Aquatic Conservation Assessment using AquaBAMM for the riverine and non-riverine wetlands of the Queensland Wide Bay-Burnett Great Barrier Reef Connecting Catchments

Flora, Fauna and Ecology Expert Panel Report

Version 2.1

Queensland Government

Prepared by: Biodiversity Assessment Team, Queensland Herbarium and Biodiversity Science, Department of Environment, Science and Innovation

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Cover photo

Mary River. Photo supplied by Shane Chemello, © Queensland Department of Environment, Science and Innovation.

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Version history

Version	Type	Release Date	Description
1.1	riverine, non-riverine	November 2011	Aquatic Conservation Assessments (ACA) using AquaBAMM for wetlands of the Wide Bay-Burnett catchments (v1.1).
2.1	riverine, non-riverine	May 2024	Aquatic Conservation Assessment using AquaBAMM for the riverine and non-riverine wetlands of the Queensland Wide Bay-Burnett Great Barrier Reef Connecting Catchments (v2.1).

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This report should be read in conjunction with the accompanying summary report – DESI 2024. Aquatic Conservation Assessment using AquaBAMM for the riverine and non-riverine wetlands of the Queensland Wide Bay-Burnett Great Barrier Reef Connecting Catchments: Summary Report, Version 2.1. Brisbane: Department of Environment, Science and Innovation, Queensland Government.

Acronyms and abbreviations

ACA	Aquatic Conservation Assessment
AquaBAMM	Aquatic Biodiversity Assessment and Mapping Methodology
ASL	Above Sea Level
BAMM	Biodiversity Assessment and Mapping Methodology
C	Least concern
CAMBA	China–Australia Migratory Bird Agreement
CE	Critically endangered (Attributed as CR in WildNet data)
CIM	Criteria, Indicators and Measures (used in AquaBAMM)
DESI	Department of Environment, Science and Innovation
DIWA	Directory of Important Wetlands Australia
E	Endangered
EPBC	*Environment Protection and Biodiversity Conservation Act 1999*
GAB	Great Artesian Basin
JAMBA	Japan–Australia Migratory Bird Agreement
NCA	*Nature Conservation Act 1992*
NET	New England Tableland bioregion
NP	National Park
NR	Non-riverine
NT	Near threatened
R	Riverine
Ramsar	Ramsar Convention on Wetlands
RE	Regional Ecosystem
ROKAMBA	Republic of Korea–Australia Migratory Bird Agreement
SEQ	Southeast Queensland bioregion
SL	Special least concern
V	Vulnerable
WBBGBRCC	Wide Bay-Burnett Great Barrier Reef Connecting Catchments
WISL	Wetland Indicator Species List

1 Introduction

The Department of Environment, Science and Innovation (DESI) has undertaken a review and update of the freshwater Aquatic Conservation Assessments (ACA) completed for the Burnett, Mary, Kolan, Burrum, and Baffle catchments completed in 2010. The current combined assessments are titled – Queensland Wide Bay–Burnett Great Barrier Reef Connecting Catchments Aquatic Conservation Assessments (WBBGBRCC ACA) version 2.1.

Aquatic Conservation Assessments are a non-social, non-economic and tenure blind assessment of wetland ecological values at the individual wetland scale. They are based on the Aquatic Biodiversity Assessment and Mapping Method (AquaBAMM; Clayton et al. 2006) and incorporate a comprehensive set of criteria, indicators and measures founded upon a large body of national and international literature.

The AquaBAMM uses expert knowledge to acquire data for several criteria measures (Clayton et al. 2006). This data is elicited during expert panel workshops comprised of individuals with knowledge and expertise in local aquatic dependent species, wetland ecology, water quality, hydrology, geomorphology and vegetation. AquaBAMM expert panel processes aim to add flexibility and a reality check to the AquaBAMM assessment process. They are based on the premise of scientific reasoning, multiple lines of evidence and consensus building, allowing the incorporation of unpublished or anecdotal data.

This report describes results and recommendations stemming from expert panel workshops held for the Queensland WBBGBRCC ACA. Three workshops (flora, fauna and ecology) were held in Bargara in May 2023. Terms of Reference for these workshops can be found in Appendix I – Expert Panel Terms of Reference.

The report should be read in conjunction with the accompanying summary report – Aquatic Conservation Assessment using AquaBAMM for the riverine and non-riverine wetlands of the Queensland Wide Bay-Burnett Great Barrier Reef Connecting Catchments Summary Report Version 2.1 (DESI 2024).

1.1 Wide Bay – Burnett Great Barrier Reef study regions

This Aquatic Conservation Assessment covers five individual catchments, or study areas, including the Burnett, Mary, Kolan, Burrum, Baffle and Other Islands (Figure 1). Table 1 shows the number of mapped non-riverine wetlands and riverine spatial units within each study area. For a description of each study area, please refer to the accompanying summary report - Aquatic Conservation Assessment using AquaBAMM for the riverine and non-riverine wetlands of the Queensland Wide Bay-Burnett Great Barrier Reef connecting catchments: Summary Report, Version 2.1. Department of Environment, Science and Innovation, Queensland Government.

Table 1. Study areas of the Wide Bay–Burnett Great Barrier Reef Connecting Catchments Aquatic Conservation Assessment

ACA study areas or catchments	Study area code	Catchment area (ha)	Number of riverine spatial units	Number of non-riverine wetlands	Area of non-riverine wetlands (ha)
Burnett	bu	3,320,997.6	386	1,636	16,951.2
Mary	my	947,832.8	165	1,313	11,238.5
Kolan	ko	290,501.3	40	394	7,116.8
Burrum	bm	335,101.1	40	1,037	13,074.3
Baffle	ba	407,765.8	321	1,120	12,604.9
Other Islands	iw	5,106.3	107	15	224.1

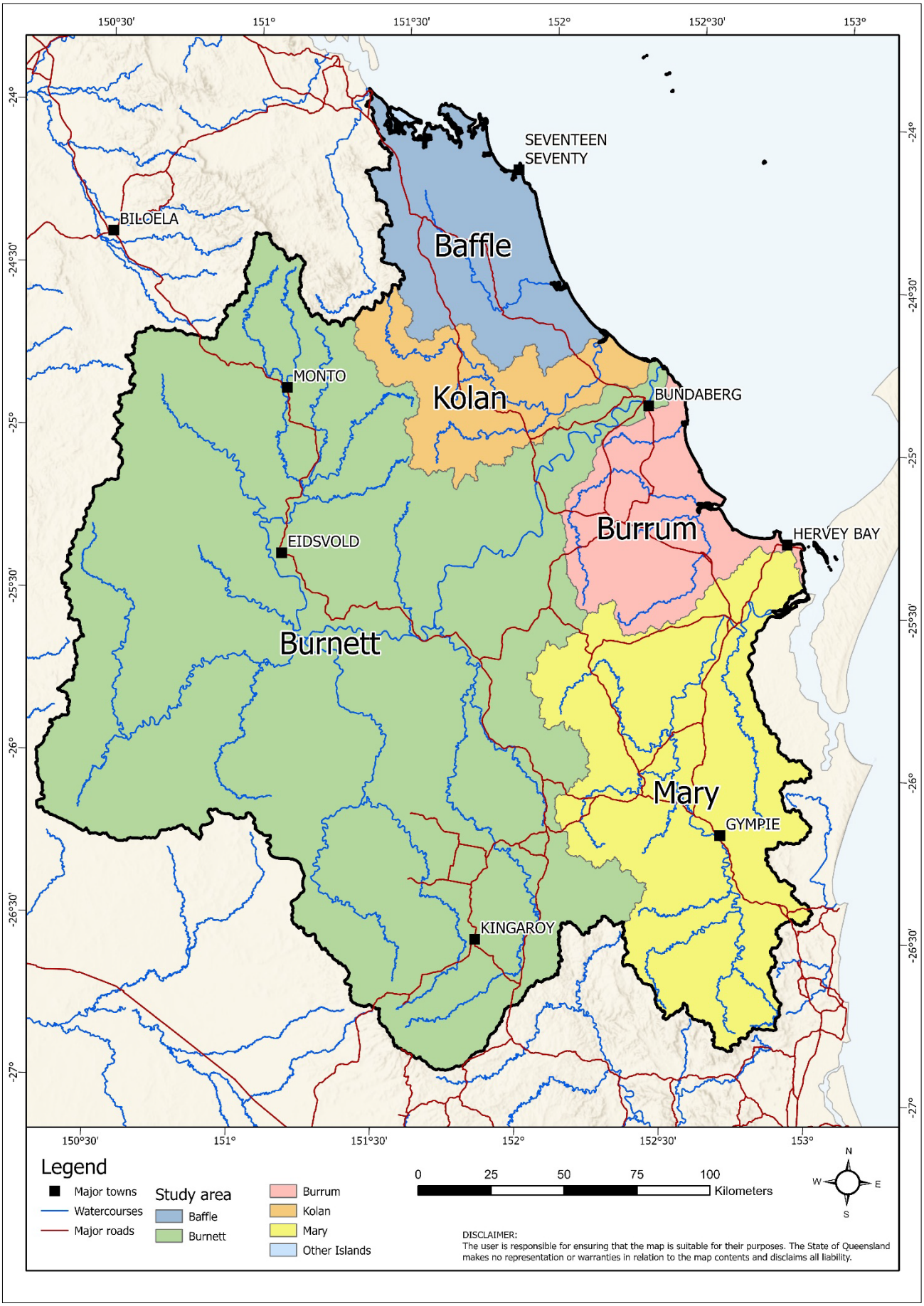

Figure 1. Study areas of the Wide Bay-Burnett Great Barrier Reef Connecting Catchments Aquatic Conservation Assessment

2 Methods and implementation

2.1 Panel composition

The expert panels for the WBBGBRCC ACA were comprised of the persons listed in Table 2. They included individuals with local knowledge and expertise in aquatic dependent flora and fauna, and non-riverine and riverine wetland ecology including fish, macro invertebrates, water quality, hydrology, geomorphology and vegetation. Members who were unavailable to attend the workshop were consulted prior to, or after, the workshop.

Prior to attending the workshops all participants were provided with background material including a Terms of Reference (Appendix I – Expert Panel Terms of Reference), relevant definitions (Appendix II – Expert Panel Definitions), and taxon lists for flora and fauna recorded within each study area.

Organisation and technical support for the panels was provided by Mark Kelton, Linda Lawrence, Shane Chemello and Lindsey Lenneberg. The fauna and ecology panels were facilitated by Dr Darren Fielder (Redleaf Environmental). The flora panel was facilitated by Shane Chemello (DESI).

Table 2. Composition and details of the Wide Bay-Burnett expert panels

Name	Organisation	Area of Expertise	Flora panel	Fauna panel	Ecology panel
Scientific Experts					
Tom Espinoza	Burnett Mary regional Group	Director of Research	Y	Y	Y
Ann Moran		Botanist / Ecologist	Y	Y	Y
Sandy Pollock	Department of Environment, Science and Innovation	Botanist	Y		
Colin Wedel	ex DAF	Fish	Y	Y	Y
Jon Marshall	Department of Environment, Science and Innovation	Aquatic ecology		Y	Y
Peter Negus	Department of Environment, Science and Innovation	Aquatic ecology		Y	Y
Trevor Brighton	Ex Department of Environment, Science and Innovation and QPWS	Ecology / birds	Y	Y	Y
Duncan Limpus	Department of Environment, Science and Innovation – Threatened species unit	Fauna / Ecology		Y	Y
Col Limpus	Department of Environment, Science and Innovation – Threatened species unit	Fauna / Ecology		Y	Y
Sarah Compagnoni	Department of Environment, Science and Innovation – Threatened species unit	Fauna	Y	Y	Y
Maria Zann	Department of Environment, Science and Innovation – Healthy Waters and Wetlands	Ecology especially intertidal, sub-tidal			Y

Name	Organisation	Area of Expertise	Flora panel	Fauna panel	Ecology panel
Ray Maynard	Department of Regional Development Manufacturing and Water (RDMW)	Hydrography – Senior Water Officer			Y
Eva Ford	Mary River Coordinated Catchment committee	Fauna		Y	
First Nations Representatives					
Conway Burns	Burnett Mary regional Group	Traditional Owner Engagement Coordinator	Y		
Thomas Holden	Gidarjil Development Corporation	Traditional Owner	Y	Y	Y
Shane Lukanovic	Butchulla Native Title Aboriginal Corporation	Traditional Owner	Y	Y	Y
Patricia Bond	Wakka Wakka peoples	Traditional Owner	Y	Y	Y
Michael Bond	Wakka Wakka peoples	Traditional Owner	Y	Y	Y
Jason Booth	Butchulla Aboriginal Corporation	Traditional Owner	Y		
Tahlia Burns	Butchulla Aboriginal Corporation/ K'gari Ranger	Traditional Owner	Y		
Kira Mills	Gidarjil Development Corporation/Gooreng, Gooreng Traditional owner	Traditional Owner	Y	Y	Y
Jason Murphy	Jinibara Peoples Aboriginal Corporation	Traditional Owner	Y	Y	Y
Margaret Blackman	Gidarjil Development Corporation/Burnett Mary Regional Group	Traditional Owner	Y	Y	Y
Support Staff (DESI)					
Mark Kelton	Department of Environment, Science and Innovation	ACA Project Manager Principal Spatial Analyst	Y	Y	Y
Linda Lawrence	Department of Environment, Science and Innovation	Senior Spatial Analyst	Y	Y	Y
Shane Chemello	Department of Environment, Science and Innovation	Senior Biodiversity Program Officer	Y	Y	Y
Darren Fielder	Redleaf Environmental	Consultant - Workshop Facilitator	Y	Y	Y

2.2 Workshop format

Three expert panel workshops were held in Bargara in May 2023. The workshops used ArcGIS Desktop software to display datasets, such as species sightings records and background topographic data, to help identify wetland components and processes of interest. Where possible, region-specific datasets were sourced from technical reports and scientific publications.

2.3 Traditional Owner connections to wetlands and wetland values

Wetland ecosystems are of material and cultural importance to First Nations peoples, and many wetlands have profound cultural significance and values (DES, 2016). Wetlands are known to have significance as ceremonial sites, initiation sites and as boundary markers (Commonwealth of Australia, 2016). In addition, many wetland species have significance as totems, symbols that acknowledge specific birds, animals, rocks or flora species, and are considered sacred by their owners (Commonwealth of Australia, 2016). In fact, almost all wetland plant and animal species have some form of traditional importance as sources of food or medicine, particularly vegetation, crustaceans, fish, reptiles, mammals and waterbirds (particularly their eggs), or cultural significance (e.g. totemic significance).

A half-day session was held on 22 May 2023 in Bargara prior to the expert panel workshops to meet and introduce Traditional Owner representatives to the AquaBAMM and ACA process. Discussions were had as to the best way to capture Traditional Ecological Knowledge within a biodiversity assessment. It was decided to focus on including the traditional values of threatened and priority species. Traditional Owner representatives were also invited to flag any Traditional Owner significance associated with the wetlands identified as having special or unique ecological value through the expert panel process.

The Traditional Owner representatives attended the expert panel workshops and contributed their knowledge throughout the sessions. Traditional knowledge was captured in the following sections of this report:

- Traditional knowledge was recorded relating to aquatic dependent threatened or near-threatened flora (Section 3.3) and fauna (Section 4.3) taxa, where known
- Traditional knowledge was recorded, where known, in the special feature descriptions (Section 0) where Traditional Owner Significance was defined as being one or more of the following:
    - an important source of food or medicine, or
    - being associated with one or more of five core Aboriginal values: language, songlines, creation stories, trading routes and lore
- Two new attributes relating to Traditional knowledge were added for priority flora (Section 3.4) and priority fauna (Section 4.4). Whilst this information was recorded, it did not contribute to a species being listed as a priority:
    - it is an important source of food or medicine for traditional owners
    - it is associated one or more of five core Aboriginal values: language, song lines, creation stories, trading routes and lore.

3 Flora

The role of the flora expert panel is to provide expert advice on the aquatic flora values of the waterways and wetlands within each study area.

Flora records were compiled from corporate databases including WildNet (extracted 04/11/2022), HERBRECS (within WildNet database), CORVEG (extracted 27/09/2022). Additional records were sourced from the Jaeger_moran plant survey database (extracted 05/2023) and Mary River Monitoring project (DES Water Planning/Ecology unit - extracted 06/2023). Only records for flora species dependent upon freshwater wetlands for all or part of their lifecycle were retained for the native, threatened and exotic species lists. Records were filtered by precision (<=2,000m) and year (>=1950). Duplicate records, defined as same species collected in same location in same year, were removed.

3.1 Exotic flora

Exotic flora are plants that cause, or have the potential to cause, significant detrimental impact on natural systems within a non-riverine, riverine landscape. The panel recommended to only include exotic plants known to cause significant detrimental impacts on natural wetland systems.

The panel identified 31 aquatic and 85 riparian exotic flora taxa impacting riverine or non-riverine wetlands within the study areas (Table 3). Sightings records for the listed species were used to identify spatial units containing exotic flora species for AquaBAMM Measure 1.1.2 (presence of exotic aquatic species) and Measure 2.1.1 (Presence of exotic riparian (i.e., semi-aquatic and non-aquatic) plants in the assessment unit).

Table 3. Exotic flora taxa impacting study area wetland values

Scientific Name	Common Name	NR	R	Expert Panel Comments	M1.1.2	M2.1.1
Alternanthera philoxeroides	alligator weed	Y	Y		Y	
Anredera cordifolia	Madeira vine		Y			Y
Aristolochia elegans	calico-flower		Y			Y
Baccharis halimifolia	groundsel bush	Y	Y			Y
Bacopa caroliniana		Y			Y	
Bacopa lanigera		Y		Not many records in study area. Limited to Wide Bay.	Y	
Berula erecta	water parsnip	Y				Y
Bryophyllum delagoense		Y	Y			Y
Bryophyllum pinnatum	resurrection plant	Y	Y			Y
Cabomba caroliniana var. *caroliniana*	cabomba	Y	Y	It is imperative to stop the sale of this plant. Spreads rapidly and is very difficult to eradicate. There are a couple of creeks where they are having significant impacts: Combomba Creek, 6 Mile Creek, Egeria Creek, Obi Obi creek.	Y	
Caesalpinia decapetala	mysore thorn		Y	Found in upper Granite creek (Bulburin National Park).		Y
Callitriche stagnalis		Y	Y		Y	
Cardiospermum grandiflorum	heart seed vine	Y	Y			Y
Cardiospermum halicacabum		Y	Y			Y
Cardiospermum halicacabum var. *halicacabum*		Y	Y			Y
Cardiospermum halicacabum var. *microcarpum*		Y	Y			Y

Scientific Name	Common Name	NR	R	Expert Panel Comments	M1.1.2	M2.1.1
Celtis sinensis	Chinese elm	Y	Y			Y
Cenchrus echinatus	Mossman River grass	Y	Y			Y
Cenchrus purpureus	elephant grass	Y				Y
Chrysanthemoides monilifera	Bitou Bush	Y		Mainly found in coastal dune systems and wetlands.		Y
Cinnamomum camphora	camphor laurel	Y	Y	Is an exotic but provides important ecosystem services such as habitat for aquatic species, bank stabilisation. They need to be removed but natives need to replace them.		Y
Cryptostegia grandiflora	rubber vine		Y			Y
Cyperus brevifolius	Mullumbimby couch	Y	Y			Y
Cyperus compressus			Y			Y
Cyperus eragrostis			Y			Y
Cyperus esculentus	yellow nutgrass	Y				Y
Cyperus flavescens		Y				Y
Cyperus involucratus		Y	Y		Y	
Cyperus papyrus	papyrus	Y	Y		Y	
Cyperus prolifer	dwarf papyrus	Y	Y		Y	
Cyperus rotundus	nutgrass		Y			Y
Echinochloa colona	awnless barnyard grass	Y	Y		Y	
Diplachne fusca var. *uninervia*			Y			Y
Dolichandra unguis-cati	cat's claw creeper	Y	Y			Y
Echinochloa crus-galli	barnyard grass	Y	Y		Y	
Eclipta prostrata	white eclipta		Y			Y
Egeria densa	dense waterweed	Y	Y	Especially prevalent on Obi Obi creek.	Y	

Scientific Name	Common Name	NR	R	Expert Panel Comments	M1.1.2	M2.1.1
Eichhornia crassipes	water hyacinth	Y	Y		Y	
Eleocharis minuta		Y				Y
Enydra fluctuans	water spinach	Y	Y			Y
Eragrostis curvula	African lovegrass		Y			Y
Eugenia uniflora	Brazilian cherry tree		Y			Y
Euphorbia cyathophora	dwarf poinsettia	Y		Coastal dominance especially mid-June.		Y
Hydrocharis dubia	frogbit	Y	Y		Y	
Hygrophila costata		Y	Y		Y	
Hygrophila polysperma		Y	Y		Y	
Hymenachne amplexicaulis 'Olive'		Y	Y		Y	
Limnobium laevigatum	Amazon frogbit	Y	Y	No records but panel indicates it is a newly emerging waterweed.	Y	
Myriophyllum aquaticum	Brazilian water milfoil	Y	Y	It is imperative to stop the sale of this plant. Cultivated widely as ornamental plant. There is an issue with the dumping of aquarium or ornamental pond plants.	Y	
Nymphaea caerulea		Y	Y		Y	
Nymphaea nouchali	blue lotus	Y	Y	This is an introduced species, but it does have indigenous cultural values. Other name is *Nymphaea nouchali* var. *caerulea*.	Y	
Paspalum distichum	water couch	Y	Y		Y	
Paspalum vaginatum	saltwater couch	Y	Y		Y	
Polypogon monspeliensis	annual beardgrass	Y	Y		Y	
Pontederia cordata		Y	Y		Y	
Rorippa nasturtium-aquaticum	watercress	Y	Y		Y	
Rotala rotundifolia		Y			Y	

Scientific Name	Common Name	NR	R	Expert Panel Comments	M1.1.2	M2.1.1
Sagittaria platyphylla	sagittaria	Y	Y	It is imperative to stop the sale of this plant. Cultivated widely as ornamental plant. There is an issue with the dumping of aquarium or ornamental pond plants.	Y	
Salvinia molesta	salvinia	Y	Y	It is imperative to stop the sale of this plant and other similar plants.	Y	
Sparganium erectum subsp. *stoloniferum*	erect bur-reed	Y			Y	
Urochloa mutica		Y	Y		Y	
Vallisneria gigantea	ribbonweed		Y		Y	
Gleditsia triacanthos	honey locust	Y	Y			Y
Harrisia martinii	Harrisia cactus	Y	Y			Y
Heliotropium amplexicaule	blue heliotrope	Y	Y	Toxic to animals.		Y
Ipomoea cairica		Y	Y			Y
Juncus bufonius	toad rush	Y	Y			Y
Juncus cognatus		Y	Y			Y
Lantana camara	lantana	Y	Y	Lantana and leucaena are particularly prevalent in some areas. Lantana susceptible to cool burns		Y
Lantana montevidensis	creeping lantana	Y	Y	Lantana and leucaena are particularly prevalent in some areas. Lantana susceptible to cool burns		Y
Leucaena leucocephala		Y	Y	Lantana and leucaena are particularly prevalent in some areas.		Y
Leucaena leucocephala subsp. *glabrata*		Y	Y	Lantana and leucaena are particularly prevalent in some areas.		Y
Leucaena leucocephala subsp. *leucocephala*		Y	Y	Lantana and leucaena are particularly prevalent in some areas.		Y
Ligustrum lucidum	large-leaved privet	Y	Y	Also includes small leaved privet.		Y

