additional water flows (United States Environmental Protection Agency 2006).	
Soil Retention			
Good Grass Cover	Scarth et al. (2006)	Groundcover reduces soil erosion (Prosser et al. 2000)	This function refers to the rate at which soil moves around the landscape as opposed to its rate of natural formation.
Woody Vegetation	Scarth et al. (2006)	Forested areas have soils with high stability, soil health, and infiltration rates, and low erodibility (Young 1989).	
Vegetation on Slopes	Mooney and Petter (unpublished manuscript)	Vegetation on slopes reduces erosion rates (Prosser et al. 2000)	
Vegetation on Streams	Mooney and Petter (unpublished manuscript)	Streams with vegetation on surrounding banks are much less prone to erosion than bare stream banks (Beeson and Doyle 1995).	
Nutrient Regulation			
Biodiversity Planning Assessment	Environmental Protection Agency (EPA 2002)	The BPA layer represents areas of remnant vegetation. Remnant native vegetation provides a variety of important ecosystem functions, including nutrient cycling (Parkes et al. 2003).	Southern Moreton Bay is highlighted as an important area for nutrient regulation due to the location of these ecosystems and related biophysical factors. The Wader Habitat layer could also be included in the nutrient regulation function as supported by de Groot et al. (2002: 399)"migration (of birds, fish and mammals) plays an important role in the distribution of nutrients between ecosystems".
Mangroves, Samphire and Salt Marshes	EPA (Young and Dillewaard 1999).	Mangroves are sites of high nutrient cycling (Tomlinson 1994). Salt marshes are nutrient cycling sites (Broome et al. 1988).	
Fish Habitat Areas	(Queensland Fisheries Service-Marine Habitat 2000)	Areas of fish habitat are nutrient cycling sites (Broome et al. 1988).	
Good Grass Cover	Scarth et al. (2006)	Grasses and plants contribute to nutrient cycling in soils (Murphy and Nance 2000).	
Good Quality Agricultural Land	DPI and DHLGP (1993).		
Woody Vegetation	Scarth et al. (2006)		

Data set	Data Set Reference	Rationale	Comments
Managed Forests	Queensland Land Use Mapping Project (QLUMP) (Witte et al. 2006)		
Low Nitrogen, Phosphorus, Total Suspended Solids	WBM Oceanics (2005)	Low levels of nutrients indicate areas where nutrient cycling is occurring (Bormann and Likens 1967).	
Floodplain and Coastal Deposits	DNR&M (2002)	Floodplains are sites where nutrient cycling occurs (Tockner et al. 1999).	
Streams	WBM Oceanics, (2004)	Nutrient cycling occurs in streams (Newbold et al. 1981).	
Woody Vegetation on Streams	Mooney and Petter (unpublished manuscript)	Grasses and plants contribute to nutrient cycling in soils (Murphy and Nance 2000). Nutrient cycling occurs in streams (Newbold et al. 1981).	
Wetlands	EPA (2008)	Wetlands are nutrient cycling sites (Corstanje et al. 2007).	
Shallow Seas	Maritime Safety Queensland (MSQ 2007) US National Geospatial Intelligence Agency (USNGIA 2005)	Nutrient cycling occurs in Shallow Seas (Sturges et al. 2001). Tidal and wave action in combination with export of organic matter, may moderate the accumulation of ephemeral algae and, thus also, render some rocky shore communities relatively resistant to nutrient enrichment (Kraufvelin 2007).	
Sea Surface		Nutrient cycling occurs at the sea surface (Sturges et al. 2001).	
Waste Treatment			
Mangroves, Samphire and Salt Marshes	EPA (Young and Dillewaard 1999)	Mangroves are valuable sites for waste treatment (de Lacerda 2002).	This map focuses on the capacity of the natural systems to assimilate waste which is regarded as excess

Data set	Data Set Reference	Rationale	Comments
Good Grass Cover	Scarth et al. (2006)	Plants provide the ecosystem service of eliminating contaminants from soils (Cunningham et al. 1995).	nutrients rather than the amount of waste processing being carried out as a result of pollution activities. However for example, in wetlands the process of natural water purification that removes pollutants and pesticides from waters is a method of waste treatment or waste assimilation which can be described as an ecosystem function (Cork et al. 2001).
Woody Vegetation	Scarth et al. (2006)	Plants absorb nutrients in waste products, primarily through the roots, and transform the soluble chemical elements, (including water contaminants), into plant tissue (Getter 1999).	
Low Nitrogen, Phosphorus, Total Suspended Solids	WBM Oceanics (2005).	Low levels of nutrients indicate areas where natural waste treatment is effectively occurring (Bormann and Likens 1967).	
Floodplain and Coastal Deposits	MSQ (2007) USNGIA (2005)	Filtration is among the most important ecosystem functions provided by floodplains (Shelton et al. 2001) and is a form of waste treatment.	
Low Total Nitrogen	WBM Oceanics (2005).	Nutrient levels can indicate either good or poor ecosystem health (Bunn et al. 1999), low total nitrogen indicates good ecosystem health, and therefore that waste treatment is naturally occurring in that area (Bormann and Likens 1967).	
Low Total Phosphorus	WBM Oceanics (2005).		
Low Total Suspended Solids	WBM Oceanics (2005).		
Streams		Streams and rivers are areas of natural waste assimilation and treatment (Velz 1970).	
Woody Vegetation on Streams	Mooney and Petter (unpublished manuscript)	Plants provide the ecosystem service of eliminating contaminants from soils (Cunningham et al. 1995).	
Wetlands	EPA (2008)	Wetlands have a higher rate of biological activity than most ecosystems therefore they can transform many of the common pollutants that occur in conventional waste waters into harmless by-products or essential nutrients that can be used for additional biological productivity (Kadlec and Wallace 2008).	

Data set	Data Set Reference	Rationale	Comments
Shallow Seas	MSQ (2007) USNGIA (2005)	Ocean ecosystems provide waste assimilation and treatment of water (Lochte et al. 2003).	
Sea Surface			
Pollination			
Biodiversity Planning Assessment	EPA (2002)	Pollination occurs in areas of remnant vegetation. Remnant vegetation is of high importance to native pollinators (Cunningham et al. 2002).	Future versions will assess the pollination role of fish habitat areas, coral generation areas and areas for generating important shellfish species. A 1-5 kilometre buffer around vegetation was adopted based on the advice from invertebrate and pollination experts regarding the likely ranges of vertebrate and invertebrate pollinators, including native bees (1km), European bees, birds, small gliders (5km) and bats (15, to 50 during drought conditions) (Committee on the Status of Pollinators in North America 2007).
Good Grass Cover	Scarth et al. (2006)	Pollination occurs on grasses and groundcover (Friedman and Harder 2004).	
Wetlands	EPA (2008)	Pollination occurs in wetlands (Cronk and Fennessey 2001).	
Vegetation Corridors	EPA (2002)	Pollination occurs in vegetation (Dafni 1992).	
Heath lands	EPA (2005)	Pollination occurs in heath lands (Dafni 1992).	
Wet Forests		Pollination occurs in forests (Dafni 1992).	
Vegetation Tracts	Mooney and Petter (unpublished manuscript)	Pollination occurs in vegetation (Dafni 1992).	
Biological Control			
Biodiversity Planning Assessment	EPA (2002)	The larger the area of remnant vegetation, the more possibilities native, vulnerable or threatened species have combating against edge effects, predators, meaning the population has a higher resilience (Murcia 1995).	Future versions will develop a surrogate map that reflects plant diversity based on the assumption that higher plant diversity provides more habitat opportunities for beneficial species for pest control.
Vegetation Corridors	EPA (2002)		
Vegetation Tracts	Mooney and Petter (unpublished manuscript)		
Good Grass Cover	Scarth et al. (2006)		
Islands		Distance from mainland protects from exotic and predator species invasions.	