Scientific Name	Common Name	NR	R	Expert Panel Comments	M1.1.2	M2.1.1
Ligustrum sinense	small-leaved privet	Y	Y			Y
Macroptilium atropurpureum	siratro	Y	Y			Y
Megathyrsus maximus	buffel grass	Y	Y			Y
Melinis minutiflora	molasses grass	Y				Y
Neonotonia wightii var. *wightii*			Y			Y
Opuntia aurantiaca	tiger pear	Y	Y			Y
Opuntia leucotricha		Y	Y			Y
Opuntia microdasys		Y	Y			Y
Opuntia monacantha		Y	Y			Y
Opuntia streptacantha	cardona pear	Y	Y			Y
Opuntia stricta		Y	Y			Y
Opuntia tomentosa	velvety tree pear	Y	Y			Y
Parthenium hysterophorus	parthenium weed	Y				Y
Phyla canescens	lippia	Y	Y			Y
Pinus elliottii	slash pine	Y				Y
Polygonum aviculare	wireweed	Y	Y			Y
Polypogon monspeliensis	annual beardgrass	Y	Y			Y
Praxelis clematidea		Y	Y	Threatening most National Parks and roadsides.		Y
Psidium guajava	guava		Y			Y
Psidium guineense	cherry guava		Y			Y
Ricinus communis	castor oil bush	Y	Y			Y
Rivina humilis		Y	Y			Y
Salix babylonica	weeping willow		Y			Y

Scientific Name	Common Name	NR	R	Expert Panel Comments	M1.1.2	M2.1.1
Schinus terebinthifolius		Y	Y			Y
Senna pendula var. *glabrata*	Easter cassia	Y		Mostly coastal with some inland locations.		Y
Solanum seaforthianum	Brazilian nightshade	Y	Y			Y
Sorghum halepense	Johnson grass	Y	Y			Y
Sphagneticola trilobata		Y	Y			Y
Sporobolus africanus	Parramatta grass	Y		Introduced Sporobolus grasses are invasive plants in Queensland.		Y
Sporobolus coromandelianus		Y		Introduced Sporobolus grasses are invasive plants in Queensland.		Y
Sporobolus fertilis	giant Parramatta grass	Y		Introduced Sporobolus grasses are invasive plants in Queensland.		Y
Sporobolus indicus		Y		Introduced Sporobolus grasses are invasive plants in Queensland.		Y
Sporobolus jacquemontii		Y		Introduced Sporobolus grasses are invasive plants in Queensland.		Y
Sporobolus natalensis		Y		Introduced Sporobolus grasses are invasive plants in Queensland.		Y
Sporobolus pyramidalis		Y		Introduced Sporobolus grasses are invasive plants in Queensland.		Y
Stenotaphrum secundatum	buffalo grass		Y			Y
Tecoma stans	tecoma	Y	Y			Y
Tecoma stans var. *stans*		Y	Y			Y
Thunbergia grandiflora	sky flower	Y	Y			Y
Urochloa decumbens	Signal grass		Y	There are no records for this species, however the panel indicated that signal grass spreading rapidly.		Y
Xanthium occidentale	bathurst burr		Y			Y
Zantedeschia aethiopica		Y	Y			Y

3.2 Flora species richness

Flora species richness (total number of species) was calculated using the wetland indicator species list compiled by the Queensland Herbarium and other species nominated by the expert panel. The panel defined flora wetland indicator species to mean:

> *Species that are adapted to and dependent on living in wet conditions for at least part of their life and are found either within or immediately adjoining a riverine, non-riverine or estuarine wetland.*

When applied to flora species this definition extends beyond the more traditional definition of submerged and floating aquatic plants as it includes plants inhabiting the littoral zone (water's edge) and plants that usually have 'wet feet' on the toe of the bank. This meaning was chosen because it was considered to best capture the intent of the AquaBAMM Measure of species richness (M3.1.5). The Criterion 3.1 Indicator is a measure of the floristic richness of a particular spatial unit's aquatic environment, and hence, a broader definition of aquatic species better depicts the flora richness values at a given location.

The panel identified 385 flora wetland indicator species relevant to the riverine and non-riverine wetlands of the study areas (Table 4). Taxa were accessed from the corporate databases of WildNet, HERBRECS and CORVEG.

Sightings records for the listed species were used to a calculate wetland flora indicator species richness scores for AquaBAMM Measure 3.1.5 (Richness of native aquatic plants).

Table 4. Wetland dependent native flora taxa

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Acacia attenuata	whipstick wattle	V	V	Y		
Acacia baueri subsp baueri	tiny wattle	V		Y		Found on sandhills but also found in heathland which is wet underneath.
Acrostichum speciosum	mangrove fern	SL		Y	Y	
Aegialitis annulata	club mangrove	C			Y	
Aegiceras corniculatum	river mangrove	C			Y	
Aldrovanda vesiculosa	waterwheel plant	SL		Y		It is an important indicator of good wetlands but could be locally extinct. This is a freshwater version of the venus fly trap. No records available.
Alternanthera denticulata	lesser joyweed	C			Y	
Alternanthera nana	hairy joyweed	C		Y	Y	Spreads rapidly. Often mistaken for *Alternanthera pungens*.
Alternanthera nodiflora	joyweed	C		Y	Y	
Ammannia multiflora	jerry-jerry	C		Y	Y	
Anthelepis paludosa		C		Y		Poorly known coastal annual.
Aponogeton elongatus subsp. *elongatus*		NT		Y	Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Aponogeton queenslandicus		SL		Y	Y	
Arthraxon hispidus		V	V	Y		Found in springs and creek lines.
Avicennia marina		C			Y	
Avicennia marina subsp. *australasica*		C			Y	
Azolla pinnata	ferny azolla	C		Y	Y	
Azolla rubra		C		Y	Y	
Bacopa monnieri		C		Y	Y	
Baeckea frutescens		C		Y		
Baloskion pallens		C		Y		
Baloskion tenuiculme		C		Y		
Baloskion tetraphyllum		C		Y		
Baloskion tetraphyllum subsp. *meiostachyum*		C		Y		
Banksia robur	broad-leaved banksia	C		Y		Priority only along coastal areas. Stands out above all other banksias. Traditional knowledge: Dried flowers are used as a torch; burns (smouldering for a few hours).
Bolboschoenus caldwellii		C		Y		
Bolboschoenus fluviatilis		C		Y	Y	
Boronia falcifolia	wallum boronia	C		Y		
Boronia keysii	Key's boronia	V	V	Y		
Boronia parviflora	swamp boronia	C		Y		
Boronia rivularis	Wide Bay boronia	NT		Y		
Brachyachne tenella		C		Y		
Brasenia schreberi		C		Y		
Bruguiera exaristata		C			Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Bruguiera gymnorhiza	large-fruited orange mangrove	C			Y	
Burchardia umbellata		C		Y		
Byblis liniflora		SL		Y		
Callitriche muelleri		C		Y		
Callitriche sonderi		C		Y		
Carex appressa		C		Y	Y	
Carex brunnea		C		Y	Y	
Carex fascicularis	tassel sedge	C		Y	Y	
Carex gaudichaudiana		C		Y	Y	
Carex lobolepis		C		Y	Y	
Carex maculata		C		Y	Y	
Carex polyantha		C		Y	Y	
Casuarina cunninghamiana		C			Y	
Casuarina cunninghamiana subsp. *cunninghamiana*		C			Y	
Casuarina glauca	swamp she-oak	C		Y		
Centipeda minima		C		Y		
Centrolepis exserta		C			Y	
Ceratophyllum demersum	hornwort	C			Y	
Ceriops tagal	yellow mangrove	C			Y	
Chara fibrosa var. *myriophylla*		C		Y	Y	
Chara globularis		C		Y	Y	
Chenopodium auricomum		C		Y		
Chordifex fastigiatus		C		Y		
Chorizandra cymbaria		C		Y		

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Chorizandra sphaerocephala		C		Y		
Cladium procerum	leafy twigrush	C		Y		Low population size.
Coleocarya gracilis		C		Y		
Crinum flaccidum	Murray lily	SL		Y		
Crinum pedunculatum	river lily	SL		Y	Y	
Cyclosorus interruptus		SL		Y		
Cycnogeton dubius		SL		Y		
Cycnogeton multifructus		SL		Y	Y	
Cycnogeton procerus		SL		Y	Y	
Cycnogeton rheophilus		SL			Y	
Cynometra iripa		C		Y		
Cyperus aquatilis		C		Y		
Cyperus betchei		C		Y		
Cyperus betchei subsp. *betchei*		C		Y		
Cyperus bifax	western nutgrass	C		Y	Y	
Cyperus bowmannii		C		Y	Y	
Cyperus bulbosus		C		Y	Y	
Cyperus concinnus		C			Y	
Cyperus conicus		C			Y	
Cyperus decompositus		C		Y	Y	
Cyperus difformis	rice sedge	C		Y		
Cyperus digitatus		C		Y		
Cyperus distans		C			Y	
Cyperus enervis		C			Y	
Cyperus exaltatus	tall flatsedge	C		Y	Y	
Cyperus flaccidus		C		Y		

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Cyperus flavidus		C		Y		
Cyperus gunnii subsp. *gunnii*		C		Y	Y	
Cyperus gunnii subsp. *novae-hollandiae*		C		Y	Y	
Cyperus gymnocaulos	spiny flatsedge	C			Y	
Cyperus haspan		C		Y	Y	
Cyperus haspan subsp. *haspan*		C		Y		
Cyperus haspan subsp. *juncoides*		C		Y		
Cyperus iria		C		Y		
Cyperus leptocarpus		C		Y	Y	
Cyperus lucidus		C			Y	
Cyperus nervulosus		C		Y		
Cyperus nutans var. *eleusinoides*	flatsedge	C			Y	
Cyperus odoratus		C		Y		
Cyperus ohwii		C		Y		
Cyperus pilosus		C		Y		
Cyperus polystachyos		C		Y	Y	
Cyperus polystachyos var. *laxiflorus*		C		Y		
Cyperus polystachyos var. *polystachyos*		C			Y	
Cyperus procerus		C		Y		
Cyperus sanguinolentus		C		Y	Y	
Cyperus sphaeroideus		C		Y	Y	
Cyperus squarrosus	bearded flatsedge	C		Y		
Cyperus subulatus		C		Y		
Cyperus tetracarpus		C		Y	Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Cyperus trinervis		C			Y	
Cyperus unioloides		C		Y		
Cyperus vaginatus		C			Y	
Damasonium minus	starfruit	SL		Y	Y	
Dapsilanthus elatior		C		Y		
Dicranopteris linearis var. *linearis*		C		Y		
Diplachne fusca var. *fusca*		C		Y		
Drosera auriculata		SL		Y		Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera binata	forked sundew	SL		Y		Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera burmanni		SL		Y		Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera finlaysoniana		SL		Y		Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera hookeri		SL		Y		Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera lunata		SL		Y		Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera pygmaea		SL		Y		Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera spatulata		SL		Y		Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Drosera spatulata var. *spatulata*		SL		Y		Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Echinochloa telmatophila	swamp barnyard grass	C		Y	Y	
Elatine gratioloides	waterwort	C		Y	Y	
Eleocharis atricha	tuber spikerush	C		Y		
Eleocharis atropurpurea		C		Y		
Eleocharis blakeana		C		Y	Y	
Eleocharis cylindrostachys		C		Y	Y	
Eleocharis dietrichiana		C		Y		
Eleocharis dulcis		C		Y		
Eleocharis equisetina		C		Y		
Eleocharis geniculata		C		Y		
Eleocharis philippinensis		C		Y		
Eleocharis plana	ribbed spikerush	C		Y		
Eleocharis sphacelata	tall spikerush	C		Y		
Eleocharis spiralis		C		Y		
Eleocharis tetraquetra		C		Y		
Empodisma minus	spreading rope rush	C		Y		
Epacris microphylla		C		Y		
Eragrostis australasica		C		Y		
Eriocaulon australe		C		Y		
Eriocaulon nanum		C		Y		
Eriocaulon scariosum		C		Y		
Eucalyptus camaldulensis		C			Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Eucalyptus robusta	swamp mahogany	C		Y		
Eurychorda complanata		C		Y		
Excoecaria agallocha	milky mangrove	C			Y	
Fimbristylis aestivalis		C		Y	Y	
Fimbristylis depauperata		C			Y	
Fimbristylis dichotoma	common fringe-rush	C		Y	Y	
Fimbristylis ferruginea		C		Y		Saline areas only.
Fimbristylis microcarya		C		Y		
Fimbristylis nuda		C		Y		
Fimbristylis nutans		C		Y		
Fimbristylis pauciflora		C		Y		
Fimbristylis polytrichoides		C		Y		
Fimbristylis sieberiana		C		Y		
Fimbristylis vagans		E		Y		
Fimbristylis velata		C		Y		
Fuirena ciliaris		C		Y		
Fuirena umbellata		C		Y		
Gahnia clarkei	tall sawsedge	C		Y		
Gahnia sieberiana	sword grass	C		Y		
Germainia capitata		V	V	Y		
Gleichenia dicarpa	pouched coral fern	C		Y	Y	
Gleichenia mendellii		C		Y	Y	
Glinus lotoides	hairy carpet weed	C		Y		
Gonocarpus chinensis		C		Y	Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Goodenia macbarronii	narrow goodenia	C		Y		
Gratiola pedunculata		C		Y		
Grevillea reptans		C		Y		
Gymnanthera oblonga		C			Y	
Haloragis heterophylla	rough raspweed	C		Y		
Hemarthria uncinata		C		Y		
Hemarthria uncinata var. *spathacea*		C		Y		
Hemarthria uncinata var. *uncinata*		C		Y		
Hydrilla verticillata	hydrilla	SL		Y	Y	
Hydrocotyle tripartita		C		Y		
Hydrocotyle verticillata	shield pennywort	C		Y		
Hygrophila angustifolia		C		Y	Y	
Hypolaena fastigiata	tassel rope rush	C		Y		
Ipomoea aquatica		C		Y		
Isachne globosa	swamp millet	C		Y		
Ischaemum australe var. *australe*		C		Y		
Juncus cognatus				Y	Y	
Ischaemum fragile		C		Y		
Isolepis cernua	nodding club rush	C		Y	Y	
Isolepis inundata	swamp club rush	C		Y	Y	
Juncus continuus		C		Y	Y	
Juncus homalocaulis	wiry rush	C		Y		
Juncus kraussii	sea rush	C		Y	Y	
Juncus kraussii subsp. *australiensis*		C		Y		

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Juncus planifolius		C		Y	Y	
Juncus polyanthemus		C		Y	Y	
Juncus prismatocarpus	branching rush	C		Y	Y	
Juncus subsecundus		C		Y	Y	
Juncus usitatus		C		Y	Y	
Juncus vaginatus		C		Y		
Landoltia punctata		C		Y	Y	
Lateristachys lateralis		SL		Y		
Leersia hexandra	swamp rice grass	C		Y	Y	
Lepidosperma longitudinale	pithy swordsedge	C		Y		
Lepironia articulata		C		Y	Y	Occurs in up to 2 meters of water with tops still sticking out.
Leptocarpus tenax		C		Y		
Leptochloa digitata		C		Y	Y	
Leptospermum liversidgei		C		Y		
Leptospermum semibaccatum	wallum tea-tree	C		Y		
Lepyrodia imitans		C		Y		
Lepyrodia scariosa		C		Y		
Liparophyllum exaltatum		SL		Y		
Limnophila aromatica		C		Y		
Limnophila brownii		C		Y		
Lindernia hyssopoides		C		Y		
Livistona australis	cabbage tree palm	SL		Y		
Livistona decora		SL		Y	Y	
Lobelia membranacea		NT			Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Lomandra hystrix		C		Y	Y	
Lophostemon suaveolens	swamp box	C		Y	Y	
Ludwigia octovalvis	willow primrose	C		Y		
Ludwigia peploides subsp. *montevidensis*		C		Y	Y	
Lumnitzera racemosa		C			Y	
Luzula flaccida		C		Y		
Lycopus australis	water horehound	C		Y	Y	
Lygodium microphyllum	snake fern	C		Y		
Lythrum paradoxum		C		Y		
Lythrum salicaria	purple loosestrife	C		Y		
Machaerina arthrophylla		C		Y	Y	
Machaerina articulata		C		Y	Y	
Machaerina gunnii		C		Y	Y	
Machaerina juncea		C		Y	Y	
Machaerina muelleri		C		Y	Y	
Machaerina planifolia		C		Y		
Machaerina rubiginosa		C		Y	Y	
Machaerina teretifolia		C		Y	Y	
Marsilea drummondii	common nardoo	C		Y		
Marsilea hirsuta	hairy nardoo	C		Y		
Marsilea mutica	shiny nardoo	C		Y		
Melaleuca alternifolia		C		Y		
Melaleuca bracteata		C		Y	Y	
Melaleuca cheelii		NT		Y		
Melaleuca dealbata	swamp tea-tree	C		Y	Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Melaleuca linariifolia	snow-in summer	C		Y	Y	
Melaleuca pachyphylla		C		Y		
Melaleuca polandii		C			Y	
Melaleuca quinquenervia	swamp paperbark	C		Y	Y	
Melaleuca saligna		C		Y	Y	
Melaleuca sieberi		C		Y		
Melaleuca thymifolia	thyme honeymyrtle	C		Y		
Melaleuca trichostachya		C		Y	Y	Western Qld on creek around Theodore Dawson River.
Melaleuca viminalis		C			Y	Traditional knowledge: Wakka Wakka noted fish (jewfish) breeding associated with flowering events.
Melaleuca viridiflora		C		Y		Southern limit of its range. Traditional knowledge: "Nambour" is the name the Kabi Kabi group gives to this species.
Melaleuca viridiflora var. *viridiflora*		C		Y		
Melastoma malabathricum subsp. *malabathricum*		C		Y		
Monochoria cyanea		C		Y		
Murdannia graminea	murdannia	C		Y		
Myriophyllum crispatum		C		Y	Y	
Myriophyllum gracile		C		Y	Y	
Myriophyllum gracile var. *gracile*		C		Y	Y	
Myriophyllum jacobsii		C		Y	Y	
Myriophyllum simulans		C		Y	Y	
Myriophyllum variifolium		C		Y	Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Myriophyllum verrucosum	water milfoil	C		Y	Y	Found to be associated with lungfish spawning.
Najas marina		SL		Y		Poorly known species.
Najas tenuifolia	water nymph	SL		Y	Y	
Nelumbo nucifera	pink waterlily	SL		Y	Y	
Nauclea orientalis	Leichhardt tree	C			Y	Northern species - granite Creek Southern-most limit.
Nitella hyalina		C		Y		
Nitella penicillata		C		Y		
Nitella tasmanica		C		Y	Y	
Nymphaea gigantea		SL		Y	Y	Considered rare in south-east Queensland.
Nymphoides exiliflora		SL		Y	Y	
Nymphoides geminata		SL		Y		
Nymphoides indica	water snowflake	SL		Y	Y	
Osbornia octodonta	myrtle mangrove	C			Y	
Ottelia alismoides		SL		Y	Y	
Ottelia ovalifolia	swamp lily	SL		Y		
Panicum larcomianum		C			Y	
Panicum obseptum	white water panic	C		Y		
Panicum paludosum	swamp panic	C		Y		
Pemphis acidula		C			Y	
Persicaria attenuata		C		Y	Y	
Persicaria barbata		C		Y	Y	
Persicaria decipiens	slender knotweed	C		Y	Y	
Persicaria dichotoma		C		Y	Y	
Persicaria hydropiper	water pepper	C		Y	Y	
Persicaria lapathifolia	pale knotweed	C		Y	Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Persicaria orientalis	princess feathers	C		Y	Y	
Persicaria praetermissa		C		Y	Y	
Persicaria prostrata	creeping knotweed	C		Y	Y	
Persicaria strigosa		C		Y	Y	
Persicaria subsessilis	hairy knotweed	C		Y	Y	
Phaius australis	Swamp orchid	E	E	Y		
Philydrum lanuginosum	frogsmouth	C		Y	Y	
Phragmites australis	common reed	C		Y	Y	
Phyla nodiflora	carpetweed	C		Y		
Polygonum plebeium	small knotweed	C		Y	Y	
Potamogeton crispus	curly pondweed	SL		Y	Y	
Potamogeton ochreatus	blunt pondweed	SL			Y	
Potamogeton perfoliatus	perfoliate pondweed	SL		Y	Y	
Potamogeton tepperi		SL			Y	
Potamogeton tricarinatus	floating pondweed	SL		Y	Y	
Prasophyllum exilis		NT		Y		Found in M*elaleuca* areas.
Pseudoraphis spinescens	spiny mudgrass	C		Y		
Pteris platyzomopsis		SL		Y		
Ptilothrix deusta		C		Y		
Ranunculus inundatus	river buttercup	C		Y		
Rhizophora stylosa	spotted mangrove	C			Y	
Rhynchospora brownii	beak rush	C		Y	Y	
Rhynchospora corymbosa		C		Y	Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Rhynchospora heterochaeta		C		Y	Y	
Rhynchospora rubra		C		Y	Y	
Riccia multifida		C		Y	Y	
Ricciocarpos natans		C		Y		Aquatic moss rarely seen.
Rotala mexicana		C		Y		
Rotala occultiflora		C		Y		
Rotala tripartita		C		Y		
Sacciolepis indica	Indian cupscale grass	C		Y		
Samolus valerandi	brookweed	C			Y	
Schoenoplectiella mucronata		C		Y		
Schoenoplectus subulatus		C		Y	Y	
Schoenoplectus tabernaemontani		C		Y	Y	
Schoenus apogon		C		Y		
Schoenus apogon var. *apogon*		C		Y	Y	
Schoenus brevifolius		C		Y	Y	
Schoenus centralis		C			Y	
Schoenus falcatus		C		Y	Y	
Schoenus lepidosperma subsp. *pachylepis*		C		Y		
Schoenus maschalinus		C		Y	Y	
Schoenus melanostachys		C		Y		
Scleria rugosa		C		Y		
Selaginella uliginosa	swamp selaginella	C		Y		
Sesbania cannabina		C		Y	Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Sesbania cannabina var. *cannabina*		C		Y		
Sesuvium portulacastrum	sea purslane	C		Y		
Sowerbaea juncea	vanilla plant	C		Y		
Sparganium subglobosum	floating bur-reed	C			Y	
Sphaerolobium vimineum		C		Y		
Sphaeromorphaea australis		C			Y	
Sphaeromorphaea subintegra		C			Y	
Sporadanthus caudatus		C		Y	Y	
Sporadanthus interruptus		C		Y		
Sporobolus virginicus	sand couch	C		Y	Y	
Sprengelia sprengelioides	sprengelia	C		Y		
Sticherus flabellatus var. *flabellatus*		C			Y	
Stuckenia pectinata		SL		Y	Y	
Stylidium debile	frail trigger plant	SL		Y		
Stylidium schizanthum		SL		Y		
Stylidium tenerum		SL		Y		
Suaeda australis		C		Y		
Tecticornia indica		C		Y		
Tecticornia indica subsp. *leiostachya*		C		Y		
Tecticornia pergranulata		C		Y		
Telmatoblechnum indicum		SL		Y		
Trentepohlia abietina		C			Y	

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Trentepohlia arborum		C			Y	
Trentepohlia bosseae var. *brevicellulis*		C			Y	
Trentepohlia bosseae var. *samoensis*		C			Y	
Trentepohlia peruana		C			Y	
Triglochin striata	streaked arrowgrass	SL		Y	Y	
Tristaniopsis laurina		C			Y	
Typha domingensis		C		Y	Y	Exotic species naturalised. Should class as invasive, not Native see Bean (2007). A new system for determining which plant species are indigenous in Australia. Australian Systematic Botany 20: 1-43.
Typha orientalis	broad-leaved cumbungi	C		Y	Y	Exotic species naturalised. Should class as invasive, not Native see Bean (2007). A new system for determining which plant species are indigenous in Australia. Australian Systematic Botany 20: 1-43.
Utricularia aurea	golden bladderwort	SL		Y		Forms significant macrophyte beds.
Utricularia biloba	moth bladderwort	SL		Y		Forms significant macrophyte beds.
Utricularia caerulea	blue bladderwort	SL		Y		Forms significant macrophyte beds.
Utricularia dichotoma	fairy aprons	SL		Y		Forms significant macrophyte beds.
Utricularia gibba	floating bladderwort	SL		Y		Forms significant macrophyte beds.
Utricularia lateriflora	small bladderwort	SL		Y		Forms significant macrophyte beds.
Utricularia stellaris		SL		Y		Forms significant macrophyte beds.
Utricularia uliginosa	asian bladderwort	SL		Y		Forms significant macrophyte beds.
Vallisneria annua		SL		Y		

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Vallisneria nana		SL		Y	Y	Forms significant macrophyte beds, important habitat for lungfish spawning.
Walwhalleya subxerophila		C		Y	Y	
Waterhousea floribunda	weeping lilly pilly	C			Y	Found in regional ecosystem 12.3.1 in Tinana creek.
Xanthorrhoea fulva	swamp grasstree	SL		Y		
Xylocarpus granatum	cedar mangrove	C			Y	
Xyris complanata	yellow-eye	C		Y		
Xyris juncea	dwarf yellow-eye	C		Y		
Zygogonium ericetorum		C		Y	Y	

3.3 Near threatened and threatened flora

The panel identified 12 threatened or near-threatened wetland indicator flora taxa relevant to the riverine and non-riverine wetlands (Table 5). Only species judged to be aquatic, semi-aquatic or riparian dependent and scheduled as Near threatened (NT), Vulnerable (V), Endangered (E), or Critically Endangered (CE) under the Queensland *Nature Conservation Act 1992* (NCA) or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) were considered.