Data set	Data Set Reference	Rationale	Comments
Barrier Effect of Vegetation			
Woody Vegetation	Scarth et al. (2006)	Woody vegetation impedes the movement of airborne substances such as dust and aerosols, enhances air mixing and mitigates noise (Bolund and Hunhammar 1999).	The challenge in defining this function spatially confused the issue, so rather than the focus being on the protection from more noise, the map would identify the assets that generate the noises pleasing to humans such as surf, wind, etc. This approach appears to be supported by Bolund and Hunhammar (1999).
Supporting Habitats			
High Ecosystem Values Aquatic	Moreton Bay Waterways and Catchments Partnership (MBWCP 2005)	Areas with high invertebrate and fish diversity. Moreton Bay is internationally recognised for its high ecosystem values which are essential to maintain habitat for high biodiversity (South East Queensland Healthy Waterways Partnership 2007).	A habitat was deemed to be "supporting" if it possessed enough vegetation or other natural features to sustain some degree of ecosystem function. This is the broadest possible interpretation and is the function map that comes closest to nature conservation mapping whereas the remaining functions are more closely related to anthropocentric service provision. This function is a supporting function for the other functions and therefore services. In summary this map illustrates a broad range of ecosystems with relevant diversity and complexity that can sustain
Biodiversity Planning Assessment	EPA (2002)	The BPA identifies habitat areas in SEQ for a number of species (EPA 2002). Remnant vegetation provides habitat for native species (Parkes et al. 2003).	
Mangroves, Samphire and Salt Marshes	EPA (Young and Dillewaard 1999)	Mangroves are habitat to number of fauna (Tomlinson 1994). Saltmarsh habitats are recognised for their importance to migratory waders under the Ramsar convention, but it is increasingly evident that they are also important to a variety of commercially valuable fish and native mammal species (Laegdsgaard 2006).	

Data set	Data Set Reference	Rationale	Comments
Core Habitat	EPA (2002).	The EPA coordinated expert panels and information to determine the habitat areas in SEQ that are core habitat for endangered, vulnerable and rare (EVR) taxa (EPA 2002).	ecosystem functions that provide a vast range of ecosystem services. This results in the use of a large amount of data. The woody vegetation layer could be included with remnant vegetation masked out to avoid doubling up with layers such as the BPA.
Fish Habitat Areas	Queensland Fisheries Service - Marine Habitat (2000).	Fish habitat areas are recognized as important areas in SEQ (South East Queensland Healthy Waterways Partnership 2007).	
Grey Nurse Shark Habitat	EPA (2006b)	Listed by the EPA as a marine species of conservation significance (EPA 2006b).	
Marine Park Conservation Zone	Queensland Government (1997)	The 'Marine Parks Zoning Plan 1997', identifies important habitat areas in Moreton Bay (Queensland Government 1997).	
Marine Park Habitat Zone	Queensland Government (1997)		
Priority Taxa Non-remnant	EPA (2007b)	Plants provide habitat for fauna (Morrison et al. 2006).	
Reefs	EPA (2006b)	Reef and rocky reef habitats have very high biological importance, and are habitat to numerous fauna (Roberts et al. 2002).	
Rocky Reefs			
Seagrass		Seagrass beds are important habitat areas (Butler and Jernakoff 1999, Coles et al. 2004).	
Special Biodiversity Values	EPA (2002)	Areas of high biodiversity provide habitat for species (Brooks et al. 2002).	
Threatened Species Habitat	EPA (2002)	Data illustrates the habitat areas in SEQ for EVR species (EPA 2002). Remnant vegetation provides habitat for species (Parkes et al. 2003).	
Woody Vegetation on Streams	Mooney and Petter (unpublished manuscript)	"Natural riparian zones are some of the most diverse, dynamic, and complex biophysical habitats on the terrestrial portion of the planet" (Naiman and Décamps 1997, 622).	
Wader Habitat and Roosts	EPA (2006b)	Important Wader habitats are present in the Moreton Bay area (Clouston 2002).	

Data set	Data Set Reference	Rationale	Comments
Wetlands	EPA (2008)	Wetlands provide a wide variety of habitats for fish, invertebrates, amphibians, reptiles, mammals, and birds (Cronk and Fennessey 2001).	
Vegetation Corridors	EPA (2002)	Vegetation corridors/tracts provide important habitat for native fauna species (Bennett 1990). Plants provide habitat (Morrison et al. 2006).	
Vegetation Tracts	Mooney and Petter (unpublished manuscript)		
Shallow Seas	MSQ (2007) USNGIA (2005)	A variety of fish species occur in shallow sea waters (Warburton and Blaber 1992).	
Sand and Mud banks		Sand and mud banks are habitat areas (Lloyd and Cook 2002).	
Sea Surface		The Moreton Bay area is habitat for many marine species (Queensland Government 1997).	
Soil Formation			
Biodiversity Planning Assessment	EPA (2002)	Vegetation contributes to soil formation (Jenny 1994).	Jenny (1994, 148) states "from the viewpoint of soil formation, the most important classes of vegetation are forests, grasses, and desert shrubs. Jenny (1994, 141) quotes Joffe (1949), stating "without plants, no soil can form." However, it is highly debated among soil scientists as to whether organisms and vegetation actually contribute to the formation of soil (Jenny 1994, 141). "In all studies of soil-climate relationships, vegetation is treated as a dependent variable rather than as a soil-forming factor" (Jenny 1994, 141).
Mangroves, Samphire and Salt Marshes	EPA (Young and Dillewaard 1999: 12/6).	Mangroves and salt marshes are places where sedimentation occurs and soils are deposited (Rogers et al. 2005).	
Good Grass Cover	DNR&M (2005).	Site where soil formation occurs (Jenny 1994).	
Good Quality Agricultural Land	DPI and DHLGP (1993).	Contributes organic matter (Schnitzer and Khan 1978) and soils are deposited here (Phillips et al. 1999).	
Floodplain and Coastal Deposits	MSQ (2007) USNGIA (2005)	Weathered soils are transported and deposited here (Gerrard 1992).	
Woody Vegetation on Slopes	Mooney and Petter (unpublished manuscript)	Contributes organic matter which is important in soil formation (Schnitzer and Khan 1978). Site where soil formation occurs (Jenny 1994).	

Data set	Data Set Reference	Rationale	Comments
Wetlands	EPA (2008)	Weathered soils are transported and deposited here (Richardson and Vepraskas 2001).	Future versions will investigate the role of micro-organisms and invertebrates in soil formation and consider the inclusion of dry sclerophyll ecosystems.
Food			
Broad Agriculture	QLUMP (Witte et al. 2006)	Agriculture provides food products for humans such as wheat and beef (Kokic 1993).	This function is interpreted literally as those areas where humans and other animals obtain food in terms of supply. In the SEQ context, hunting natural game apart from fishing does not provide a significant amount of food for human consumption. The most significant game meat industry for human consumption is kangaroo. Traditional Owners would value bush foods and natural areas higher. In a divergence from biophysical and topographic interpretation of ecosystem function, this map relies on land use mapping as a surrogate for food provision. This map requires further thought particularly the contradiction between food for animals and food as a service for humans. However the MEA identifies biodiversity as a source of ecosystem goods such as food (Bennett and Alcamo 2004).
Mangroves, Samphire and Salt Marshes	EPA (Young and Dillewaard 1999: 12/6).	Mangroves are important areas of food sources for many animals (EPA 2007a).	
Good Quality Agricultural Land	DPI and DHLGP (1993).	Good quality agricultural lands are areas of high soil fertility and provide the bulk of fresh food (M. Petter *pers com*, 2008).	
Grazing	QLUMP (Witte et al. 2006)	An area where livestock graze for food.	
Intensive Agriculture	QLUMP (Witte et al. 2006)	Food growing and food production for human consumption (M. Petter *pers com*, 2008).	
Marine Park Habitat Zone	Queensland Government (1997).	A food source area for marine species and birds (EPA 2006c).	
Reservoirs	Dep. of Natural Resources and Water (DNR&W 2006)	The damming of rivers for water supply has created food sources and habitats for fish species and water birds (Arthington and Pusey 2003).	
Seagrass	EPA (2006b)	An important food source for many marine animals (Schneider and Mann 1991), and to marine biota along the Queensland coast (Coles et al. 2004).	
Water Bodies	DNR&W (2006)	Mostly farm dams which cattle use as their water supply.	