Sightings records for the listed species were used to identify spatial units containing near-threatened or threatened flora taxa to calculate scores for AquaBAMM Measure 4.1.2 (Presence of near threatened or threatened aquatic ecosystem dependent flora species — NCA, EPBC Act).

Table 5. Aquatic dependent threatened or near-threatened flora taxa

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Acacia attenuata	whipstick wattle	V	V	Y		
Acacia baueri subsp baueri	tiny wattle	V		Y		Found on sandhills but also found in heathland which is wet underneath.
Aponogeton elongatus subsp. *elongatus*		NT		Y	Y	
Arthraxon hispidus		V	V	Y		Found in springs and creek lines.
Boronia keysii	key's boronia	V	V	Y		
Boronia rivularis	wide Bay boronia	NT		Y		

Scientific Name	Common Name	NCA Status	EPBC Status	NR	R	Expert Panel Comments
Fimbristylis vagans		E		Y		
Germainia capitata		V	V	Y		
Lobelia membranacea		NT			Y	
Melaleuca cheelii	cheel's paperbark	NT		Y		
Phaius australis	lesser swamp-orchid	E	E	Y		Found mainly in the vicinity of springs.
Prasophyllum exilis		NT		Y		Found in *Melaleuca* areas.

3.4 Priority flora

Priority taxa are defined as those not listed as NT, V, E, or CE in Queensland or Commonwealth legislation but are considered important by the expert panel for the integrity of local aquatic ecosystems as they exhibit one or more of the following priority attributes:

1. It forms significant macrophyte beds (in shallow or deep water)
2. It is an important/critical food source
3. It is important/critical habitat
4. It is implicated in spawning or reproduction for other fauna and/or flora species.
5. It is at its distributional limit or is a disjunct population
6. It provides stream bank or bed stabilisation or has soil-binding properties
7. It is a small population and subject to threatening processes
8. Taxa vulnerable to impacts of climate change - Species that are considered to be adversely affected by the predicted changes in climate, e.g. increasing temperatures, sea level rise and increasing frequency of extreme weather events (drought, flood & cyclones).
9. It is an important source of food or medicine for traditional owners
10. It is associated one or more of five core Aboriginal values: language, song lines, creation stories, trading routes and lore.

The panel identified 108 priority flora taxa relevant to the riverine and non-riverine wetlands of the study areas (Table 6). Only species judged to be aquatic, semi-aquatic or riparian dependent were considered.

Sightings records for the listed species were used to identify spatial units containing priority flora taxa to calculate scores for AquaBAMM Measure 5.1.2 (Presence of aquatic ecosystem dependent 'priority' flora species).

Table 6. Aquatic dependent priority flora taxa

Scientific Name	Common Name	NR	R	Priority Attributes	Expert Panel Comments
Aldrovanda vesiculosa	waterwheel plant	Y		5,7,8	It is an important indicator of good wetlands but could be locally extinct. Is a freshwater version of the 'venus fly trap'.

Scientific Name	Common Name	NR	R	Priority Attributes	Expert Panel Comments
Azolla pinnata	ferny azolla	Y	Y	1,2,3,4,8	May be outcompeted by exotics (i.e. salvinia) with increasing temperatures.
Azolla rubra		Y	Y	1,2,3,4,8	May be outcompeted by exotics (i.e. salvinia) with increasing temperatures.
Bacopa monnieri		Y	Y	1,6	
Banksia robur	broad-leaved banksia	Y		2,6,9	Priority only along coastal areas.
Bolboschoenus fluviatilis		Y	Y	2,3,4,6	
Casuarina cunninghamiana subsp. *cunninghamiana*			Y	2,3,4,6	
Ceratophyllum demersum	hornwort		Y	1,2,3,4	
Crinum pedunculatum	river lily	Y	Y	2,3,4,6	Priority especially in the Burnett catchment.
Cycnogeton procerus		Y	Y	2,3,4	
Cyperus exaltatus	tall flatsedge	Y	Y	2,3,4,6	Usually riverine but can also be non-riverine.
Damasonium minus	starfruit	Y	Y	2,3,4	
Drosera auriculata		Y		5,7,8	Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera binata	forked sundew	Y		5,7,8	Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera burmanni		Y		5,7,8	Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera finlaysoniana		Y		5,7,8	Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera hookeri		Y		5,7,8	Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera lunata		Y		5,7,8	Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.

Scientific Name	Common Name	NR	R	Priority Attributes	Expert Panel Comments
Drosera pygmaea		Y		5,7,8	Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Drosera spatulata		Y		5,7,8	Indicator of water table rise. Under threat due to pesticides, loss of habitat, decrease in insects.
Eleocharis cylindrostachys		Y	Y	2,3,4,6	
Eleocharis equisetina		Y		2,3,4,6	
Eleocharis geniculata		Y		2,3,4,6	
Eleocharis philippinensis		Y		2,3,4,6	
Eleocharis sphacelata	tall spikerush	Y		2,3,4,6	
Eleocharis tetraquetra		Y		3,7	More associated as a northern species.
Eucalyptus tereticornis		Y	Y	3,6,7,9,10	Considered an important component of regional ecosystems 12.3.3 and 12.3.8. Traditional knowledge: Blue gum is habitat for witchetty species. Important in ceremonial processes.
Ficus opposita				2,6,9	Strong riparian-dependent species, but not restricted to riparian zones.
Ficus racemosa var. *racemosa*			Y	2,3,6,9	
Gahnia clarkei	tall sawsedge	Y		2,3,4,6	
Gahnia sieberiana	sword grass	Y		2,3,4	
Hydrilla verticillata	hydrilla	Y	Y	1,2,3,4,6	Associated with lungfish spawning.
Juncus cognatus		Y	Y	2,3,4,6	
Juncus continuus		Y	Y	2,3,4,6	
Juncus planifolius		Y	Y	2,3,4,6	
Juncus polyanthemus		Y	Y	2,3,4,6	
Juncus prismatocarpus	branching rush	Y	Y	2,3,4,6	

Scientific Name	Common Name	NR	R	Priority Attributes	Expert Panel Comments
Juncus subsecundus		Y	Y	2,3,4,6	
Juncus usitatus		Y	Y	2,3,4,6	Priority for the central Burnett, not a priority for the other catchments.
Landoltia punctata		Y	Y	2,3,4	
Leersia hexandra	swamp rice grass	Y	Y	2,3,4,6	
Lepironia articulata		Y	Y	2,3,4,6	Occurs in up to 2 meters of water with tops still sticking out.
Lomandra hystrix		Y	Y	2,3,4,6	
Ludwigia octovalvis	willow primrose			2,3,4,6	
Ludwigia peploides subsp. *montevidensis*		Y	Y	2,3,4,6	
Machaerina arthrophylla		Y	Y	2,3,4,6	
Machaerina articulata		Y	Y	2,3,4,6	
Machaerina gunnii		Y	Y	2,3,4,6	
Machaerina juncea		Y	Y	2,3,4,6	
Machaerina muelleri		Y	Y	2,3,4,6	
Machaerina rubiginosa		Y	Y	2,3,4,6	
Machaerina teretifolia		Y	Y	2,3,4,6	
Marsilea drummondii	common nardoo	Y		2,3,4,6,9	Important food source.
Marsilea hirsuta	hairy nardoo	Y		2,3,4,6,9	Important food source.
Marsilea mutica	shiny nardoo	Y		2,3,4,6,9	Important food source.
Melaleuca bracteata		Y	Y	2,3,4,6,9	
Melaleuca dealbata	swamp tea-tree	Y	Y	2,3,4,6,9	More a dry land/dunal species.
Melaleuca linariifolia	snow-in summer	Y	Y	2,3,4,6,9	

Scientific Name	Common Name	NR	R	Priority Attributes	Expert Panel Comments
Melaleuca pachyphylla		Y		5	This species is a main food source for honeyeaters in wet heath areas. The red and green form is in Wide Bay-Burnett with different forms overlapping in the Cooloola/Fraser region.
Melaleuca quinquenervia	swamp paperbark	Y	Y	2,3,4,6,9,10	Often grows in edge of brackish wetlands. Grows at interface of salt and fresh water. Indicator species, used for a wide variety of cultural practices. Traditional knowledge: used for tools, housing, shelter/protection. Also indicative of whiting on the run.
Melaleuca sieberi		Y		5,7,9	Occurs primarily in small, disjunct populations in Noosa north catchment.
Melaleuca trichostachya		Y	Y	2,3,4,6,9	
Melaleuca viminalis			Y	2,3,4,6,9	Traditional knowledge: Wakka Wakka noted fish (jewfish) breeding associated with flowering events.
Melaleuca viridiflora		Y		5,9,10	Southern limit of its range. Traditional knowledge: “Nambour” is the name Kabi Kabi group give to this species.
Monochoria cyanea		Y		2,3,4	
Myriophyllum simulans		Y	Y	2,3,4	Poorly collected.
Myriophyllum verrucosum	water milfoil	Y	Y	1,2,3,4,6	Found to be associated with lungfish spawning.
Najas tenuifolia	water nymph	Y	Y	1,2,3,4	
Nitella tasmanica		Y	Y	1,2,3,4	
Nymphaea gigantea		Y	Y	2,3,4,6,7, 9	Considered rare in south-east Queensland.
Nymphoides exiliflora		Y	Y	2,3,4	
Nymphoides indica	water snowflake	Y	Y	2,3,4	
Ottelia alismoides		Y	Y	1,2,3,4	
Ottelia ovalifolia	swamp lily	Y		1,2,3,4,6	
Persicaria attenuata		Y	Y	2,3,4,6	

Scientific Name	Common Name	NR	R	Priority Attributes	Expert Panel Comments
Persicaria barbata		Y	Y	2,3,4,6	
Persicaria decipiens	slender knotweed	Y	Y	2,3,4,6	
Persicaria dichotoma		Y	Y	2,3,4,6	
Persicaria hydropiper	water pepper	Y	Y	2,3,4,6	
Persicaria lapathifolia	pale knotweed	Y	Y	2,3,4,6	
Persicaria orientalis	princess feathers	Y	Y	2,3,4,6	
Persicaria praetermissa		Y	Y	2,3,4,6	
Persicaria prostrata	creeping knotweed	Y	Y	2,3,4,6	
Persicaria strigosa		Y	Y	2,3,4,6	
Persicaria subsessilis	hairy knotweed	Y	Y	2,3,4,6	
Philydrum lanuginosum	frogsmouth	Y	Y	6	
Phragmites australis	common reed	Y	Y	2,3,4,6	
Potamogeton crispus	curly pondweed	Y	Y	1,2,3,4	
Potamogeton perfoliatus	perfoliate pondweed	Y	Y	1,2,3,4	
Potamogeton tricarinatus	floating pondweed	Y	Y	1,2,3,4	
Pseudoraphis spinescens	spiny mudgrass	Y		2,3,4,6	
Schoenoplectiella mucronata		Y		2,3,4,6	
Schoenoplectus subulatus		Y	Y	2,3,4,6	
Schoenoplectus tabernaemontani		Y	Y	2,3,4,6	
Sphaerolobium vimineum		Y		5	Found in wet heath.
Stuckenia pectinata		Y	Y	1,2,3,4	

Scientific Name	Common Name	NR	R	Priority Attributes	Expert Panel Comments
Typha domingensis				2,3,4,6,9	
Typha orientalis	broad-leaved cumbungi	Y	Y	2,3,4,6,9	
Utricularia aurea	golden bladderwort	Y		1,2,3,4	Forms significant macrophyte beds.
Utricularia biloba	moth bladderwort	Y		1,2,3,4	Forms significant macrophyte beds.
Utricularia caerulea	blue bladderwort	Y		1,2,3,4	Forms significant macrophyte beds.
Utricularia dichotoma	fairy aprons	Y		1,2,3,4	Forms significant macrophyte beds.
Utricularia gibba	floating bladderwort	Y		1,2,3,4	Forms significant macrophyte beds.
Utricularia lateriflora	small bladderwort	Y		1,2,3,4	Forms significant macrophyte beds.
Utricularia stellaris		Y		1,2,3,4	Forms significant macrophyte beds.
Utricularia uliginosa	asian bladderwort	Y		1,2,3,4	Forms significant macrophyte beds.
Vallisneria nana		Y	Y	1,2,3,4	Forms significant macrophyte beds, important habitat for lungfish spawning.
Waterhousea floribunda	weeping lilly pilly		Y	2,3,4,6	Found in regional ecosystem 12.3.1, in Tinana creek.

4 Fauna

The role of the fauna expert panel is to provide expert advice on the aquatic fauna values of the waterways and wetlands within each study area.

Fauna sightings records compiled from corporate databases including WildNet (12/12/2021) and the Queensland Fauna Database (22/08/2023). Records were filtered by precision (<=2,000m) and year (>=1975). Only records for fauna species dependent upon freshwater wetlands for all or part of their lifecycle were retained.

4.1 Exotic fauna

Exotic fauna species found in or likely to invade study area wetlands were evaluated by the panel. Only species known or suspected to cause significant detrimental impact to wetland habitat and/or native species were considered. The panel identified 36 exotic fauna taxa impacting riverine or non-riverine wetlands within the study areas (Table 7).

Sightings records for the listed species were used to identify spatial units containing exotic vertebrate fauna taxa. These taxa counts were used to calculate scores for the AquaBAMM Measure 1.1.1 (Presence of 'alien' fish species within the wetland), 1.1.3 (Presence of exotic invertebrate fauna within the wetland) and 1.1.4 (Presence of feral/exotic vertebrate fauna (other than fish)).

Table 7. Exotic fauna taxa impacting study area wetland values

Scientific Name	Common Name	R	NR	M1.1.1	M1.1.3	M1.1.4	Expert Panel Comments
Fish							
Ambassis marianus	estuary glassfish	Y		Y			
Amniataba percoides	barred grunter	Y	Y	Y			This species has been introduced into the Mary River.
Bidyanus bidyanus	silver perch	Y	Y	Y			This is a translocated species so should be removed from m3.1.2 and not included in m4.1.1.
Carassius auratus	goldfish	Y	Y	Y			
Cyprinus carpio	European carp	Y	Y	Y			The panel notes that this species is sparse in the Mary River, and has been detected through analysis of eDNA in the Burnett, Baffle and Kolan catchments.
Gambusia holbrooki	mosquitofish	Y	Y	Y			
Hephaestus fuliginosus	sooty grunter	Y	Y	Y			This is a translocated species so should be removed from m3.1.
Macquaria ambigua	golden perch	Y	Y	Y			This is a translocated species so should be removed from m3.1.2. The panel noted it is still stocked in local wetlands and present in big numbers.
Oreochromis mossambica	Mozambique mouthbrooder	Y	Y	Y			

Scientific Name	Common Name	R	NR	M1.1.1	M1.1.3	M1.1.4	Expert Panel Comments
Oxyeleotris lineolata	sleepy cod	Y	Y	Y			This is a translocated species so should be removed from m3.1.2.
Poecilia latipinna	sailfin molly	Y		Y			
Poecilia reticulata	guppy	Y	Y	Y			
Scleropages leichardti	southern saratoga	Y	Y	Y			This is a translocated species so should be removed from m3.1.2.
Scortum barcoo	Barcoo Grunter	Y		Y			
Xiphophorus hellerii	swordtail	Y	Y	Y			
Xiphophorus maculatus	platy	Y	Y	Y			
Invertebrates							
Cherax quadricarinatus	redclaw	Y	Y		Y		This species has spread throughout the Burnett, Mary, and Fitzroy catchments.
Cherax destructor		Y	Y		Y		
Melanoides tuberculata		Y	Y		Y		
Physa acuta		Y	Y		Y		
Amphibian							
Rhinella marina	cane toad	Y	Y			Y	Impacts on most taxa that consume frogs at all stages of the toad's lifecycle.
Birds							
Anas platyrhynchos	northern mallard	Y	Y			Y	Known to hybridize with native ducks.
Anser anser	Greylag (Domestic) Goose	Y	Y			Y	Compete for food with native species. Likely to predate frogs.
Cairina moschata	Muscovy Duck	Y	Y			Y	Compete for food with native species. Likely to predate frogs.

Scientific Name	Common Name	R	NR	M1.1.1	M1.1.3	M1.1.4	Expert Panel Comments
Mammals							
Bos sp.	cattle	Y	Y			Y	Tends to stay localised, eat vegetation and trample, causing degradation to wetlands and eutrophication of water through defecation.
Canis familiaris	dog	Y	Y			Y	Predation of animals and digging up reptile nests.
Capra hircus	goat	Y	Y			Y	
Cervus elaphus	red deer	Y	Y			Y	Eats vegetation, trample and strip bark off plants causing degradation to wetlands. Evidence of digging and feeding on turtle eggs.
Equus caballus	horse	Y	Y			Y	
Felis catus	cat	Y	Y			Y	Feral cats occur everywhere in Wide Bay – Burnett.
Rattus rattus	black rat	Y	Y			Y	Potentially impacts on frogs and known to predate birds' eggs.
Sus scrofa	pig	Y	Y			Y	Predation of animals and digging up reptile and invertebrate nests. Trampling in waterways.
Vulpes vulpes	red fox	Y	Y			Y	Predation of animals and digging up reptile nests.
Reptiles							
Crocodylus johnstoni	freshwater crocodile	Y	Y			Y	Sighted in Mundubbera but not native to there. Likely released decades ago.
Emydura macquarii macquarii	Murray turtle	Y	Y			Y	Translocated into study area, likely through the pet trade.
Trachemys scripta elegans	red-eared slider	Y	Y			Y	Recorded in Baldwin Swamp. One unconfirmed record near Gympie.

4.2 Fauna species richness

Fauna species richness (total number of species) was calculated using wetland dependent species. Wetland dependent fauna species were defined as:

> *Species that are adapted to and dependent on living in wet conditions for at least part of their life and are found either within or immediately adjoining a riverine, non-riverine or estuarine wetland.*

4.2.1 Amphibian richness

The panel identified 45 native amphibian wetland indicator species relevant to the riverine and non-riverine wetlands of the study areas (Table 8). Sightings records for the listed species were used to identify spatial units containing native amphibian taxa to calculate species richness scores for AquaBAMM Measures 3.1.1 (Richness of native amphibians (riverine wetland breeders)) and 3.1.6 (Richness of native amphibians (non-riverine wetland breeders).

Table 8. Aquatic dependent native amphibian taxa

Scientific Name	Common Name	M3.1.1 (R)	M3.1.6 (NR)	Expert Panel Comments
Adelotus brevis	tusked frog	Y	Y	Find a Frog in February (FFF), a citizen science program facilitated by the Mary River Catchment Coordinating Committee, have observed a decline in occupancy rate from 2020 to 2024 in the Noosa, Mary and Burrum catchments.
Crinia deserticola	chirping froglet		Y	
Crinia parinsignifera	beeping froglet		Y	
Crinia signifera	clicking froglet	Y	Y	
Crinia tinnula	wallum froglet		Y	
Cyclorana alboguttata	greenstripe frog		Y	
Cyclorana brevipes	superb collared frog		Y	
Cyclorana novaehollandiae	eastern snapping frog		Y	
Cyclorana verrucosa	rough-collared frog		Y	
Limnodynastes convexiusculus	marbled frog		Y	
Limnodynastes fletcheri	barking frog	Y	Y	Breeds on the margins of slow-moving streams.
Limnodynastes peronii	striped marshfrog	Y	Y	Find a Frog in February (FFF), a citizen science program facilitated by the Mary River Catchment Coordinating Committee, have observed a decline in occupancy rate from 2020 to 2024 in the Noosa, Mary and Burrum catchments.

Scientific Name	Common Name	M3.1.1 (R)	M3.1.6 (NR)	Expert Panel Comments
Limnodynastes salmini	salmon striped frog		Y	
Limnodynastes tasmaniensis	spotted grassfrog		Y	
Limnodynastes terraereginae	scarlet sided pobblebonk	Y	Y	
Litoria freycineti	wallum rocketfrog		Y	This species is not a riverine breeder in south-eastern Queensland.
Litoria gracilenta	graceful treefrog		Y	This species is not a riverine breeder. Find a Frog in February (FFF), a citizen science program facilitated by the Mary River Catchment Coordinating Committee, have observed a decline in occupancy rate from 2020 to 2024 in the Noosa, Mary and Burrum catchments.
Litoria inermis	bumpy rocketfrog	Y	Y	
Litoria kroombitensis	Kroombit treefrog	Y		This population has been described as *Litoria kroombitensis*, split from *L. pearsonian*a, which is also present in the study area.
Litoria latopalmata	broad palmed rocketfrog	Y	Y	
Litoria nasuta	striped rocketfrog	Y	Y	
Litoria olongburensis	wallum sedgefrog	N	Y	This species is not a riverine breeder, does not do well with fish.
Litoria pearsoniana	cascade treefrog	Y		
Litoria peronii	emerald spotted treefrog	Y	Y	
Litoria revelata	whirring treefrog	Y	Y	
Litoria rothii	northern laughing treefrog	Y	Y	
Litoria rubella	ruddy treefrog		Y	This species is not a riverine breeder. Find a Frog in February (FFF), a citizen science program facilitated by the Mary River Catchment Coordinating Committee, have observed a decline in occupancy rate from 2020 to 2024 in the Noosa, Mary and Burrum catchments.
Litoria tyleri	southern laughing treefrog		Y	This species is not a riverine breeder.

Scientific Name	Common Name	M3.1.1 (R)	M3.1.6 (NR)	Expert Panel Comments
Litoria verreauxii	whistling treefrog	Y	Y	
Litoria wilcoxii	eastern stony creek frog	Y	Y	Find a Frog in February (FFF), a citizen science program facilitated by the Mary River Catchment Coordinating Committee, have observed a decline in occupancy rate from 2020 to 2024 in the Noosa, Mary and Burrum catchments.
Mixophyes fasciolatus	great barred frog	Y	Y	
Mixophyes fleayi	Fleay's barred frog	Y		
Mixophyes iteratus	giant barred frog	Y		
Neobatrachus sudellae	meeowing frog		Y	
Platyplectrum ornatum	ornate burrowing frog		Y	This species is not a riverine breeder.
Taudactylus pleione	Kroombit tinkerfrog	Y		
Uperoleia fusca	dusky gungan		Y	
Uperoleia laevigata	eastern gungan		Y	
Uperoleia rugosa	chubby gungan		Y	

4.2.2 Fish richness

The panel identified 48 native fish taxa relevant to the riverine and non-riverine wetlands of the study areas (Table 9). Sightings records for the listed species were used to identify spatial units containing native fish taxa to calculate species richness scores for AquaBAMM Measure 3.1.2 (Richness of native fish).