Data set	Data Set Reference	Rationale	Comments
Shallow seas	MSQ (2007) USNGIA (2005)	Photosynthesis provides food for autotrophic organisms (Garrison 2007).	
Tidal Zone		A variety of marine species feed in tidal zones (Pihl 1985).	
Raw Materials			
Woody Vegetation	Scarth et al. (2006)	Woody vegetation (trees and shrubs) planted for wood production (Kavanagh et al. 2005).	Hunting for skins or furs is not a significant part of mainstream culture in SEQ which leaves areas of timber as the principle raw material to map. A layer illustrating areas of private farm forestry would enhance this map.
Managed Forests	QLUMP (Witte et al. 2006)	Australian forests are available for timber harvesting (Department of Agriculture Fisheries and Forestry 2003).	
Plantations	QLUMP (Witte et al. 2006)	Australia's plantations are an important source of hard and softwood supplies (Department of Agriculture, Fisheries and Forestry 2005).	
Vegetation Corridors	EPA (2002)	Woody vegetation (trees and shrubs) planted for wood production (Kavanagh et al. 2005).	
Water Supply			
High Ecosystem Values (Aquatic)	(MBW&CP 2005)	Good ecosystem health requires adequate water supply to maintain that ecosystem's health (Gleick 1996).	The layers used to produce this map are considered indicators of a catchment in good health and functioning well to supply water. These areas are largely unmodified by human practices and can therefore be expected to be playing a very important water supply role. The MEA provides evidence that terrestrial plants provide water quality through the biological processes they undergo (eg. during evapotranspiration) (Bennett and Alcamo 2004).
FLAG lowup	(Roberts et al. 1997)	Areas where groundwaters are likely to accumulate (Roberts et al. 1997).	
Good Quality Agricultural Land	DPI and DHLGP (1993).	Good quality soils have high water content and retention capacity (Arshad and Martin 2002) or may occur above groundwater reserves.	
High Density of Headwater Streams	Mooney and Petter (unpublished manuscript)		
Low Nitrogen, Phosphorus, Total Suspended Solids	WBM Oceanics (2005).	Cleaner water is more likely to contribute to water supply (M. Petter *pers com*, 2008).	

Data set	Data Set Reference	Rationale	Comments
Rainfall	Mooney and Petter (unpublished manuscript)	Rainfall and runoff flows into reservoirs and dams (M. Petter *pers com*, 2008).	
Reservoirs	DNR&W (2006)		
Sand and Gravel Geology Above 5 Metres HAT	DNR&M (2002).	These areas have the capacity to store fresh water (Milly and Dunne 1994).	
Water Bodies	DNR&W (2006)	Rainfall leads to runoff which flows into reservoirs and dams contributing to water supply (M. Petter *pers com*, 2008).	
Streams	DERM (2008)		
Genetic Resources			
Core Habitat	EPA (2002).	Provides habitat areas to maintain genetic diversity (Corvalán et al. 2005). The preservation of habitats is related to the availability of genetic resources (Lowe et al. 2005).	The preservation of habitats is related to the availability of genetic resources (Lowe *et al*. 2005: 255). High species diversity maintains genetic diversity (Corvalán et al. 2005).
Fish Habitat Areas	Qld Fisheries Service -Marine Habitat (2000).		
Grey Nurse Shark Habitat	EPA (2006a)		
Moreton Bay Marine Park Conservation Zone	Marine Park Zoning Plan (Queensland Government 1997).		
Priority Taxa Non Remnant	EPA (2007b)	High species diversity maintains genetic diversity (Corvalán et al. 2005).	
Reefs	EPA (2006b)	Australian reefs are among the richest in the world for genetic resources (Volkman 1999).	
Rocky Reefs			
Seagrass		Important food source which maintains genetic diversity (Corvalán et al. 2005). Occurs along the Queensland coastline (Coles et al. 2004).	
Special Biodiversity Values	EPA (2002)	Biodiversity is a source of ecosystem goods such as genetic resources (Bennett and Alcamo 2004).	

Data set	Data Set Reference	Rationale	Comments
Threatened Species Habitat	EPA (2005)	Areas which maintain genetic diversity through provision of varied ecosystems (Corvalán et al. 2005).	
Regional Ecosystem Variety	EPA (2005)		
Vegetation Corridors	EPA (2002)		
Streams	DERM (2008).	Streams provide services such as mitigating drought and floods, detoxifying and decomposing wastes, and maintaining biodiversity (Phillips 2006).	
Island Streams			
Sand and Mudbanks	MSQ (2007) USNGIA (2005)	The preservation of habitats is related to the availability of genetic resources (Lowe et al. 2005).	
Vegetation Tracts	Mooney and Petter (unpublished manuscript) derived from SLATS (2003)		
Shade and Shelter			
Woody Vegetation	Scarth et al. (2006)	Woody vegetation consists of trees which provide shade from the sun for many animals (Belsky 1994).	Shelter for mapping purposes was described as shelter provided to animal, plants and/or stock and humans. Abel et al. (1997) list the benefits of shade and shelter. A shelter layer was added by intersecting the Good Grass Cover layer (DNR&M 2007) with the woody vegetation layer (DNR&M 2005), showing shelter provided for stock.
Shelter	Mooney and Petter (unpublished manuscript) derived from SLATS (2003)	Trees provide shelter for stock (Greenslade 1992).	
Pharmacological Resources			
Reefs	EPA (2006b)	Areas of high biological and genetic diversity are	Oceans and areas with special