Table 9. Aquatic dependent native fish taxa

Scientific Name	Common Name	R	NR	Expert Panel Comments
Acanthopagrus australis	yellowfin bream	Y		
Ambassis agassizii	Agassiz's glassfish	Y	Y	
Anguilla australis	southern shortfin eel	Y	Y	
Anguilla reinhardtii	longfin eel	Y	Y	Traditional owners noted the value of this species as a food source.

Scientific Name	Common Name	R	NR	Expert Panel Comments
Arrhamphus sclerolepis	snubnose garfish	Y	Y	
Carcharhinus amboinensis	pig-eyed shark	Y		Occasionally enters estuaries into freshwater zone. Frequently confused with bullshark, *Carcharhinus leucas*.
Carcharhinus leucas	bullshark	Y		Occasionally enters estuaries into freshwater zone.
Craterocephalus marjoriae	silverstreak hardyhead	Y		
Craterocephalus stercusmuscarum	flyspecked hardyhead	Y	Y	
Kuhlia rupestris	jungle perch	Y		Confirmed as native to the area but heavily impacted by impeded flows of riverine systems blocking passage upstream.
Lates calcarifer	barramundi	Y	Y	
Leiopotherapon unicolor	spangled perch	Y	Y	
Lutjanus argentimaculatus	mangrove jack	Y	Y	Traditional owners noted the value of this species as a food source.
Glossamia aprion	mouth almighty	Y	Y	
Gobiomorphus australis	striped gudgeon	Y		
Hypseleotris compressa	empire gudgeon	Y	Y	
Hypseleotris galii	firetail gudgeon	Y	Y	
Hypseleotris klunzingeri	western carp gudgeon	Y	Y	The panel noted this species is native to the study area.
Hypseleotris species 1	Midgley's carp gudgeon	Y	Y	The panel noted this species is native to the study area.
Hypseleotris species 2	Lake's carp gudgeon	Y	Y	The panel noted this species is native to the study area.
Maccullochella mariensis	Mary River cod	Y		Traditional owners noted the value of this species as a food source.
Macquaria novemaculeata	Australian bass	Y		
Megalops cyprinoides	oxeye herring	Y	Y	

Scientific Name	Common Name	R	NR	Expert Panel Comments
Melanotaenia duboulayi	crimsonspotted rainbowfish	Y	Y	
Melanotaenia splendida splendida	eastern rainbowfish	Y	Y	
Mogurnda adspersa	southern purplespotted gudgeon	Y	Y	
Monodactylus argenteus	diamondfish	Y		
Mugil cephalus	sea mullet	Y	Y	Traditional owners noted the value of this species as a food source.
Nannoperca oxleyana	Oxleyan pygmy perch	Y	Y	Panel notes this species is typically found in non-riverine wetlands connected to creek systems and low-energy creeks.
Nematalosa erebi	bony bream	Y	Y	
Neoarius graeffei	blue catfish	Y		
Neoceratodus forsteri	Australian lungfish	Y		Traditional owners noted the value of this species as part of one of their creation stories.
Neosilurus hyrtlii	Hyrtl's catfish	Y	Y	
Notesthes robusta	bullrout	Y		
Philypnodon grandiceps	flathead gudgeon	Y		
Philypnodon macrostomus	dwarf flathead gudgeon	Y	Y	
Porochilus rendahli	Rendahl's catfish	Y	Y	
Pseudomugil mellis	honey blue eye	Y	Y	
Pseudomugil signifer	Pacific blue eye	Y		
Redigobius bikolanus	speckled goby	Y	Y	
Retropinna semoni	Australian smelt	Y	Y	
Rhadinocentrus ornatus	ornate rainbowfish	Y	Y	

Scientific Name	Common Name	R	NR	Expert Panel Comments
Scatophagus argus	spotted scat	Y		
Selenotoca multifasciata	striped scat	Y		
Strongylura krefftii	freshwater longtom	Y	Y	
Tandanus tandanus	freshwater catfish	Y	Y	Traditional owners noted the value of this species as a food source.
Terapon jarbua	crescent grunter	Y		
Trachystoma petardi	pinkeye mullet	Y		

4.2.3 Reptile richness

The panel identified 14 native reptile wetland dependent species relevant to the riverine and non-riverine wetlands of the study areas (Table 10). Sightings records for the listed species were used to identify spatial units containing native reptile taxa to calculate scores for AquaBAMM Measure 3.1.3 (Richness of native aquatic dependent reptiles).

Table 10. Aquatic dependent native reptile taxa

Scientific Name	Common Name	R	NR	Expert Panel Comments
Chelodina expansa	broad-shelled river turtle	Y	Y	Traditional owners noted this species is locally named Milbi in the Baffle and Burnett catchments and is associated with a creation story.
Chelodina longicollis	eastern snake-necked turtle	Y	Y	
Crocodylus porosus	Saltwater Crocodile	Y	Y	This species was historically present throughout the region. It is still (or again) present in the Mary River.
Elseya albagula	southern snapping turtle (white throated snapping turtle)	Y	N	This species is endemic to coastal catchments in central Queensland. The species is a totem for local Taribelang Bunda traditional owners. The local common name is white-throated snapping turtle. Since the previous ACA report this species has become Critically Endangered and has been moved from the priority species list (measure 5.1.1) to the threatened species list (measure 4.1.1).
Elusor macrurus	Mary River turtle	Y	N	
Emydura macquarii krefftii	Krefft's river turtle	Y	Y	
Eulamprus quoyii	eastern water skink	Y	Y	
Hemiaspis damelii	grey snake	Y	Y	

Scientific Name	Common Name	R	NR	Expert Panel Comments
Hemiaspis signata	black-bellied swamp snake	Y	Y	
Intellagama lesueurii	eastern water dragon	Y	Y	This species was included in the previous report as *Physignathus lesueurii*.
Pseudechis porphyriacus	red-bellied black snake	Y	Y	
Tropidechis carinatus	rough-scaled snake	Y	Y	
Tropidonophis mairii	freshwater snake	Y	Y	The panel notes this species is also known as the keelback snake.
Wollumbinia latisternum	saw-shelled turtle	Y	Y	

4.2.4 Waterbird richness

The panel identified 99 native bird wetland indicator species relevant to the riverine and non-riverine wetlands of the study areas (Table 11). Only bird species inhabiting freshwater wetland environments for all, or part of their life history were considered.

Sightings records for the listed species were used to identify spatial units containing native bird taxa to calculate species richness scores for AquaBAMM Measure 3.1.4 (Richness of native waterbirds).

Table 11. Aquatic dependent native bird taxa

Scientific Name	Common Name	R	NR	Expert Panel Comments
Acrocephalus australis	Australian reed-warbler	Y	Y	No longer listed in international migratory bird conventions. Removed from measure 5.1.3.
Actitis hypoleucos	common sandpiper	Y		
Amaurornis moluccana	pale-vented bush-hen	Y	Y	
Anas castanea	chestnut teal	Y	Y	
Anas gracilis	grey teal	Y	Y	
Anas superciliosa	Pacific black duck		Y	
Anhinga novaehollandiae	Australasian darter	Y	Y	
Anseranas semipalmata	magpie goose		Y	
Antigone rubicunda	brolga		Y	Included in the previous report as *Grus rubicunda*.

Scientific Name	Common Name	R	NR	Expert Panel Comments
Ardea alba modesta	eastern great egret	Y	Y	Listed as migratory in initial Wide Bay-Burnett ACA but since split into Australian subspecies. Removed from measure 5.1.3.
Ardea intermedia	intermediate egret	Y	Y	
Ardea pacifica	white-necked heron	Y	Y	
Ardea sumatrana	great-billed heron	Y	Y	
Arenaria interpres	ruddy turnstone		Y	
Aythya australis	hardhead	Y	Y	
Biziura lobata	musk duck	Y		
Botaurus poiciloptilus	Australasian bittern	Y	Y	Species has been listed as threatened since last report. Added to measure 4.1.1.
Bubulcus ibis	cattle egret	Y	Y	No longer listed in international migratory bird conventions. Removed from measure 5.1.3.
Butorides striata	striated heron	Y	Y	
Chenonetta jubata	Australian wood duck		Y	
Cygnus atratus	black swan		Y	
Chlidonias hybrida	whiskered tern	Y	Y	
Chlidonias leucopterus	white-winged black tern	Y	Y	
Chroicocephalus novaehollandiae	silver gull	Y	Y	
Calidris acuminata	sharp-tailed sandpiper		Y	
Calidris alba	sanderling		Y	
Calidris canutus	red knot		Y	Uses aquatic environments occasionally during migration.
Calidris falcinellus	broad-billed sandpiper		Y	Uses aquatic environments occasionally during migration.
Calidris ferruginea	curlew sandpiper		Y	Species is known to occasionally use aquatic environments during migration and as feed and roost sites.
Calidris melanotos	pectoral sandpiper		Y	There 26 records for the region so the species is no longer considered a vagrant to the area.

Scientific Name	Common Name	R	NR	Expert Panel Comments
Calidris ruficollis	red-necked stint		Y	
Calidris tenuirostris	great knot		Y	Uses aquatic environments occasionally during migration.
Ceyx azureus	azure kingfisher	Y	Y	
Circus approximans	swamp harrier	Y	Y	Considered a waterbird by Birdlife Australia in their waterbirds index.
Charadrius bicinctus	double-banded plover		Y	
Charadrius leschenaultii	greater sand plover		Y	Uses aquatic environments occasionally during migration.
Charadrius mongolus	lesser sand plover		Y	Uses aquatic environments occasionally during migration.
Charadrius ruficapillus	red-capped plover	Y		
Dendrocygna arcuata	wandering whistling-duck		Y	
Dendrocygna eytoni	plumed whistling-duck		Y	
Egretta garzetta	little egret	Y	Y	
Egretta novaehollandiae	white-faced heron	Y	Y	
Elseyornis melanops	black-fronted dotterel	Y	Y	
Ephippiorhynchus asiaticus	black-necked stork	Y	Y	
Erythrogonys cinctus	red-kneed dotterel	Y	Y	
Fulica atra	Eurasian coot		Y	
Gallinago hardwickii	Latham's snipe	Y	Y	
Gallinula tenebrosa	dusky moorhen	Y	Y	
Gallirallus philippensis	buff-banded rail		Y	
Gelochelidon nilotica	gull-billed tern	Y	Y	Species is known to travel up riverine systems a long way inland.
Haliaeetus leucogaster	white-bellied sea-eagle	Y	Y	No longer listed in international migratory bird conventions. Removed from measure 5.1.3.

Scientific Name	Common Name	R	NR	Expert Panel Comments
Haliastur indus	brahminy kite	Y	Y	
Himantopus leucocephalus	pied stilt		Y	Included in the previous report as *Himantopus himantopus*.
Hydroprogne caspia	Caspian tern	Y	Y	
Irediparra gallinacea	comb-crested jacana	Y	Y	
Ixobrychus dubius	Australian little bittern	Y	Y	
Ixobrychus flavicollis	black bittern	Y	Y	
Lewinia pectoralis	Lewin's rail		Y	Previously listed as Near Threatened but has been downlisted to Least Concern. Removed from measure 4.1.1.
Limosa lapponica baueri	Western Alaskan bar-tailed godwit		Y	Uses aquatic environments occasionally during migration.
Limosa limosa	black-tailed godwit	Y	Y	
Malacorhynchus membranaceus	pink-eared duck		Y	
Microcarbo melanoleucos	little pied cormorant	Y	Y	
Nettapus coromandelianus	cotton pygmy-goose		Y	Previously listed as Near Threatened but has been downlisted to Least Concern. Removed from measure 4.1.1.
Nettapus pulchellus	green pygmy-goose		Y	
Numenius madagascariensis	eastern curlew	Y	Y	Uses aquatic environments occasionally during migration.
Numenius phaeopus	whimbrel		Y	Uses aquatic environments occasionally during migration.
Nycticorax caledonicus	nankeen night-heron	Y	Y	
Oxyura australis	blue-billed duck		Y	
Pandion haliaetus cristatus	eastern osprey	Y	Y	Included in the previous report as *Pandion cristatus*.
Pelecanus conspicillatus	Australian pelican	Y	Y	

Scientific Name	Common Name	R	NR	Expert Panel Comments
Pezoporus wallicus wallicus	ground parrot		Y	This species was considered for removal due to questions about its use of aquatic ecosystems, however it was decided to be included due to 100% overlap of modelled habitat with mapped wetland polygons.
Phalacrocorax carbo	great cormorant	Y	Y	
Phalacrocorax sulcirostris	little black cormorant	Y	Y	
Phalacrocorax varius	pied cormorant	Y	Y	
Platalea flavipes	yellow-billed spoonbill		Y	
Platalea regia	royal spoonbill		Y	
Plegadis falcinellus	glossy ibis		Y	
Pluvialis fulva	Pacific golden plover		Y	Species is known to occasionally use aquatic environments during migration and as feed and roost sites.
Pluvialis squatarola	grey plover		Y	
Podiceps cristatus	great crested grebe		Y	
Poliocephalus poliocephalus	hoary-headed grebe		Y	
Poodytes gramineus	little grassbird	Y	Y	Included in the previous report as *Megalurus gramineus*.
Porphyrio melanotus	purple swamphen	Y	Y	
Porzana fluminea	Australian spotted crake		Y	
Radjah radjah	radjah shelduck		Y	Previously listed as Near Threatened but has been downlisted to Least Concern. Removed from measure 4.1.1.
Recurvirostra novaehollandiae	red-necked avocet	Y	Y	
Rostratula australis	Australian painted-snipe		Y	Inclusion as migratory under CAMBA likely historic artefact and no longer correct. The species is a resource nomad rather than migratory. Removed from measure 5.1.3.
Spatula rhynchotis	Australasian shoveler		Y	

Scientific Name	Common Name	R	NR	Expert Panel Comments
Stictonetta naevosa	freckled duck		Y	
Tachybaptus novaehollandiae	Australasian grebe		Y	
Thalasseus bergii	crested tern	Y	Y	Species is known to travel up riverine systems a long way inland.
Threskiornis molucca	Australian white ibis		Y	
Threskiornis spinicollis	straw-necked ibis		Y	
Tringa glareola	wood sandpiper		Y	
Tringa nebularia	common greenshank		Y	
Tringa stagnatilis	marsh sandpiper	Y	Y	
Tribonyx ventralis	black-tailed native-hen	Y	Y	
Zapornia pusilla	Baillon's crake		Y	Included in the previous report as *Porzana pusilla*.
Zapornia tabuensis	spotless crake		Y	Included in the previous report as *Porzana tabuensis*.

4.2.5 Mammal richness

Eight mammal taxa were considered by the panel to be aquatic dependent and relevant to the riverine and non-riverine wetlands of the study areas (Table 12). Sightings records for the listed species were used to identify spatial units containing mammal taxa to calculate species richness scores for AquaBAMM Measure 3.1.7 (Richness of native aquatic dependent mammals).

Table 12. Aquatic dependent native mammal taxa

Scientific Name	Common Name	R	NR	Expert Panel Comments
Hydromys chrysogaster	water rat	Y	Y	
Myotis macropus	large-footed myotis	Y	N	Also known as fishing bat, this species predominantly forages over or in riparian wetlands. They also roost under bridges and in culverts.
Ornithorhynchus anatinus	platypus	Y	Y	Platypus was noted as being particularly significant for the traditional owners, they are a totem species and also part of a creation story.

Scientific Name	Common Name	R	NR	Expert Panel Comments
Pteropus poliocephalus	grey-headed flying-fox	Y	Y	This species strongly prefers vegetation in or surrounding wetlands for their camps and breeding roosts. The species is highly mobile, and a key pollinator in the landscape. They also damage commercial fruit crops. Traditional owners noted they are traditional food source.
Pteropus alecto	black flying-fox	Y	Y	This species strongly prefers vegetation in or surrounding wetlands for their camps and breeding roosts. The species is highly mobile, and a key pollinator in the landscape. They also damage commercial fruit crops.
Pteropus scapulatus	little red flying-fox	Y	Y	This species strongly prefers vegetation in or surrounding wetlands for their camps and breeding roosts. The species is a resource nomad, and a key pollinator in the landscape. They also damage commercial fruit crops. Traditional owners noted they are a totem species and have a skin system story.
Rattus lutreolus	swamp rat	Y	Y	
Xeromys myoides	water mouse	Y	Y	

4.2.6 Macroinvertebrate richness

The panel advised against using wetland-dependent macroinvertebrate taxa lists to calculate macroinvertebrate diversity for the study areas. They based this recommendation on the lack of macroinvertebrate surveys across the region. Where available, past ACAs have used maximum richness scores derived from higher-level macroinvertebrates studies undertaken using recognised survey and analysis methods (i.e., those used by Conrick & Cockayne 2000, Chessman 2003, and Healthy Waterways 2014). Such methods estimate macroinvertebrate diversity at the broad taxonomic group level (e.g., sub-family, family, order, or class). Higher-level macroinvertebrates studies were unavailable for the region so AquaBAMM Measure 3.2.1 (Richness of macroinvertebrate taxa) was not calculated for the WBBGBRCC ACA.

While taxa specific to AquaBAMM Measure 3.2.1 were not elicited from experts at the expert panel workshops, experts were still invited to nominate individual priority macroinvertebrate species for Measure 5.1.1.

4.3 Near threatened and threatened fauna

The panel identified 30 near threatened or threatened fauna taxa relevant to the riverine and non-riverine wetlands of the study areas (Table 13). Only species judged to be aquatic, semi-aquatic or riparian dependent and scheduled as NT, V, E, or CE under the NCA or the EPBC Act were considered.

Sightings records for the listed species were used to identify spatial units containing near threatened or threatened fauna taxa to calculate scores for AquaBAMM Measure 4.1.1 (Presence of rare or threatened aquatic ecosystem dependent fauna species - NCA, EPBC Act).

Table 13. Aquatic dependent near threatened and threatened fauna taxa

Scientific Name	Common Name	NCA Status	EPBC Status	R	NR	Expert panel Comments
Adelotus brevis	tusked frog	V		Y	Y	
Botaurus poiciloptilus	Australasian bittern	E	E	Y	Y	Species has been listed as threatened since the 2009 assessment

Scientific Name	Common Name	NCA Status	EPBC Status	R	NR	Expert panel Comments
Calidris canutus	red knot	E	E	N	Y	Uses aquatic environments occasionally during migration.
Calidris ferruginea	curlew sandpiper	CE	CE	N	Y	Species is known to occasionally use aquatic environments during migration and as feed and roost sites.
Calidris tenuirostris	great knot	CE	CE	N	Y	Uses aquatic environments occasionally during migration.
Charadrius leschenaultii	greater sand plover	V	V	N	Y	Uses aquatic environments occasionally during migration.
Charadrius mongolus	lesser sand plover	E	E	N	Y	Uses aquatic environments occasionally during migration.
Crinia tinnula	wallum froglet	V		N	Y	
Crocodylus porosus	Saltwater Crocodile	V		Y	Y	This species was historically present throughout the region. It is still (or again) present in the Mary River.
Elseya albagula	southern snapping turtle (white throated snapping turtle)	CE	CE	Y	N	This species is endemic to coastal catchments in central Queensland. The species is a totem for local Taribelang Bunda traditional owners. The local common name is white-throated snapping turtle. This species has become Critically Endangered since the 2009 assessment and so has been moved from the priority species list (measure 5.1.1) to the threatened species list (measure 4.1.1).
Elusor macrurus	Mary River turtle	E	E	Y	N	
Hemiaspis damelii	grey snake	E		Y	Y	
Limosa lapponica baueri	Western Alaskan bar-tailed godwit	V	V	N	Y	Uses aquatic environments occasionally during migration.
Litoria cooloolensis	Cooloola sedgefrog	NT		N	Y	
Litoria freycineti	wallum rocketfrog	V		N	Y	This species is not a riverine breeder in south-eastern Queensland.

Scientific Name	Common Name	NCA Status	EPBC Status	R	NR	Expert panel Comments
Litoria kroombitensis	Kroombit treefrog	CE	CE	Y	N	This population has been described as *Litoria kroombitensis*, split from L. pearsoniana, which is also present in the study area.
Litoria olongburensis	wallum sedgefrog	V	V	N	Y	This species is not a riverine breeder, they do not do well with fish.
Litoria pearsoniana	cascade treefrog	V		Y	N	
Maccullochella mariensis	Mary River cod		E	Y	N	Traditional owners noted the value of this species as a food source.
Mixophyes fleayi	Fleay's barred frog	E	E	Y	N	
Mixophyes iteratus	giant barred frog	V	V	Y	N	
Nannoperca oxleyana	Oxleyan pygmy perch	V	E	Y	Y	Panel notes this species is typically found in non-riverine wetlands connected to creek systems and low-energy creeks.
Neoceratodus forsteri	Australian lungfish		V	Y	N	Traditional owners noted the value of this species as part of one of their creation stories.
Numenius madagascariensis	eastern curlew	E	CE	Y	Y	Uses aquatic environments occasionally during migration.
Pezoporus wallicus wallicus	ground parrot	V		N	Y	This species was considered for removal due to questions about its use of aquatic ecosystems, however it was decided to be included due to 100% overlap of modelled habitat with mapped wetland polygons.
Pseudomugil mellis	honey blue eye	E	V	Y	Y	

Scientific Name	Common Name	NCA Status	EPBC Status	R	NR	Expert panel Comments
Pteropus poliocephalus	grey-headed flying-fox		V	Y	Y	This species strongly prefers vegetation in or surrounding wetlands for their camps and breeding roosts. The species is highly mobile, and a key pollinator in the landscape. They also damage commercial fruit crops. Traditional owners noted they are traditional food source.
Rostratula australis	Australian painted-snipe	E	E	N	Y	Inclusion as migratory under CAMBA likely historic artefact and no longer correct. The species is a resource nomad rather than migratory.
Taudactylus pleione	Kroombit tinkerfrog	CE	CE	Y	N	
Xeromys myoides	water mouse	V	V	Y	Y	

4.4 Priority fauna

The panel deliberated on all aquatic-dependent fauna species within the study areas to identify priority fauna. Priority taxa are defined as those not listed as NT, V, E, or CE in Queensland or Commonwealth legislation but are considered significant within the study region as they exhibit one or more of the following attributes:

1. It is endemic to the study area (>75% of its distribution is in the study area/catchment)
2. It has experienced, or is suspected of experiencing, a serious population decline
3. It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment
4. It is currently a small population and threatened by loss of habitat
5. It is a significant disjunct population
6. It is a migratory species (other than birds)
7. A significant proportion of the breeding population (>1% for waterbirds, >75% other species) occurs in the waterbody (see Ramsar Criterion 6 for waterbirds)
8. Taxa vulnerable to impacts of climate change - Species that are considered to be adversely affected by the predicted changes in climate e.g. increasing temperatures, sea level rise and increasing frequency of extreme weather events (drought, flood & cyclones). Species can only be listed under this reason if there is sufficient knowledge of species' biology and its interaction with climate that would support an assessed impact under climate change scenarios
9. It is an important source of food or medicine for traditional owners
10. It is associated one or more of five core Aboriginal values: language, song lines, creation stories, trading routes and lore.

4.4.1 Priority species

The panel identified seven priority fauna taxa relevant to the riverine and non-riverine wetlands of study areas (Table 14). Sightings records for the listed species were used to identify spatial units containing priority fauna taxa to calculate scores for AquaBAMM Measure 5.1.1 (Presence of aquatic ecosystem dependent 'priority' fauna species).

Based on a recommendation from the fauna expert panel this list includes all freshwater species occurring within the study areas and listed as "No Take" under the *Fisheries Act* (1994).

Table 14. Aquatic dependent priority fauna taxa

Scientific Name	Common Name	R	NR	Priority Attributes	Expert Panel Comments
Euastacus urospinosus		Y		1	This species is endemic to the Obi Obi Creek catchment. The panel notes it is likely to soon be listed as threatened.
Kuhlia rupestris	jungle perch	Y		1,2,3	Confirmed as native to the area but heavily impacted by impeded flows of riverine systems blocking passage upstream.
Lates calcarifer	barramundi	Y	Y	2,4 (Burnett), 9, 10	Barramundi is a priority species specifically in the Burnett catchment, due to a small population and an inferred population decline. Traditional owners noted the importance of this species as a food source. The species is stocked in parts of the study area.
Limnodynastes salmini	salmon striped frog		Y	2,3,8	Declining and at the limit of its range for the Burnett. It occurs in gilgais and floodplains.
Macquaria novemaculeata	Australian bass	Y		2,8, 9, 10	Australian bass is at the northern edge of its range in the study area. The species is undergoing widespread declines. Traditional owners noted the importance of this species as a food source.
Rhadinocentrus ornatus	ornate rainbowfish	Y	Y	4, 5	The panel noted this species also qualifies under criteria 4.
Trachystoma petardi	pinkeye mullet	Y		2	Pinkeye Mullet is a priority species in the Burnett and Kolan catchments due to population declines. Interruption of connectivity between marine and fresh waters in riparian systems is the main threat to the species.

4.4.2 Migratory species

In addition to the priority species identified above, the panel nominated migratory species for inclusion in AquaBAMM Measure 5.1.3. Only species listed under the Convention on Migratory Species (Bonn), Japan Australia Migratory Bird Agreement (JAMBA), the China Australia Migratory Bird Agreement (CAMBA), or Republic of Korea Australia Migratory Bird Agreement (ROKAMBA) as significant fauna taxa were considered.

The panel identified 29 migratory species relevant to the riverine and non-riverine wetlands of the study areas (Table 15). Sightings records for the listed species were used to identify spatial units containing migratory taxa to calculate the scores for AquaBAMM Measure 5.1.3 (Habitat for, or presence of, migratory species).

Table 15. Migratory taxa listed on international agreements

Scientific Name	Common Name	NCA Status	NR	R	Agreements/ Conventions	Expert Panel Comments (M5.1.3)
Actitis hypoleucos	common sandpiper	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	
Arenaria interpres	ruddy turnstone	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	
Calidris acuminata	sharp-tailed sandpiper	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	
Calidris alba	sanderling	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	
Calidris canutus	red knot	E	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	Uses aquatic environments occasionally during migration.
Calidris falcinellus	broad-billed sandpiper	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	Uses aquatic environments occasionally during migration.
Calidris ferruginea	curlew sandpiper	CE	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	Species is known to occasionally use aquatic environments during migration and as feed and roost sites.
Calidris melanotos	pectoral sandpiper	SL	Y	Y	JAMBA, ROKAMBA, Bonn	There 26 records for the region so the species is not considered a vagrant to the area.
Calidris ruficollis	red-necked stint	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	
Calidris tenuirostris	great knot	CE	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	Uses aquatic environments occasionally during migration.
Charadrius bicinctus	double-banded plover	SL	Y	Y	Bonn	
Charadrius leschenaultii	greater sand plover	V	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	Uses aquatic environments occasionally during migration.
Charadrius mongolus	lesser sand plover	E	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	Uses aquatic environments occasionally during migration.
Chlidonias leucopterus	white-winged black tern	SL	Y	Y	JAMBA, CAMBA, ROKAMBA	
Gallinago hardwickii	Latham's snipe	SL	Y	Y	JAMBA, ROKAMBA, Bonn	
Gelochelidon nilotica	gull-billed tern	SL	Y	Y	CAMBA	Split from Australian tern *Gelochelidon macrotarsa*.
Hydroprogne caspia	Caspian tern	SL	Y	Y	JAMBA	

Scientific Name	Common Name	NCA Status	NR	R	Agreements/ Conventions	Expert Panel Comments (M5.1.3)
Limosa lapponica baueri	Western Alaskan bar-tailed godwit	V	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	Uses aquatic environments occasionally during migration.
Limosa limosa	black-tailed godwit	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	
Numenius madagascariensis	eastern curlew	E	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	Uses aquatic environments occasionally during migration.
Numenius phaeopus	whimbrel	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	Uses aquatic environments occasionally during migration.
Pandion haliaetus cristatus	eastern osprey	SL	Y	Y	Bonn	Included in the previous report as *Pandion cristatus*.
Plegadis falcinellus	glossy ibis	SL	Y	Y	Bonn	
Pluvialis fulva	Pacific golden plover	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	Species is known to occasionally use aquatic environments during migration and as feed and roost sites.
Pluvialis squatarola	grey plover	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	
Thalasseus bergii	crested tern	SL	Y	Y	JAMBA	Species is known to travel up riverine systems a long way inland.
Tringa glareola	wood sandpiper	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	
Tringa nebularia	common greenshank	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	
Tringa stagnatilis	marsh sandpiper	SL	Y	Y	JAMBA, CAMBA, ROKAMBA, Bonn	

5 Springs

Spring wetlands were not explicitly assessed as part of the WBBGBRCC assessments. In the absence of an ACA for spring wetlands, end-users are referred to the Queensland spring database published by the Queensland Herbarium (DES, 2020). This database provides comprehensive data on the condition, threats and biodiversity values associated with springs within the database. The database also includes a conservation priority rating for springs within the Great Artesian Basin. These ratings were developed by Fensham and Fairfax (2005) and are based on the following criteria:

- Category 1a: These spring wetlands provide habitat for biota endemic to one spring complex.
- Category 1b: These spring wetlands provide habitat for biota endemic to more than one spring complex.
- Category 1c: These spring wetlands provide habitat for species listed under State or Commonwealth legislation (except *Callistemon* sp. Boulia (L. Pedley 5297) which is listed as vulnerable under the EPBC and has since been identified as the common species *C. viminalis*).
- Category 2: These spring wetlands provide habitat for some isolated populations of plant species or, are outstanding examples of their type.
- Category 3: Any spring of lower value than above that is relatively intact.
- Category 4: Severely degraded by any threatening processes.

For the WBBGBRCC ACA a conservation value rating of 4 was assigned to Measure 6.3.1 (Presence of distinct, unique or special habitat including habitat that functions as refugia or other critical purpose) for all non-riverine wetlands identified under Criterion 6 (Special and Unique Values) as having an "active" spring. The Queensland Herbarium's Groundwater Dependent Ecosystems Surface Points dataset was used as a basis for selecting "active" spring locations.

6 Special Features

Special Features

The flora, fauna and ecology expert panels were asked to identify special and unique features relevant to the riverine and non-riverine wetlands within each study area. The expert panels reviewed decisions from the previous ACA as well as nominating new decisions. Expert panel derived special features are used to calculate scores for the following AquaBAMM measures:

- 5.1.4 - Habitat for significant numbers of waterbirds.
- 5.2.1 - Presence of 'priority' aquatic ecosystem.
- 6.1.1 - Presence of distinct, unique or special geomorphic features.
- 6.2.1 - Presence of or requirement for distinct, unique or special ecological processes.
- 6.3.1 - Presence of distinct, unique or special habitat, including habitat that functions as refugia or other critical purpose.
- 6.3.3 - Ecologically significant wetlands identified through expert opinion and/or documented study.
- 6.3.4 - Areas important as refugia from the predicted effects of climate change (e.g. source of species re-population.
- 6.4.1 - Presence of distinct, unique or special hydrological regimes, e.g. spring fed stream, ephemeral stream or boggomoss.
- 7.2.1 - The contribution (upstream or downstream) of the spatial unit to the maintenance of groundwater ecosystems with significant biodiversity values.
- 7.3.2 - Extent to which the wetland retains critical ecological and hydrological connectivity, where it should exist, with floodplains, rivers, groundwater, etc.
- 7.5.1 - The contribution of the spatial unit to the maintenance of estuarine and marine ecosystems with significant biodiversity values.
- 7.5.2 – Extent to which the wetland retains critical ecological and hydrological connectivity, where it should exist in marine or estuarine areas.
- 8.2.5 - Wetland type representative of the study area.

Where a single special feature decision crossed more than one study area, the special feature was implemented separately in each study area. Special features were assigned a conservation rating of 2 (Medium), 3 (High) or 4 (Very High) for one or more of the above Criterion 6 Measures. Areas having multiple values (e.g. flora and fauna values) were consolidated and implemented as ecology special feature decisions. Decisions that were not able to be implemented due to uncertainty or a lack of available data are indicated as ‘Not Implemented’ in the special feature tables.

A decision was made by experts at the beginning of the expert panel workshops to only assign special feature values to artificial wetlands if explicitly identified by the expert panel. Where artificial wetlands have been identified as having special or unique values, these values are meant to serve as an ecological inventory, and their inclusion is not meant to imply any policy, protective or legislative requirements.

For example, the Baffle off stream lagoons near Lowmead (ba_nr_ec_05) provide important dry season refugia for many species of fish. The lagoons only fill during high flows and hold water for prolonged periods.

The riverine and non-riverine special features identified by the WBBGBRCC ACA expert panels are listed in following tables which are sorted by study area and either riverine or non-riverine spatial units. Each feature may have fauna, flora and/or ecology values, either singularly or in combination.

The 10 tables include:

- Table 16. Baffle Riverine ecology, fauna and flora special features
- Table 17. Baffle Non-Riverine ecology and fauna special features
- Table 18. Burrum Riverine ecology and fauna special features
- Table 19. Burrum Non-Riverine ecology, fauna and flora special features
- Table 20. Burnett Riverine ecology, fauna and flora special features
- Table 21. Burnett Non-Riverine ecology, fauna and flora special features
- Table 22. Kolan Riverine ecology special features
- Table 23. Kolan Non-Riverine fauna special features
- Table 24. Mary Riverine ecology and fauna special features

- Table 25. Mary Non-Riverine ecology special features

Table glossary:

ba	Baffle study area	bm	Burrum study area
bu	Burnett study area	ko	Kolan study area
my	Mary study area	ec	Ecology
fa	Fauna	fl	Flora
nr	Non-riverine	r	Riverine

Map location legend:

■	Towns	■	Special Features
▬	Watercourses	▬	Major roads

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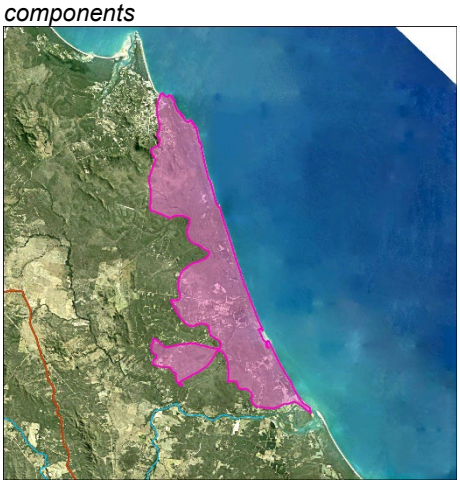
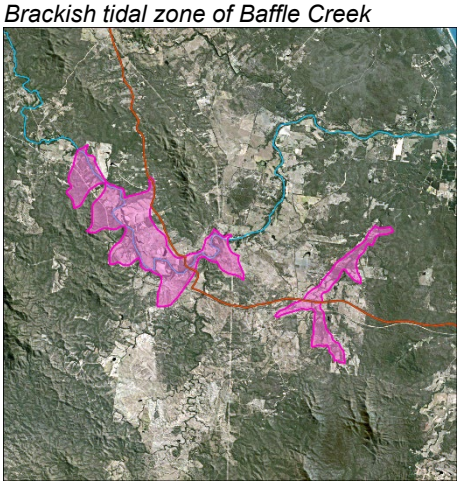
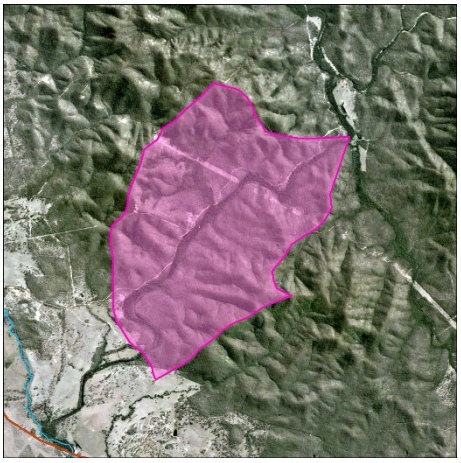
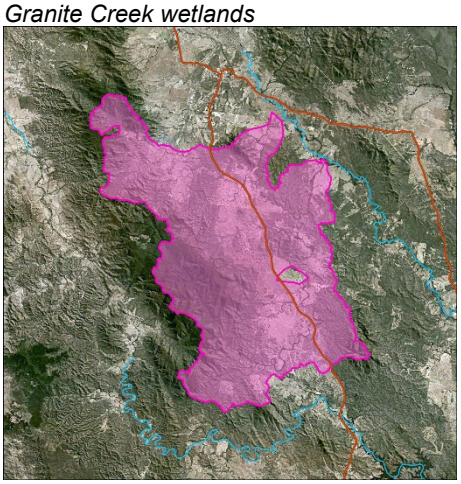
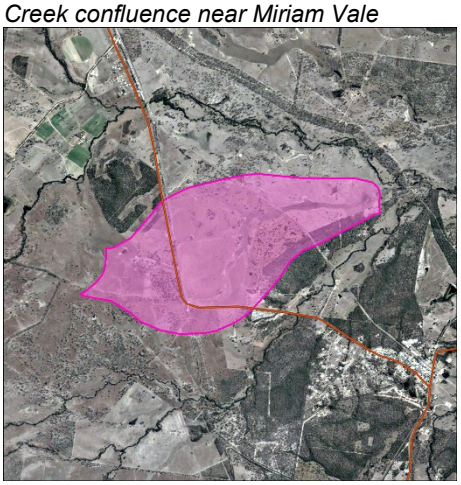
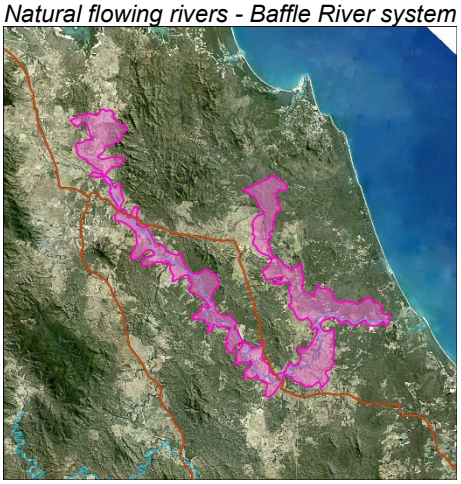
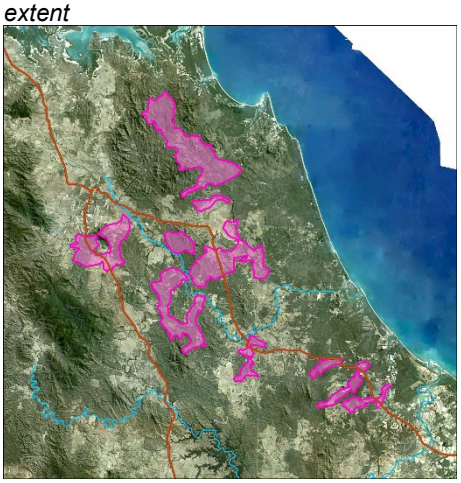
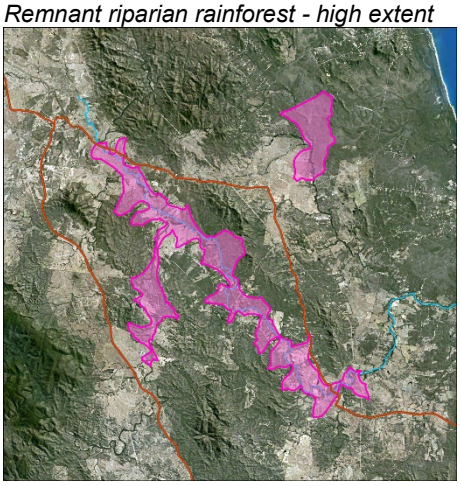
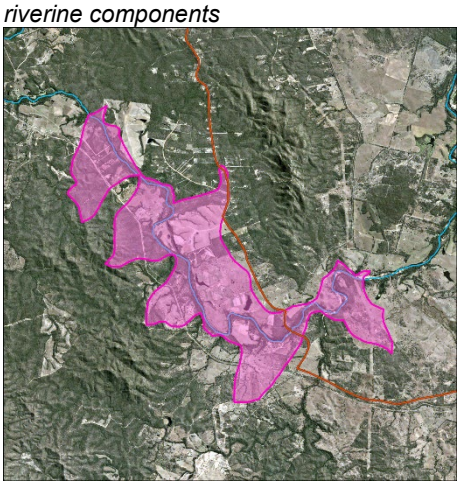
Table 16. Baffle Riverine ecology, fauna and flora special features

Special Feature	Values	CIM	Rating
ba_r_ec_01 *Deepwater area wet heaths - riverine components* 	Coastal wet heath communities in the Deepwater area support a rich diversity of plant and animal species including species with unique adaptations for water stress, low nutrient availability, anaerobic soil conditions and/or acidic conditions. This difficult and challenging environment occurs wherever soils are subject to prolonged periods of high soil moisture. Wet heaths often have perched water levels thought to be influenced by fluctuating groundwater and seepage, are typified by peaty soils (i.e., high in organic matter) and high flora diversity, and commonly occur on the back side of dune systems. Near Deepwater, this decision includes wetlands with intact and unique hydrological regimes resulting in permanent or near-permanent waterholes providing important wildlife refugia. This area was also flagged by the Port Curtis Coral Coast (Bailai, Gurang, Gooreng Gooreng, Taribelang-Bunda) traditional custodians as having important cultural values in the vicinity. Large areas of coastal heath have been cleared for residential development, forestry, and agriculture. Today, Eurimbula national parks (near Agnes Water–1770), Byfield/Corio/Shoalwater bays (north of Yeppoon), and Deepwater area contain the best examples of wet heath communities in central Queensland. Note: this decision was also included in the riverine ACA assessment (decision number ba_nr_ec_01).	6.1.1 6.3.1	4 4

Special Feature	Values	CIM	Rating
ba_r_ec_02 *Brackish tidal zone of Baffle Creek* 	Brackish areas at the upper limits of estuarine influence on Baffle Creek provide important habitat for recruitment of diadromous fish species such as mangrove jack (*Lutjanus argentimaculatus*) and other commonly observed marine and brackish fish species including *Lutjanus russellii* (Moses' Snapper) and *Acanthopagrus australis* (Yellowfin Bream) (Mattone et. al., 2022). The area covered by this decision includes the brackish areas at the upper estuarine limit of Baffle Creek. The extensive freshwater-marine interface within Baffle Creek also provides an unusual area for aquatic processes. For example, the conductivity is much lower than for typical estuarine systems. The interface area is very large which adds to its unusual attributes.	6.2.1 6.3.1 7.5.1	4 4 4
ba_r_ec_03 *Creek on 'Bindaree'* 	The creek on the Bindaree property north-east of Miriam Vale has cobble geomorphology which provides special habitat for frogs and is an extensive frog breeding area, especially for the stony creek frog (*Litoria lesueuri*).	6.1.1 6.3.1	4 4
ba_r_ec_04 *Granite Creek wetlands* 	The riverine wetlands upstream of the confluence of Granite Creek and Baffle Creek occur in gorges with incised geomorphology. Part of this area coincides with the Directory of Important Wetlands (Environment Australia, 2001). There is good groundwater connectivity in the Granite Creek area with permanent pools and spring fed breakthrough areas along river banks. Note: these values are also present for the official Directory of Important Wetlands (DIWA) areas along Granite Creek.	6.1.1 6.3.1 6.3.3	4 4 4

Special Feature	Values	CIM	Rating
ba_r_ec_05 *Creek confluence near Miriam Vale* 	The riverine wetland areas near the confluence of creeks at Miriam Vale retain groundwater aquifer connection. There is distinct groundwater and surface water interactions which can be seen in the form of boggy/quicksand areas and strong flows to the stream via gravel seeps. This hydrological interaction is visible in further downstream riverine and non-riverine areas. Nitrogen removal processes are also evident here.	6.4.1	4
ba_r_ec_06 *Deepwater Creek* 	Deepwater Creek has a unique groundwater hydrology relative to the whole Baffle Creek catchment. The groundwater and surface water interactions remain intact and are fed from dunes. Water extraction in this area is currently minimal.	6.4.1	4
ba_r_ec_08 *Natural flowing rivers - Baffle River system* 	These streams were nominated because they have a natural undisturbed hydrological regime. Strong hold for mangrove jack and threadfin salmon. The Baffle is a good example for how a river system should function. Important habitat for sea mullet, freshwater mullet, barramundi, white-throated snapping turtle. Intact riparian zones.	6.3.1 6.4.1 7.5.1	4 4 4

Special Feature	Values	CIM	Rating
ba_r_ec_09 *Remnant riparian rainforest - medium extent* 	Remnant riparian rainforest was identified by experts for its flora and fauna values including habitat for the 'vulnerable' Black-breasted Button Quail (*Turnix melanogaster*), Southern penda (*Xanthostemon oppositifolius*), *Fontainea rostrata*, Macadamia nut tree (*Macadamia integrifolia*), Gympie nut (*Macadamia ternifolia*) and Richmond birdwing (*Ornithoptera richmondii*). High species diversity occurs particularly on the lowlands where the remaining riparian rainforest is important for fruit-eating birds, many of which migrate seasonally from upland to lowland rainforest areas. The expert panel recommended this decision be implemented across all Wide Bay-Burnet study areas. The implementation of this decision used the Fisher-Jenks algorithm to categorise riverine spatial units as low, medium or high based on the total area of riparian rainforest regional ecosystems present (12.3.1a, 12.3.16, 12.3.17, 12.3.21). Riverine spatial units with a medium riparian rainforest extent were given a score of '3' for AquaBAMM measure 6.3.1. Riverine spatial units with a high riparian rainforest extent were given a score of '4' for AquaBAMM measure 6.3.1.	6.3.1	3
ba_r_ec_10 *Remnant riparian rainforest - high extent* 	Remnant riparian rainforest was identified by experts for its flora and fauna values including habitat for the 'vulnerable' Black-breasted Button Quail (*Turnix melanogaster*), Southern penda (*Xanthostemon oppositifolius*), *Fontainea rostrata*, Macadamia nut tree (*Macadamia integrifolia*), Gympie nut (*Macadamia ternifolia*) and Richmond birdwing (*Ornithoptera richmondii*). High species diversity occurs particularly on the lowlands where the remaining riparian rainforest is important for fruit-eating birds, many of which migrate seasonally from upland to lowland rainforest areas. The expert panel recommended this decision be implemented across all Wide Bay-Burnet study areas. The implementation of this decision used the Fisher-Jenks algorithm to categorise riverine spatial units as low, medium or high based on the total area of riparian rainforest regional ecosystems present (12.3.1a, 12.3.16, 12.3.17, 12.3.21). Riverine spatial units with a medium riparian rainforest extent were given a score of '3' for AquaBAMM measure 6.3.1. Riverine spatial units with a high riparian rainforest extent were given a score of '4' for AquaBAMM measure 6.3.1.	6.3.1	4
ba_r_ec_11 *Baffle off stream lagoons near Lowmead - riverine components* 	These off-stream lagoons provide important dry season refugia for many species of fish including barramundi (*Lates calcarifer*), mangrove jack (*Lutjanus argentimaculatus*), sea mullet (*Mugil cephalus*) and the long-finned eel (*Anguilla reinhardtii*). These lagoons only fill during high flows, and hold water form prolonged periods, as opposed to the waterholes within the main channel which dry-up naturally or due to pumping. The non-riverine decision is ba_nr_ec_05.	6.1.1 6.3.1 6.4.1	3 3 3