Data set	Data Set Reference	Rationale	Comments
Rocky Reefs		areas where bioprospecting occurs (Tucker and Farrier 2001).	biodiversity values are highly likely to yield pharmacological resources especially areas such as reefs. The loss of threatened species denies the opportunities for any future use of their genetic resources or any of their pharmacological properties. This includes animal species that can supply useful pharmacological products.
Seagrass		Habitat and food for a number of marine biota (Coles et al. 2004), which are of much interest as pharmacological resources, for example, Cone snails (Chivian 2002). Areas where bio-prospecting occurs (Tucker and Farrier 2001).	
Special Biodiversity Values	EPA (2002)	Biodiversity is the fundamental resource for bioprospecting (Hassan et al. 2005). The maintenance of threatened species helps maintain biodiversity.	
Threatened Species Habitat			
Wet Forests		Many pharmacological resources are found in rainforests, including fungi which have high pharmaceutical potential (Paulus et al. 2006).	
Regional Ecosystem Variety	EPA (2005)	Native Australian species are of interest to bioprospectors (Williams et al. 2001).	
Tidal Zone	MSQ (2007) USNGIA (2005)	Tidal zone algae are used as a pharmacological resource (Reichelt and Borowitzka 1984).	
Landscape Opportunity			
Priority Taxa Non Remnant	EPA (2005, 2007b)	Areas with remaining populations of priority taxa represent a particular type of landscape variety. Bushland areas in SEQ have been found to have high scenic amenity (Office of Urban Management 2007).	Landscape Opportunity is the ability of the different variety and extent of the natural ecosystems to provide the opportunity for a wide range of spiritual, scientific, aesthetic, educational (both formal and informal education) and is a function of the diversity in the landscape, as well as areas of broad landscape and special biodiversity as well as areas of broad extent.
Special Biodiversity Values	EPA (2007b)		
Specific landscape types (see comments)	Terranean Mapping Technologies (2007)	Specific landscapes provide variety in opportunities across the region. Many of these landscapes have scenic amenity, recreational, cultural and social values. Waterways in particular are essential landscape features (M. Petter *pers com*, 2008).	

Data set	Data Set Reference	Rationale	Comments
Vegetation Corridors	EPA (2002)	Corridors provide essential connections between landscapes and the extensive edges offer a high degree of landscape diversity (M. Petter *pers com*, 2008).	**Specific landscape types included:** Mangroves, Samphire and Salt Marshes Reefs/Rocky Reefs Reservoirs Seagrass Water bodies Streams Wetlands Heathlands Islands Island streams Midlands Mountains Wet forests Sand and Mudbanks Sea Surface Tidal Zone
Good Streams	DERM (2008)	Healthy streams provide recreational and cultural amenity, eg. Water sports, Bird-watching (Bennett and Alcamo 2004) and are identified in the SEQ Regional Plan as having "significant scenic amenity" (Office of Urban Management 2007). Watercourses in SEQ provide scenic amenity (Preston 2001, Office of Urban Management 2007).	
Landscape variety: • Geodiversity • RE Variety	DNR&M (2002) EPA (2005)	The diversity of geological features supports diversity of regional ecosystems (M. Petter *pers com*, 2008).	
Vegetation Tracts	Mooney and Petter (unpublished manuscript)	Large areas of continuous habitat provide unique opportunities and inspiration (South East Queensland Regional Organisation of Councils 2005).	
Scenic Preference	Council of Mayors SEQ (South East Queensland Regional Organisation of Councils 2005)	Areas of high scenic preference (or beauty) provide unique opportunities and inspiration (South East Queensland Regional Organisation of Councils 2005).	