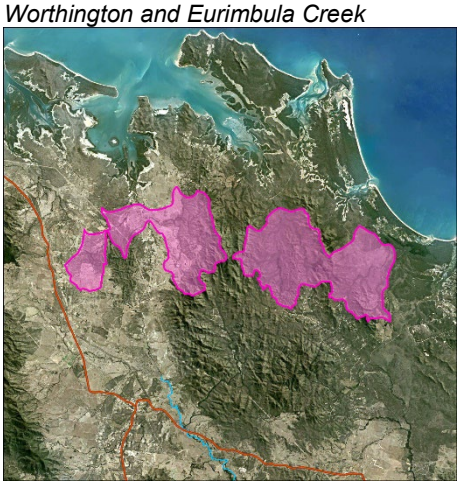
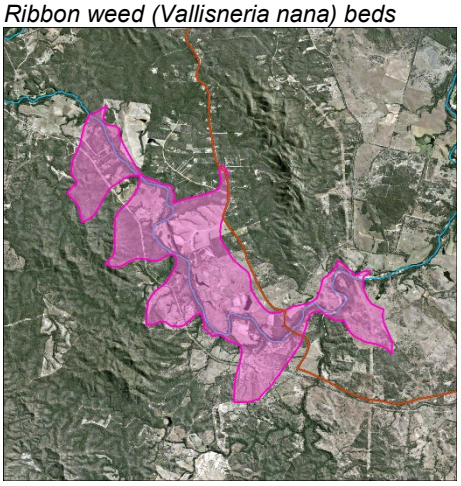
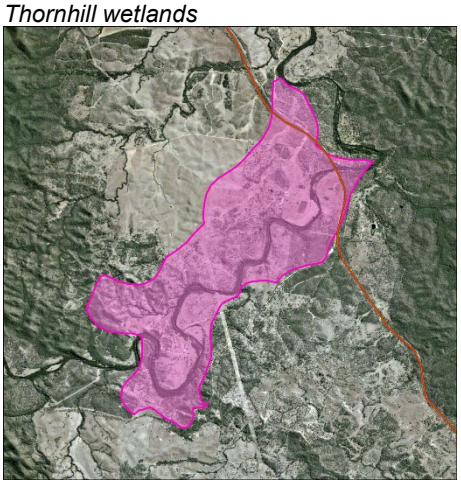
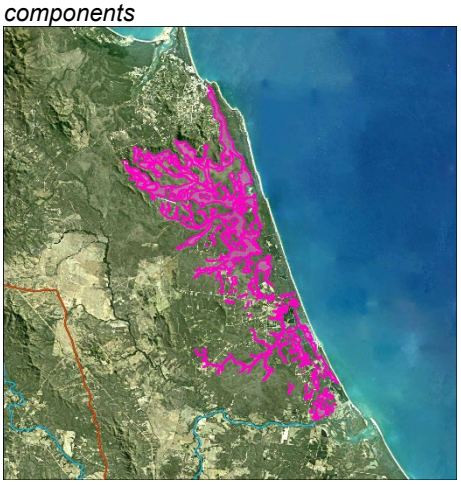
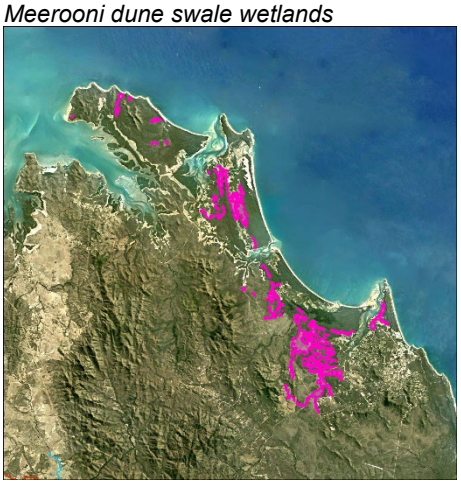
Special Feature	Values	CIM	Rating
ba_r_fa_03 *Worthington and Eurimbula Creek* 	Tidal pools in the upstream estuarine areas of Worthington, Sandy, Scrubby and Eurimbula creeks provide important nursery fish habitat, including nursery refuge due to reduced predations pressure, for commonly observed marine and brackish fish species including *Lutjanus argentimaculatus* (Mangrove Jack), *Lutjanus russellii* (Moses' Snapper) and *Acanthopagrus australis* (Yellowfin Bream) (Mattone et. al., 2022). Worthington Creek has rock bars on volcanics in the channel, which create hyper-saline pools (tidal and seasonal). The lower reaches are mangrove-lined and provide good fish nursery habitat.	6.2.1 6.3.1 7.5.2	4 4 4
ba_r_fl_02 *Ribbon weed (Vallisneria nana) beds* 	There are few areas of extensive ribbon weed in the Baffle Creek catchment (Andrew McDougall, pers. comm., Dec 2006).	6.3.1	4
ba_r_fl_04 *Thornhill wetlands* 	The 2.3km section of Granite Creek on Thornhill Station is fringed by Gallery Rainforest, a structurally complex and biologically productive ecosystem type which performs a range of ecosystem functions and services at varying scales. Major plant species present include Black Bean, River Oak, Giant Stinging Tree, Weeping Lilly Pilly, Forest Red Gum, Narrow-leaved Ironbark, Grey Box, Carbeen, Weeping Bottlebrush, Native Holly, and Hickory Wattle; surveys have also found a variety of fig species including sandpaper and strangler figs present (Trackless, 2010). An endangered ecological community, 12.3.3 *Eucalyptus tereticornis* open forest, lies adjacent to the creek in some areas within the property. Active management, including de-stocking, by First Nation peoples is underway with the aim of restoring Thornhill Station's biodiversity values to a pre-European state. This area was flagged by the Port Curtis Coral Coast (Bailai, Gurang, Gooreng Gooreng, Taribelang-Bunda) traditional custodians as having important cultural values in the vicinity.	6.3.1	2

Table 17. Baffle Non-Riverine ecology and fauna special features

Special Feature	Values	CIM	Rating
ba_nr_ec_01 *Deepwater area wet heaths - non-riverine components* 	Coastal wet heath communities in the Deepwater area support a rich diversity of plant and animal species including species with unique adaptations for water stress, low nutrient availability, anaerobic soil conditions and/or acidic conditions. This difficult and challenging environment occurs wherever soils are subject to prolonged periods of high soil moisture. Wet heaths often have perched water levels thought to be influenced by fluctuating groundwater and seepage, are typified by peaty soils (i.e., high in organic matter) and high flora diversity, and commonly occur on the back side of dune systems. Near Deepwater, this decision includes wetlands with intact and unique hydrological regimes resulting in permanent or near-permanent waterholes providing important wildlife refugia. This area was also flagged by the Port Curtis Coral Coast (Bailai, Gurang, Gooreng Gooreng, Taribelang-Bunda) traditional custodians as having important cultural values in the vicinity. Large areas of coastal heath have been cleared for residential development, forestry, and agriculture. Today, Eurimbula national parks (near Agnes Water–1770), Byfield/Corio/Shoalwater bays (north of Yeppoon), and Deepwater area contain the best examples of wet heath communities in central Queensland. Note: this decision was also included in the riverine ACA assessment (decision number ba_r_ec_01).	6.1.1 6.3.1	4 4
ba_nr_ec_02 *Jack's Lagoon* 	Jack's Lagoon, which is found near Ulangool Homestead near the confluence of Granite Creek and Baffle Creek, is known fish habitat. This value is largely due to its connectedness to the river and its size.	6.3.1	3
ba_nr_ec_04 *Meerooni dune swale wetlands* 	Over the past 6,000 years parallel dunes have built up on the coastal edge of Eurimbula National Park. Low-lying areas between these dunes support a variety of saturated to seasonally flooded woody, herbaceous and shrub-dominated wetland heath communities. Open forest palustrine wetlands dominated by *Melaleuca quinquenervia* and/or *Melaleuca viridiflora* (regional ecosystems 12.2.7, 12.5.4a, 12.3.5, 12.3.6, 12.3.13) dominate but are also interspersed with sedgelands and associated waterbodies in coastal swamps (regional ecosystem 12.5.15) or closed heath on seasonally waterlogged and plains (regional ecosystem 12.2.12). Special values include potential habitat for rare or threatened species including *Durringtonia paludosa (durringtonia*), *Eleocharis difformis*, *Maundia triglochinoides*, *Thelypteris confluens*, *Blandfordia grandiflora*, *Acacia baueri* (tiny wattle) and the ground parrot (*Pezoporus wallicus wallicus*). Most of this area is very remote and/or within protected areas. Grazing occurred here historically but the area is now largely protected in Eurimbula National Park.	6.1.1 6.3.1	4 4

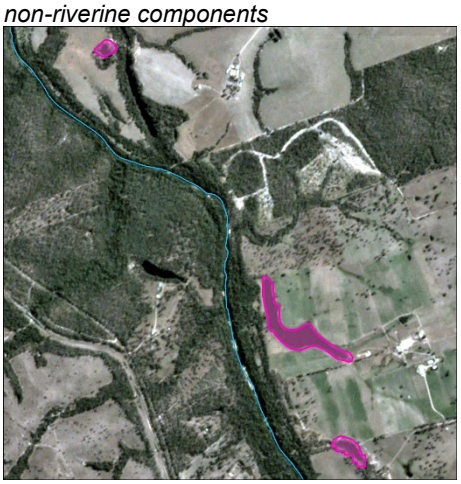
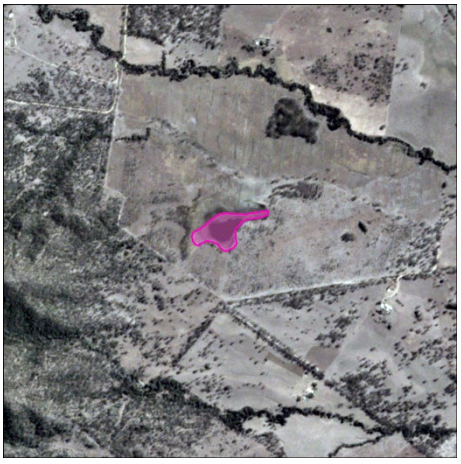
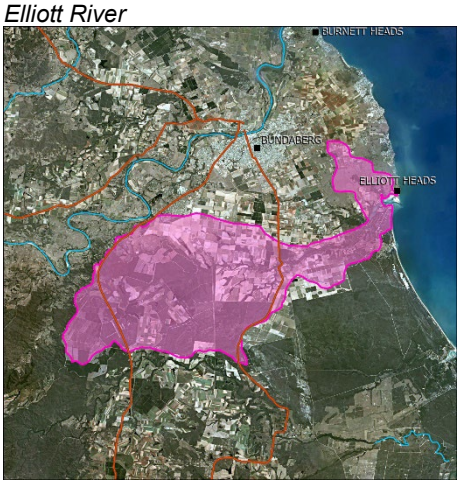
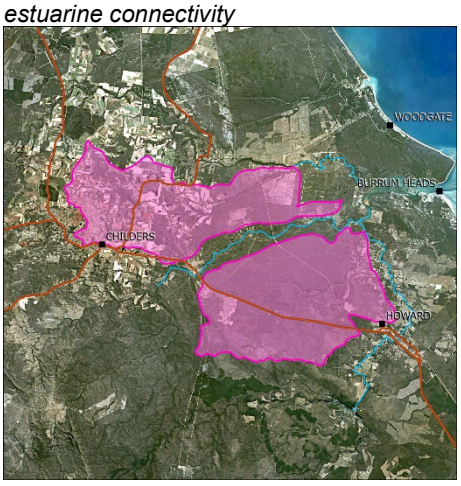
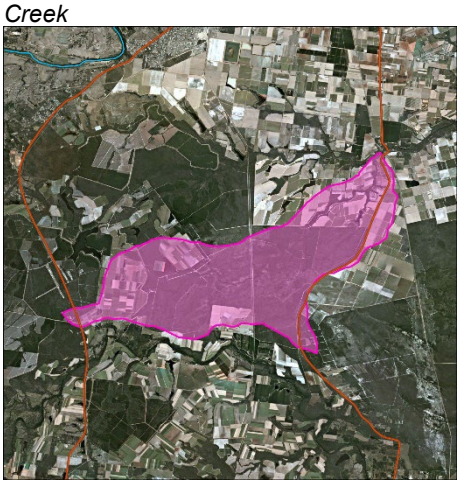
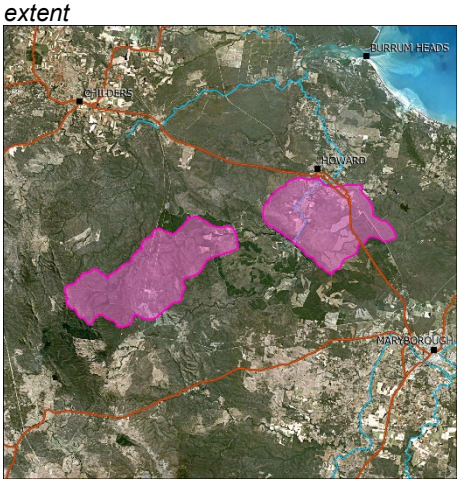
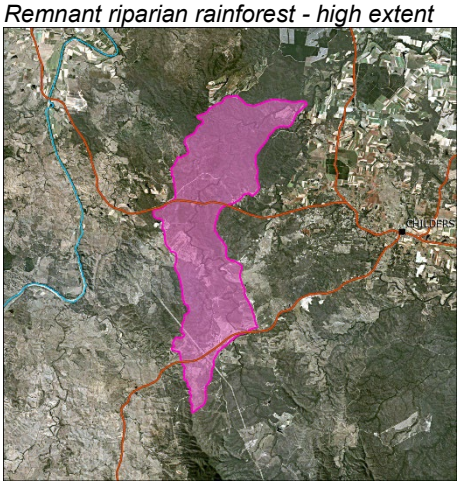
Special Feature	Values	CIM	Rating
ba_nr_ec_05 *Baffle off stream lagoons near Lowmead - non-riverine components* 	These off-stream lagoons provide important dry season refugia for many species of fish including barramundi (*Lates calcarifer*), mangrove jack (*Lutjanus argentimaculatus*), sea mullet (*Mugil cephalus*) and the long-finned eel (*Anguilla reinhardtii*). These lagoons only fill during high flows, and hold water for prolonged periods, as opposed to the waterholes within the main channel which dry-up naturally or due to pumping.	6.1.1 6.3.1 6.4.1	3 3 3
ba_nr_fa_02 *Eleocharis equisetina swamp at the base of Granite Creek State Forest near Miriam Vale* 	This area has high wildlife refugia values. Note: This decision is a flora decision in the Southeast Queensland Biodiversity Planning Assessment (decision number seqn_fl_31).	6.3.1	3

Table 18. Burrum Riverine ecology and fauna special features

Special Feature	Values	CIM	Rating
bm_r_ec_01 *Elliott River* 	Surface water-groundwater connectivity associated with the Elliott River is of significant ecological value, as it is a key driver of instream and off-stream waterhole dynamics, including waterhole persistence (CSIRO 2009; Sinclair-Knight Merz 2005). Unlike the rivers to the north and south, the majority (30-50%) of the Elliott River's base flow is sourced from groundwater. During dryer periods, the freshwater reaches of the river often dry up to a series of wetlands and waterholes, fed largely by groundwater, and providing important refugial habitat for aquatic faunal communities. The Elliot River also maintains intact connectivity between estuarine and freshwater systems essential for diadromous fish migration.	6.3.1 6.4.1 7.3.2 7.5.1	4 4 4 4
bm_r_ec_02 *Cherwell River and Stockyard Creek estuarine connectivity* 	The Cherwell River maintains intact connectivity between estuarine and freshwater systems, essential for diadromous fish migration. *Melaleuca* wetlands along drainage lines of the Cherwell river include *Melaleuca cheelii* and riverine drainage lines in the area support species with restricted range (e.g. the vulnerable *Eucalyptus hallii*) or approaching northern range limits (e.g. *Strangea linearis*). This area was originally nominated by the fauna panel and underwent further review by the wetland ecology panel. The wetland ecology panel noted that the Cherwell River and Stockyard Creek contain different fish assemblages from the other tributaries in the Burrum catchment located below the weir.	6.3.1 7.5.1	4 4
bm_r_ec_03 *Elliott River coastal heaths* 	This area, which includes the Burrum Coast National Park, has many threatened species and flora values with high coastal wet heath diversity. Values include dense stands of *Melaleuca cheelii* scattered throughout the area. The area was nominated by the flora panel but underwent a subsequent review by the ecology panel. The wetland ecology panel endorsed this decision and noted the presence of potential Water mouse (*Xeromys myoides*) habitat. The area is mostly wallum within lower lying areas and contains significant floristic values e.g. *Melaleuca cheelii*, macrozamias. The wetlands contain a large area of intact continuous vegetation types within a variety of habitats. They encompass a transition between landzone 5 (Tertiary Elliott Formation) and landzone 2 (parallel Pleistocene beach ridges and dune barriers) and provide good connectivity to estuarine, marine and saltpan areas. The wetlands are important as constant water sources as wetting remains on site and in soaks during dry periods. The area includes Burrum Coast National Park (Kinkuna section) and Coonarr area including wildflower reserve. Note: This decision also applies as a non-riverine decision (decision number bm_nr_ec_01) and is related to a flora non-riverine decision (decision number bm_nr_fl_01).	6.3.1 7.5.1	4 4

Special Feature	Values	CIM	Rating
bm_r_ec_04 *Waterholes associated with Mahogany Creek* 	These waterholes are paperbark waterholes fed from leakage via channels and include the presence of the threatened species including *Melaleuca cheelii*, *Eucalyptus hallii* (groundwater dependent), *Macrozamia lomandroides* and species at the northern limit of their range including *Strangea linearis* and *Callistemon pachyphylla*. Wetlands within Bingera National Park). These areas are in relatively good condition and provide an important recharge and discharge function in the headwaters of the Elliott River and Elliott aquifer. This area was also flagged by the Port Curtis Coral Coast (Bailai, Gurang, Gooreng Gooreng, Taribelang-Bunda) traditional custodians as having important cultural values in the vicinity. Note: This decision also applies as a non-riverine decision (decision number bm_nr_ec_03).	6.3.1 6.4.1	3 3
bm_r_ec_05 *Remnant riparian rainforest - medium extent* 	Remnant riparian rainforest was identified by experts for its flora and fauna values including habitat for the 'vulnerable' Black-breasted Button Quail (*Turnix melanogaster*), Southern penda (*Xanthostemon oppositifolius*), *Fontainea rostrata*, Macadamia nut tree (*Macadamia integrifolia*), Gympie nut (*Macadamia ternifolia*) and Richmond birdwing (*Ornithoptera richmondii*). High species diversity occurs particularly on the lowlands where the remaining riparian rainforest is important for fruit-eating birds, many of which migrate seasonally from upland to lowland rainforest areas. The expert panel recommended this decision be implemented across all Wide Bay-Burnet study areas. The implementation of this decision used the Fisher-Jenks algorithm to categorise riverine spatial units as low, medium or high based on the total area of riparian rainforest regional ecosystems present (12.3.1a, 12.3.16, 12.3.17, 12.3.21). Riverine spatial units with a medium riparian rainforest extent were given a score of '3' for AquaBAMM measure 6.3.1. Riverine spatial units with a high riparian rainforest extent were given a score of '4' for AquaBAMM measure 6.3.1.	6.3.1	3
bm_r_ec_06 *Remnant riparian rainforest - high extent* 	Remnant riparian rainforest was identified by experts for its flora and fauna values including habitat for the 'vulnerable' Black-breasted Button Quail (*Turnix melanogaster*), Southern penda (*Xanthostemon oppositifolius*), *Fontainea rostrata*, Macadamia nut tree (*Macadamia integrifolia*), Gympie nut (*Macadamia ternifolia*) and Richmond birdwing (*Ornithoptera richmondii*). High species diversity occurs particularly on the lowlands where the remaining riparian rainforest is important for fruit-eating birds, many of which migrate seasonally from upland to lowland rainforest areas. The expert panel recommended this decision be implemented across all Wide Bay-Burnet study areas. The implementation of this decision used the Fisher-Jenks algorithm to categorise riverine spatial units as low, medium or high based on the total area of riparian rainforest regional ecosystems present (12.3.1a, 12.3.16, 12.3.17, 12.3.21). Riverine spatial units with a medium riparian rainforest extent were given a score of '3' for AquaBAMM measure 6.3.1. Riverine spatial units with a high riparian rainforest extent were given a score of '4' for AquaBAMM measure 6.3.1.	6.3.1	4

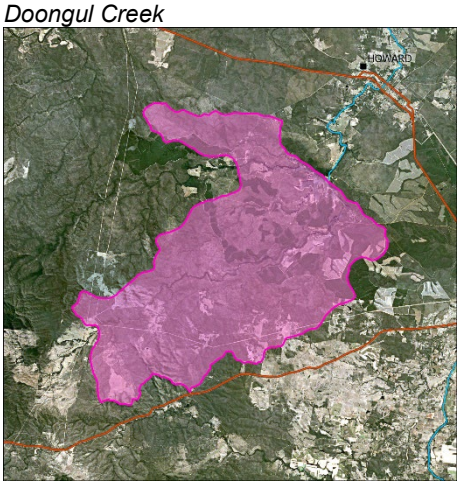
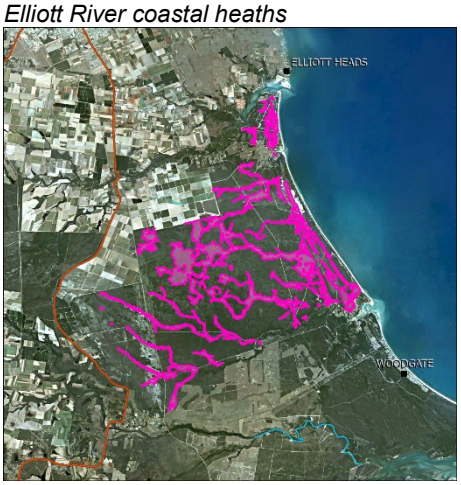
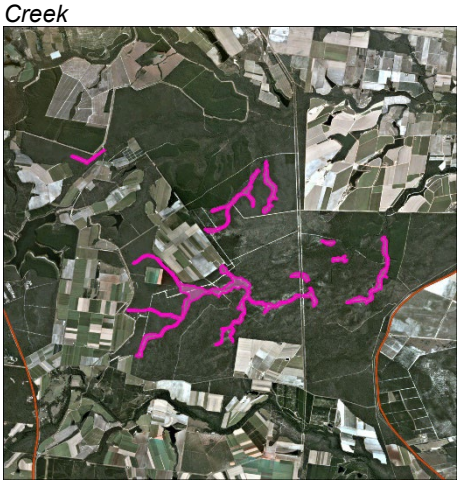
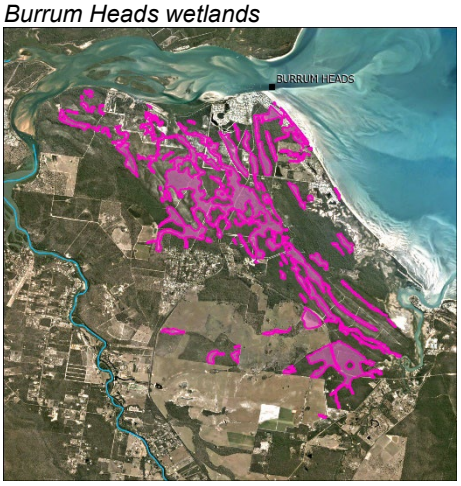
Special Feature	Values	CIM	Rating
bm_r_fa_02 *Doongul Creek* 	Doongul Creek above Lenthalls Dam was identified as providing important frog habitat, notably being the northern range limit of the giant barred frog (*Mixophyes iteratus*).	6.3.1	4

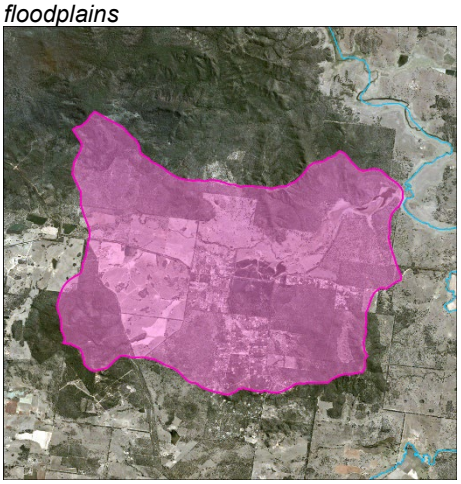
Table 19. Burrum Non-Riverine ecology, fauna and flora special features

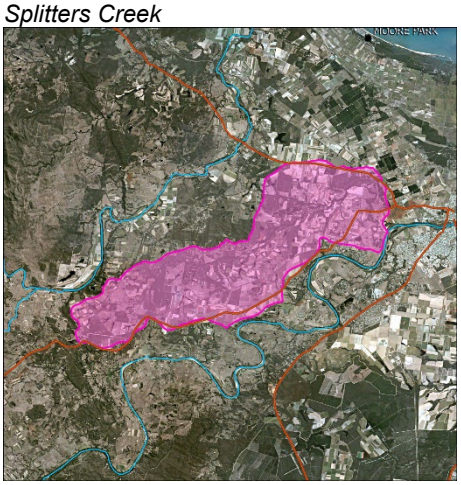
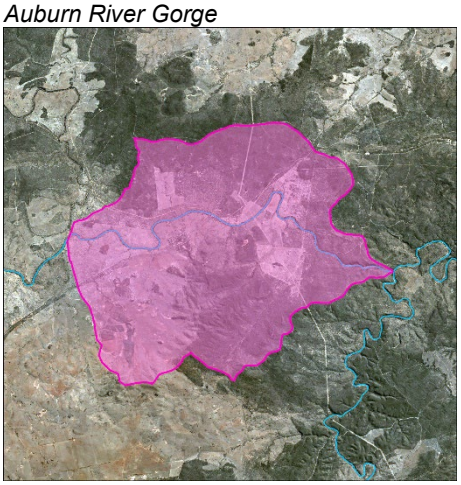
Special Feature	Values	CIM	Rating
bm_nr_ec_01 *Elliott River coastal heaths* 	This coastal heath and wallum complex south of the Elliott River has many threatened species and flora values including high coastal wet heath diversity and species at the limits of their range (i.e. northern limit of *Strangea linearis* and *Callistemon pachyphylla*). Other values include dense stands of *Melaleuca cheelii* scattered throughout the area, fig trees, *macrozamias* and *Acacia baueri ssp baueri* which is listed as Vulnerable under the Nature Conservation Act (1992). It also includes a wildflower reserve. The area was nominated by the flora panel but underwent a subsequent review by the ecology panel. The wetland ecology panel endorsed this decision and noted the presence of potential Water mouse (*Xeromys myoides*) habitat. This area contains a large area of intact continuous vegetation types within a variety of habitats. It encompasses a transition between landzone 5 (Tertiary Elliott Formation) and landzone 2 (parallel Pleistocene beach ridges and dune barriers) and provide good connectivity to estuarine, marine and saltpan areas. Note: This decision also applies as a riverine decision (decision number bm_r_ec_03).	6.3.1 7.5.1	4 4
bm_nr_ec_02 *Freshwater wetlands at Mon Repos* 	While this is a highly modified wetland, it is suggested that the hydrology of the wetland is linked with dune moisture content and temperature which are important for nesting/hatching turtles as the sands of the egg chamber must be sufficiently moist to be cohesive enough not to collapse while the chamber is being constructed (Sinclair-Knight Merz 2005). This area was also flagged by the Port Curtis Coral Coast (Bailai, Gurang, Gooreng Gooreng, Taribelang-Bunda) traditional custodians as having important cultural values in the vicinity.	6.2.1 6.3.1	4 4

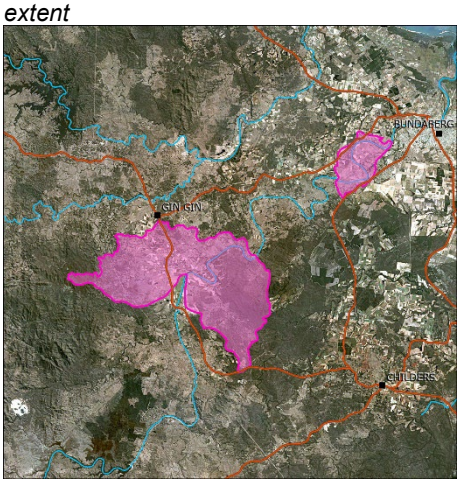
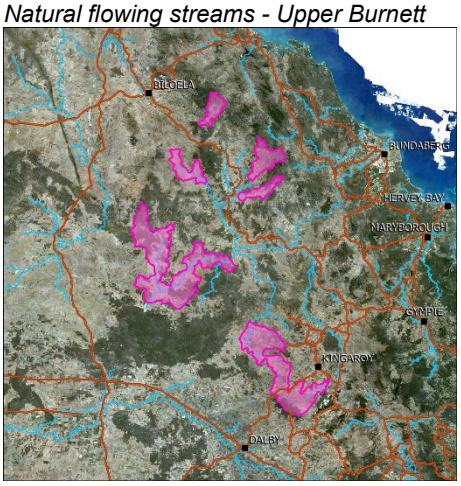
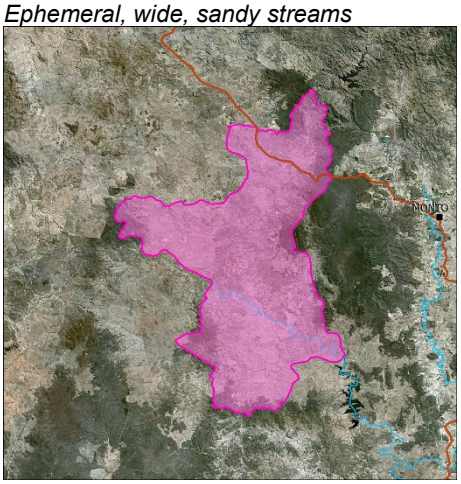
bm_nr_ec_03 *Waterholes associated with Mahogany Creek* 	These paperbark waterholes contain threatened species including *Melaleuca cheelii*, *Eucalyptus hallii* (groundwater dependent), *Macrozamia lomandroides* and species at their northern range limits (e.g. *Callistemon pachyphylla* and *Strangea linearis*). The wetlands are fed by leakage via channels. The decision includes all wetlands within the Bingera National Park, wetlands which also feed the upper Elliott River and discharge from the Elliott aquifer. Waterhole vegetation includes various sedges including *Lepironia articulata* and *Baumea articulate* whilst the wetlands include tea -tree heathland, old-growth Melaleucas, tall Casuarinas, Banksia robur and Grevilleas, with a tussock grass understorey. Note: This decision also applies as a riverine decision (decision number bm_r_ec_04).	6.3.1 6.4.1	3 3
bm_nr_ec_04 *Burrum Heads wetlands* 	This area was originally identified by the flora panel and although it has similar values to the Woodgate wetlands decision (bm_nr_fl_02), including significant numbers of threatened species including *Melaleuca cheelii*, *Eucalyptus hallii*, (as well as a number of non-wetland plant species) and species at the northern limits of their range *Melaleuca sieberi*, *Strangea linearis* and *Callistemon pachyphylla*, the area is south of the Burrum and was therefore regarded as a separate system. The area also includes habitat for threatened species of wallum frogs including the wallum froglet (*Crinia tinnula*) and the wallum rocketfrog (*Litoria freycineti*). Review by the wetland ecology panel noted that this was also an ecology decision as seagrass occurring offshore is dependent on groundwater discharges. Seagrass species in this area provide an important food source as a dugong nursery (Sheppard et al. 2006, Sheppard et al. 2007). Seagrass species in this area (*Halodule* and *Zostera* species) may require lower pore water salinities to germinate. While nutrients or toxicants in groundwater may have a negative influence on seagrass health, the link between seagrass and the hydrology of the wetlands identified here warrants further investigation (Sinclair-Knight Merz 2005).	6.4.1 7.2.1	4 4
bm_nr_fa_01 *Wongi waterholes* 	These waterholes are within Wongi State Forest in the upper Burrum River above Lenthalls Dam. This series of very stable, deep pools has been persistent over thousands of years. It contains unique geomorphological features and aquatic fauna including honey blue eyes (*Pseudomugil mellis*) and the southern purple spotted gudgeon (*Mogurnda adspersa*) (Queensland Parks and Wildlife Service 2010 unpublished). The Wongi waterholes has a plant (*Gahnia sieberiana*) growing along the edges. Management actions implemented for Lenthalls Dam to protect these plants. This area was also flagged by the Butchulla traditional custodians as having important cultural values in the vicinity. It is also one of the regionally prioritised wetlands by the Burnett-Mary Regional Group (T Espinoza 2023, pers. comm., 24 May).	6.1.1 6.3.1	4 4

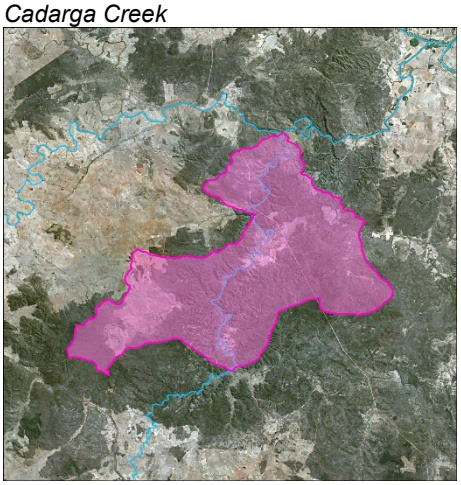
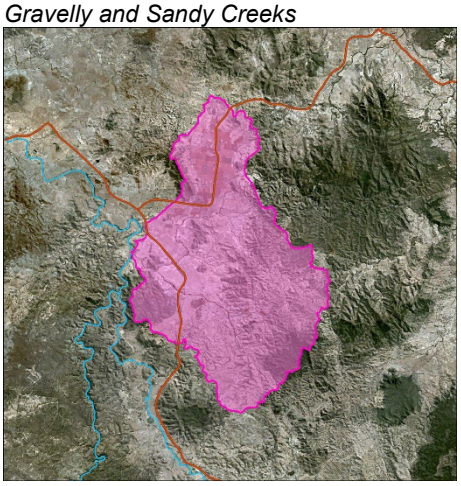
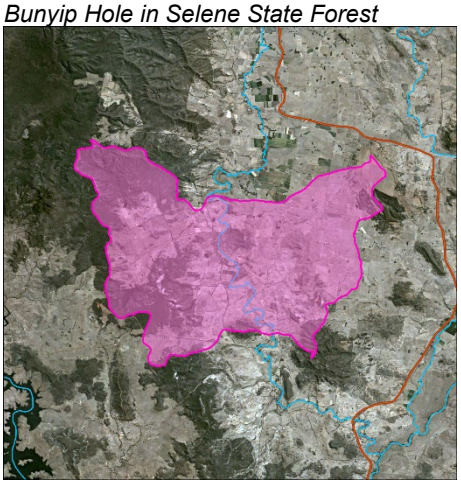
bm_nr_fl_02 *Woodgate wetlands* 	Significant numbers of threatened species including *Melaleuca cheelii*, *Eucalyptus hallii*, (as well as a number of non-wetland plant species) and species at the northern limits of their range *Melaleuca sieberi*, *Strangea linearis* and *Callistemon pachyphylla*. Wet and dry heathlands. Part of the Burrum Coast National Park (Woodgate section) where an intact sequence of geomorphic features exist (e.g. parallel Holocene beach ridges occur in front of Pleistocene ridges and Quaternary alluvium). Likely to contain threatened species of wallum frogs including the wallum froglet (*Crinia tinnula*) and the wallum rocketfrog (*Litoria freycineti*).	6.3.1	4

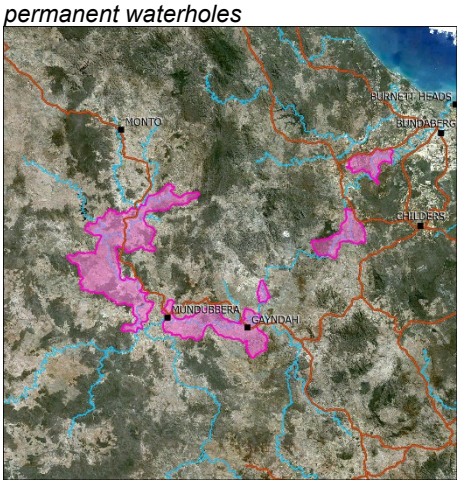
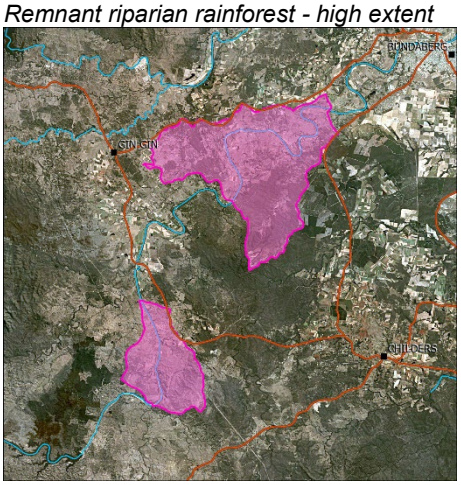
Table 20. Burnett Riverine ecology, fauna and flora special features

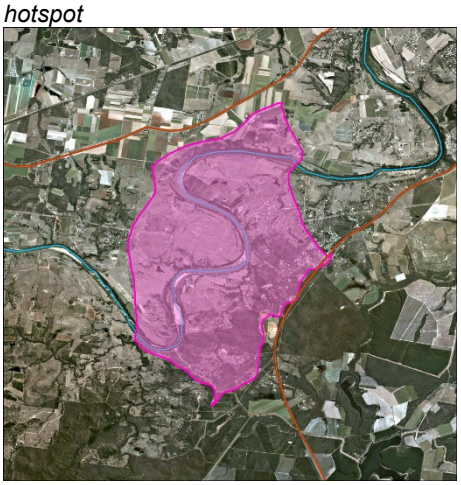
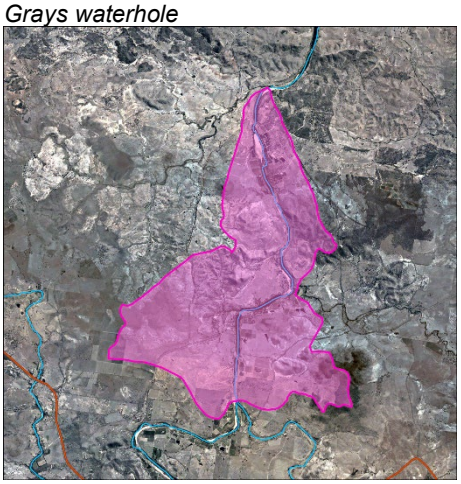
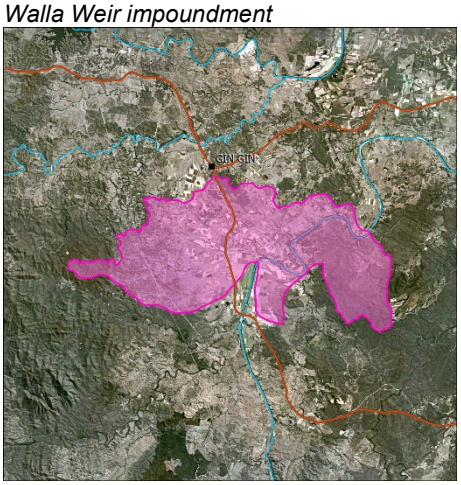
Special Feature	Values	CIM	Rating
bu_r_ec_01 *Confluence of Frickey and Barker Creek floodplains* 	This special feature is a floodplain system that meets just south of the dam and includes the area on the confluence to Frickey Creek and Wattle Camp wetland on Frickey Creek. The special feature was originally nominated by the flora panel for its values for migratory birds and referred to the wetland ecology panel for further review. The decision was made to change it to a wetland ecology special feature although no further information was provided by the wetland ecology panel. Note: This decision is related to a non-riverine fauna decision (decision number bu_nr_fa_03).	5.1.4 6.3.1	2 2

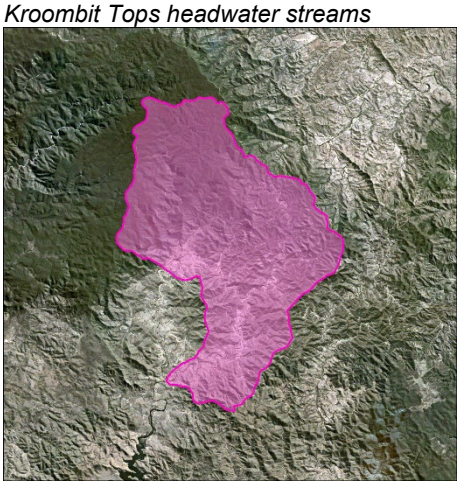
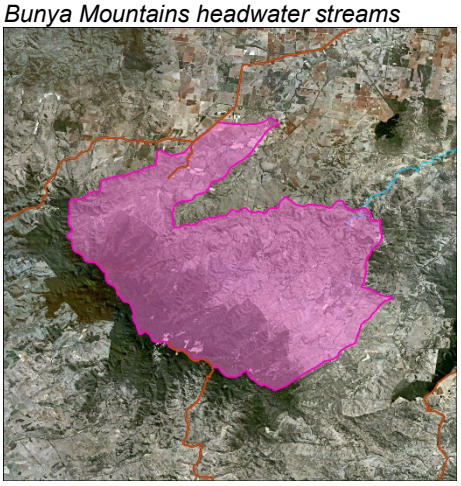
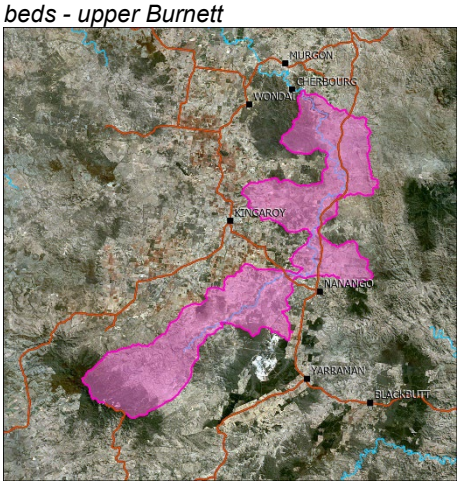
Special Feature	Values	CIM	Rating
bu_r_ec_03 *Splitters Creek* 	Splitters Creek is one of the last remaining lowland, stream-based wetland complexes in the Burnett-Mary region with no weir structures to interfere with natural flows and passage of migratory fish (including the recreationally important barramundi, bass and mangrove jack). Connectivity to the estuary was confirmed by the capture of tagged mullet in the estuary and off beaches. Splitters Creek comprises a diverse range of wetlands including tidal reaches extending several kilometres upstream, brackish sedgelands, a *Melaleuca* swamp forest section, riparian vegetation, closed canopy instream waterholes, and a large permanent deepwater lagoon (Meadowvale) running several kilometres upstream. Instream waterholes along Splitters Creek provide habitat for a variety of fish, turtle and other aquatic species including southern snapping turtle (*Elseya albagula*), Australian lungfish (*Neoceratodus forsteri*) and nursery habitat for Barramundi (*Lates calcarifer*). A regionally significant platypus population has also been recorded in here. Splitters Creek has a reasonably undisturbed riparian area, big storage areas and relatively intact tributaries despite being surrounded by cane land, macadamia and rural residential areas. Threats include aquatic and semi-aquatic weeds, agricultural impacts and urban encroachment. The wetland ecology panel endorsed this as an ecology decision and noted that it has significant riparian zone retention. This area was also flagged by the Port Curtis Coral Coast (Bailai, Gurang, Gooreng Gooreng, Taribelang-Bunda) traditional custodians as having important cultural values in the vicinity.	6.3.1 7.5.1	3 3
bu_r_ec_04 *Auburn River Gorge* 	This area was identified for its special biodiversity and geomorphic values. It was originally nominated by the flora panel and later referred to the wetland ecology panel for further review. The flora panel noted that this is a fairly dry gorge most of the year and is of limited floristic value as the values are considered to be more relation to scenic amenity. The wetland ecology panel endorsed its ecology values noting that it is a series of very deep waterholes in a granite gorge with aquatic fauna values (e.g. the Australian lungfish (*Neoceratodus forsteri*), turtles, frogs and brush tail wallabies in the riparian area). The gorge is contained to the Auburn River National Park with permanent upstream water holes containing flora and fauna values.	6.1.1 6.3.1	4 4

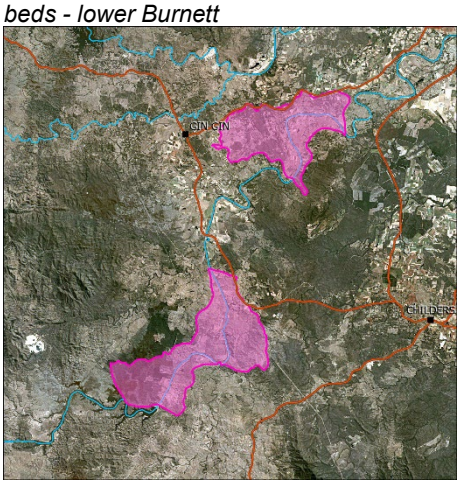
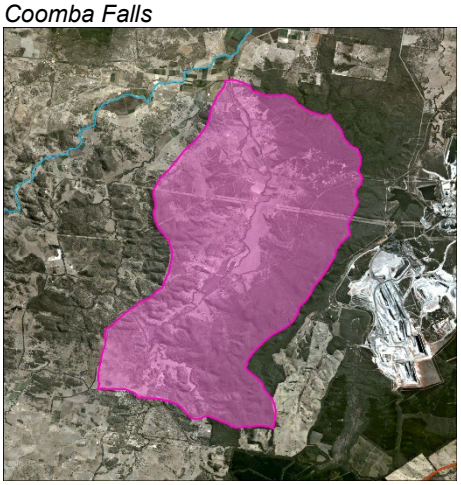
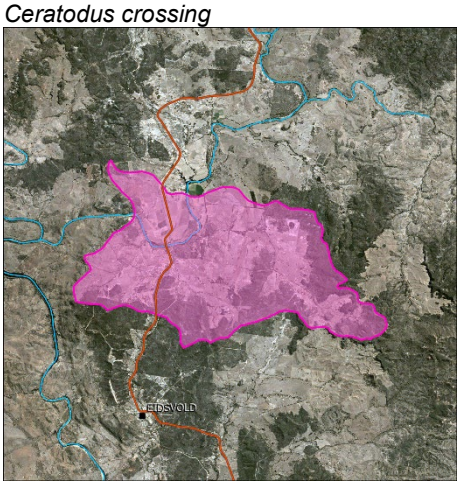
Special Feature	Values	CIM	Rating
bu_r_ec_05 *Remnant riparian rainforest - medium extent* 	Remnant riparian rainforest was identified by experts for its flora and fauna values including habitat for the 'vulnerable' Black-breasted Button Quail (*Turnix melanogaster*), Southern penda (*Xanthostemon oppositifolius*), *Fontainea rostrata*, Macadamia nut tree (*Macadamia integrifolia*), Gympie nut (*Macadamia ternifolia*) and Richmond birdwing (*Ornithoptera richmondii*). High species diversity occurs particularly on the lowlands where the remaining riparian rainforest is important for fruit-eating birds, many of which migrate seasonally from upland to lowland rainforest areas. In the Burnett catchment these mostly small, isolated remnants are in good condition and are a good representation of riparian ecosystems on the Burnett River within in the more developed sugar cane areas of the lower Burnett catchment. The expert panel recommended this decision be implemented across all Wide Bay-Burnet study areas. The implementation of this decision used the Fisher-Jenks algorithm to categorise riverine spatial units as low, medium or high based on the total area of riparian rainforest regional ecosystems present (12.3.1a, 12.3.16, 12.3.17, 12.3.21). Riverine spatial units with a medium riparian rainforest extent were given a score of '3' for AquaBAMM measure 6.3.1. Riverine spatial units with a high riparian rainforest extent were given a score of '4' for AquaBAMM measure 6.3.1.	6.3.1	3
bu_r_ec_06 *Natural flowing streams - Upper Burnett* 	These streams were nominated because they have a natural undisturbed hydrological regime. Streams included under this decision include the Auburn River, Upper Burnett River upstream of Splinter Creek, Three Moon Creek upstream of Cania Dam, Kroombit Tops, Eastern Creek upstream of Eidsvold, Nogo River upstream of Wuruma Dam, Boyne River upstream of Boondooma Dam, Bunya Mountains catchments (Stuart River and Barker Creek) and Barker Ck.	6.4.1	3
bu_r_ec_07 *Ephemeral, wide, sandy streams* 	These streams were nominated because they are distinct ephemeral, wide, sandy streams. Streams included under this decision include the Nogo River, Trevethan Creek, Cattle Creek and upstream of Wuruma Dam.	6.4.1	3

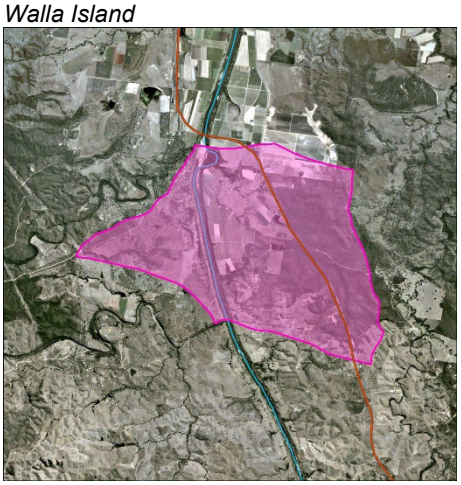
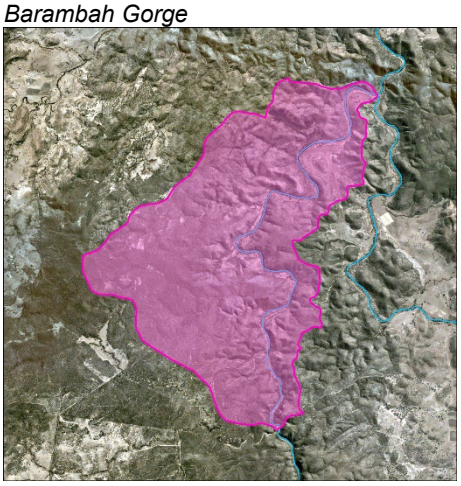
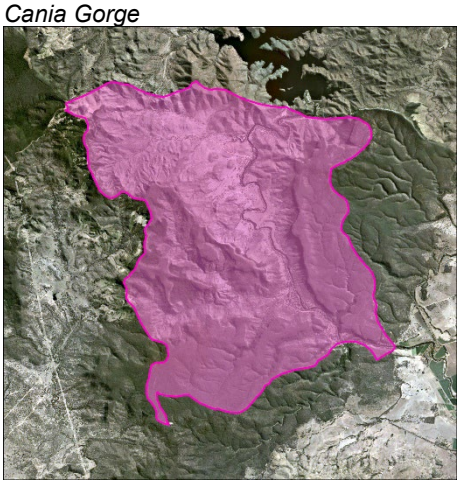
Special Feature	Values	CIM	Rating
bu_r_ec_08 *Cadarga Creek* 	This creek has geomorphic values and is one of the few remaining undisturbed gorge systems in the region. The area is unlikely to be altered due to the terrain. Its geology consists of laterised sandstone overlying granite and there are several large granite basins (waterholes) which fill with water and sand slugs, as well as sandy creeks. The upper section occurs in cleared Brigalow country although areas associated with this decision are predominantly uncleared. Endemic terrestrial flora or flora species at their range limits are likely to occur within the gorge. The boundary of the decision was compared with high ecological value mapping to ensure that high ecological value waterways were captured.	6.1.1	4
bu_r_ec_10 *Gravelly and Sandy Creeks* 	These areas are heavily groundwater dependent systems unique to the Burnett area. The creeks are located near Ban Ban Springs and provide persistent waterholes important during drought periods.	6.4.1	3
bu_r_ec_11 *Bunyip Hole in Selene State Forest* 	This area contains a deep, permanent riverine waterhole on a section of Three Moon Creek located within the Selene State Forest. The waterhole is centred at 151°5'50.32"E 25°2'34.488"S and is habitat for platypus (*Ornithorhynchus anatinus*) and Australian lungfish (*Neoceratodus forsteri*). This area was also flagged by the Wakka Wakka and Wulli Wulli traditional custodians as having important cultural values in the vicinity.	6.3.1 6.3.4	3 3

Special Feature	Values	CIM	Rating
bu_r_ec_12 *Natural flowing riverine habitat with permanent waterholes* 	Natural flowing riverine areas containing permanent waterholes acting as critical habitat and refugia for fish and turtle species. Platypus also occur in these areas. The remaining fish diversity, majority of the *Elseya sp*., and Australian lungfish (*Neoceratodus forsteri*) populations found in these river reaches in the future.	6.2.1 6.3.1 6.3.4	4 4 4
bu_r_ec_13 *Remnant riparian rainforest - high extent* 	Remnant riparian rainforest was identified by experts for its flora and fauna values including habitat for the 'vulnerable' Black-breasted Button Quail (*Turnix melanogaster*), Southern penda (*Xanthostemon oppositifolius*), *Fontainea rostrata*, Macadamia nut tree (*Macadamia integrifolia*), Gympie nut (*Macadamia ternifolia*) and Richmond birdwing (*Ornithoptera richmondii*). High species diversity occurs particularly on the lowlands where the remaining riparian rainforest is important for fruit-eating birds, many of which migrate seasonally from upland to lowland rainforest areas. In the Burnett catchment these mostly small, isolated remnants are in good condition and are a good representation of riparian ecosystems on the Burnett River within in the more developed sugar cane areas of the lower Burnett catchment. The expert panel recommended this decision be implemented across all Wide Bay-Burnet study areas. The implementation of this decision used the Fisher-Jenks algorithm to categorise riverine spatial units as low, medium or high based on the total area of riparian rainforest regional ecosystems present (12.3.1a, 12.3.16, 12.3.17, 12.3.21). Riverine spatial units with a medium riparian rainforest extent were given a score of '3' for AquaBAMM measure 6.3.1. Riverine spatial units with a high riparian rainforest extent were given a score of '4' for AquaBAMM measure 6.3.1.	6.3.1	4

Special Feature	Values	CIM	Rating
bu_r_fa_01 *Ben Anderson Barrage Impoundment - White-throated Snapping Turtle nesting hotspot* 	Large numbers of female southern snapping turtle (*Elseya albagula*) nest in the upper impoundment of Ben Anderson Barrage. This is a significant nesting area for the species. Note: This decision also applies as an ecology decision (decision number bu_r_ec_09).	6.3.1	4
bu_r_fa_03 *Grays waterhole* 	Grays waterhole is known to be important for lungfish because it is a deep, permanent waterhole. Very old lungfish have been recorded from this waterhole. This waterhole is also the upper reach of nesting habitat for the southern snapping turtle (*Elseya albagula*). The area identified is downstream of Gayndah, at the upper limit of Paradise Dam.	6.3.1 6.3.4	3 3
bu_r_fa_04 *Walla Weir impoundment* 	An artificial impoundment known to be important for waterfowl and water raptors. However the quality of the habitat is deteriorating over time (e.g., dead trees falling into water).	5.1.4	2

Special Feature	Values	CIM	Rating
bu_r_fa_05 *Kroombit Tops headwater streams* 	Kroombit Tops has narrow strips of riverine aquatic habitat where three endemic species occur including freshwater crayfish (*Euastacus monteithorum*), and frogs species (*Litoria pearsoniana*) and (*Taudactylus pleione*). This habitat is also home to a number of unique aquatic invertebrates.	6.3.1	4
bu_r_fa_06 *Bunya Mountains headwater streams* 	The unique vegetation in combination with the high altitude of the Bunya Mountains has resulted in a distinct habitat for montane frog species and for some aquatic invertebrates.	6.3.1	4
bu_r_fl_01 *Extensive Vallisneria nana macrophyte beds - upper Burnett* 	Where these macrophyte beds occur, they provide significant habitat and food resources for instream fauna including macroinvertebrates, fish and turtles. The aquatic and riparian flora expert panel for the Burnett ACA conducted in 2006 noted *Vallisneria nana* as the most critical aquatic plant for maintaining complex food webs and aquatic ecosystems because of its extensive macrophyte beds and broad geographic coverage of the Burnett catchment. As there are not many macrophyte beds remaining, the panel considered it to be important as a flora decision.	6.3.1	3

Special Feature	Values	CIM	Rating
bu_r_fl_02 *Extensive Vallisneria nana macrophyte beds - lower Burnett* 	Where these macrophyte beds occur, they provide significant habitat and food resources for instream fauna including macroinvertebrates, fish and turtles. *Vallisneria nana* is the most critical aquatic plant for maintaining complex food webs and aquatic ecosystems because of its extensive macrophyte beds and broad geographic coverage of the Burnett catchment. As there are not many macrophyte beds remaining, the panel considered it to be important as a flora decision.	6.3.1	4
bu_r_fl_03 *Coomba Falls* 	Located at these falls is a unique species of *Xanthorrhoea* which is thought to be a natural hybrid between *Xanthorrhoea johnsonii* and *Xanthorrhoea latifolia* subsp. *latifolia*. The Coomba Falls have created large deep permanent waterholes which are refuges for fauna and flora from drought. It was also the location of an Aboriginal massacre by early settlers of the area and is therefore a culturally and historically significant site. The panel have revised the conservation rating to a 2 in terms of the flora values as it is not considered to be very diverse floristically – rather it should be regarded as a special geomorphic feature. The area is located east of the township of Maidenwell.	6.3.1	2
bu_r_fl_04 *Ceratodus crossing* 	The riparian zone of this section of the Burnett River, north of Eidsvold is in very good condition. The area also has macrophyte beds with a possible presence of *Aponogeton*. However, this species is most likely extinct now due to the altered flow regime.	5.2.1	3

Special Feature	Values	CIM	Rating
bu_r_fl_05 *Walla Island* 	This vegetated island located in the Burnett River near Tim Fischer Bridge on the highway is located within the Ned Churchward Weir impoundment on the Burnett River and, consequently, it is partially submerged by Weir. At least seven significant fig trees are extant on the island. These are an important food source for the critically endangered southern snapping turtle (*Elseya albagula*) and vulnerable black-breasted buttonquail (*Turnix melanogaster*). The highest risk to the fig trees is weeds, namely cat's claw creeper (*Dolichandra unguis-cati*), which is invading the island. The flora panel from the Burnett River ACA conducted in 2006 identified an urgent need to control cat's claw creeper on the island. The island also contains macrophyte beds; a rainforest stand, some heritage listed figs and an occurrence of the Australian lungfish (*Neoceratodus forsteri*).	5.2.1 6.3.1	3 3
bu_r_fl_07 *Barambah Gorge* 	Species at the limit of their distributions (coastal species) occur in Barambah Gorge. Also, new species are likely to occur here and they are being collected from the area for example an endemic Hibiscus sp. (*Barambah Creek P. Grimshaw*). Barambah Gorge also has high geomorphic and scenic values. The area is an intact piece of the system that has not been extensively explored. The boundaries of the area can be defined using Barambah Gorge High Ecological Value (HEV) area (Burnett–Baffle Water Quality Improvement Plan data). Records for Hibiscus species (*Barambah Creek P. Grimshaw*) were located in a gully area high within the HEV area. This area was also flagged by the Wakka Wakka traditional custodians as having important cultural values in the vicinity.	6.1.1 6.3.1	3 3
bu_r_fl_08 *Cania Gorge* 	Cania gorge is a sandstone gorge 500km north west of Brisbane with towering cliffs, ancient caves, sheltered gorges, and more or less permanent water system running through it, creating a cool and wet microclimate relative to the surrounding landscape. The park is home to more than 90 species of bird, brush-tailed rock-wallabies and common bent-wing bats. In the wet, choruses of frogs can be heard near creeks. Forest red gum and Moreton Bay ash are found on the flats alongside Three Moon Creek, while river she-oaks and weeping bottlebrush cloak the edges of the creek. Numerous species are likely to occur at the limit of their distributions at Cania Gorge. One such species is *Sphagnum perichaetiale* which has been recorded at Dripping Rock and Two Storey Cave. The gorge also includes and groundwater dependent species and ecosystems, and patches of dry rainforest likely to contain unique or disjunct species. Cania Gorge also has high geomorphic and scenic values. The area has similar values to Barambah gorge and possible impacts from tourism. This area was also flagged by the Port Curtis Coral Coast (Bailai, Gurang, Gooreng Gooreng, Taribelang-Bunda) traditional custodians as having important cultural values in the vicinity.	6.1.1 6.3.1	3 3

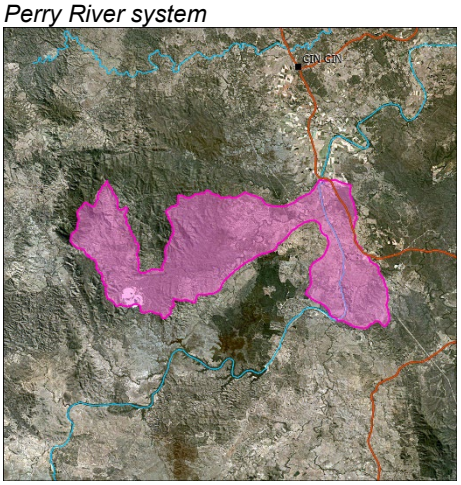
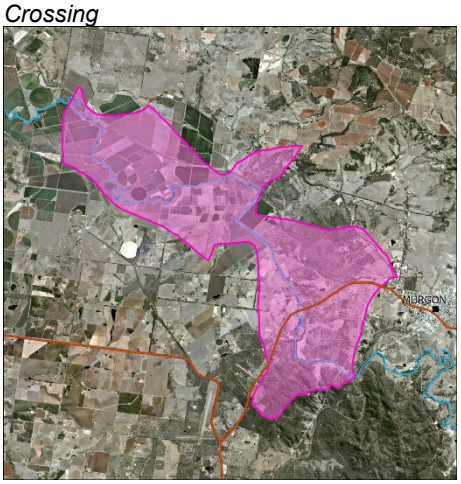
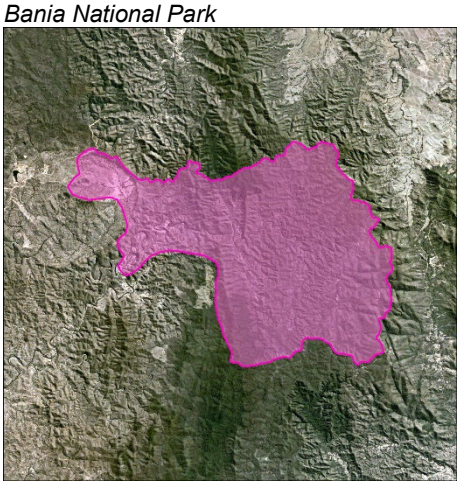
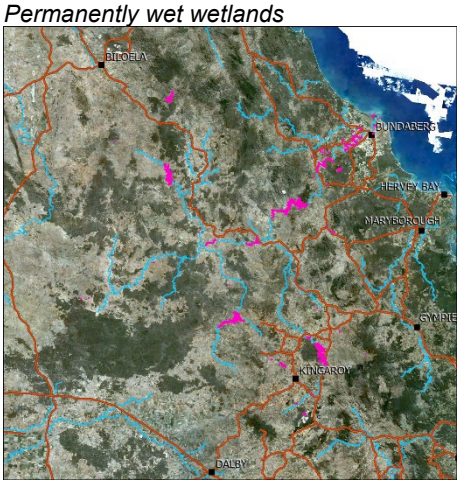
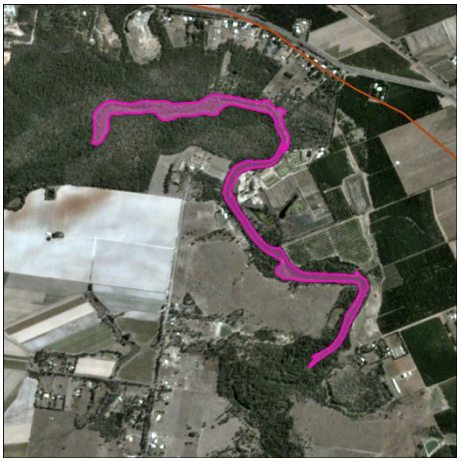
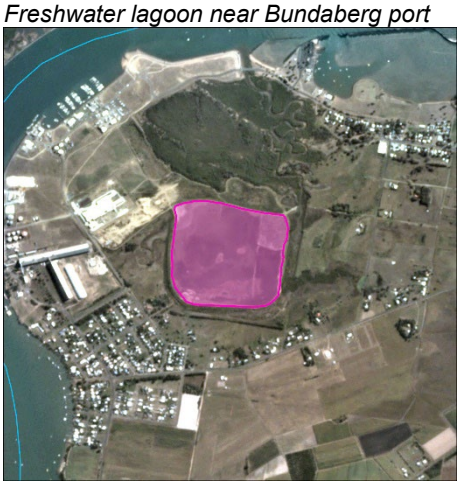
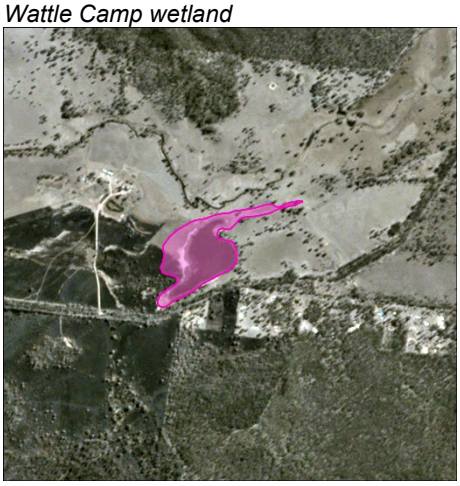
Special Feature	Values	CIM	Rating
bu_r_fl_09 *Perry River system* 	Perry River was identified as having a high richness of fish, macrophytes (34 spp.) and macroinvertebrates (at the family level). In addition, habitat values were quite high and remain intact. These values stand out from other river systems in Queensland. Most of the flora species are callistemon and there is grazing up to the edge. The area is important for migrating birds during winter and is relatively dry, tough country. Palms may also provide value for bats.	6.3.1	4
bu_r_fl_10 *Barambah Creek Aponogeton beds between Silver Leaf Weir and Ficks Crossing* 	At least two large beds of *Aponogeton elongatus* subsp. elongatus occur within this reach of Barambah Creek. These unusual macrophyte beds provide significant habitat and food resources for instream fauna including macroinvertebrates, fish and turtles. The area also contains significant numbers of threatened species and plant species at the limit of their distribution, including *Pittosporum angustifolium* (Gumbi Gumbi), which is widely used in Aboriginal bush medicine as a treatment for coughs, colds and eczema, and to induce lactation. Anecdotal evidence suggests there is not much reed in the creek anymore, meaning turtles are not fattening like they used to (Patricia Bond, pers. comm., May 2023). First Nation peoples have also observed an increase in blue-green algae blooms. Wetlands in the vicinity were also flagged by the Wakka Wakka traditional custodians as having important cultural values due to many story lines crossing the area (Patricia Bond, pers. comm. May 2023).	6.3.1	3
bu_r_fl_11 *Bania National Park* 	Located in the headwaters of the Burnett River within Bania National Park and for about 5 km downstream of the State Forest boundary. Special biodiversity and geomorphic values. The area contains weed free Callistemon communities that are lightly grazed but still in good condition.	6.1.1 6.3.1	3 3

Table 21. Burnett Non-Riverine ecology, fauna and flora special features

Special Feature	Values	CIM	Rating
bu_nr_ec_02 *Permanently wet wetlands* 	These wetlands are refugia for non-riverine dependent species in an otherwise relatively dry landscape. Note: This decision also applies in the Mary catchment (decision number my_nr_ec_03).	6.3.1	4
bu_nr_ec_03 *Meadowvale* 	This special feature is a large waterhole along Splitters Creek with fringing *Melaleuca*. The area contains high fish species diversity (with 12 species tagged including the Australian lungfish (*Neoceratodus forsteri*), Mullet, Australian Bass (*Macquaria novemaculeata*), Barramundi (*Lates calcarifer*), Oxeye Herring (*Megalops cyprinoides*), and high connectivity to the estuary confirmed by the capture of tagged mullet in the estuary and off beaches. This is the largest lagoon within Splitter's Creek (the only remaining major freshwater creek downstream of the barrage with a natural freshwater estuarine interface) and, as such, is an important refuge for large (600 mm) Australian lungfish (*Neoceratodus forsteri*) that are washed over the barrage and cannot get back upstream through the fishway.	6.3.1 7.5.1	3 3
bu_nr_ec_12 *Freshwater lagoon near Bundaberg port* 	These freshwater wetlands in an estuarine environment are highly modified but continue to provide habitat freshwater aquatic species including waterbirds. These wetlands have restoration potential, with some revegetation of mangrove and salt marsh areas occurring in 2017. The Gladstone Port Authority and Skilling Queenslanders for Work are currently creating an interpretive walkway for bird watchers. This area was also flagged by the Port Curtis Coral Coast (Bailai, Gurang, Gooreng Gooreng, Taribelang-Bunda) traditional custodians as having important cultural values in the vicinity.	6.3.1	2

bu_nr_fa_01 *Wetlands associated with conservation significant springs* 	Three important springs complexes (Abercorn, Ceratodus, Spring Grove) occur between Mundubbera and Monto and two other complexes along Barambah Creek. Spring Grove is the most important complex. Spring ecosystems provide habitat for species of conservation significance, including endemic and threatened flora and fauna that rely on the continued flow of the springs for their existence. Spring ecosystems also provide important drought refugia especial in arid landscapes. This decision also includes significant flora values, particularly Ban Ban Springs which is currently in poor condition/dry. Only the Abercorn spring complex has coincident wetland regional ecosystems or waterbodies mapped in the Queensland Wetland Mapping (v6.0), so this decision can only be implemented for the Abercorn wetlands. This area was also flagged by the Port Curtis Coral Coast (Bailai, Gurang, Gooreng Gooreng, Taribelang-Bunda), Wakka Wakka and Wulli Wulli traditional custodians as having important cultural values in the vicinity.	6.3.1	4
bu_nr_fa_03 *Wattle Camp wetland* 	This wetland is important for migratory birds. Some species such as duck species; white-necked heron (*Ardea pacifica*); white-faced heron (*Egretta novaehollandiae*); spoonbills; Australian pelican (*Pelecanus conspicillatus*) and the black swan (*Cygnus atratus*) are known to nest and breed at this wetland. The wetland is somewhat degraded and there are no significant flora values. It forms part of a flood plain system that meets just south of the dam. Note: This decision is related to a riverine ecology decision (decision number bu_r_ec_01).	5.1.4 6.3.1	2 2
bu_nr_fl_01 *Lakeside* 	This special feature was identified in the South East Queensland Biodiversity Planning Assessment (decision number seqn_fl_3). The following values were identified: Wildlife refugia (Criterion Ib). Wetland taxa at or near western limits of geographic range (*Melaleuca quinquenervia*, *Lepironia articulata*) (Criterion Id). Criterion ratings were: Ib (wildlife refugia): HIGH, Id (limits of geographic range): MEDIUM. This area is a wetland complex with permanent waterhole and ephemeral swamp at Lakeside on Maryborough – Biggenden Road	6.3.1 6.3.3	3 3

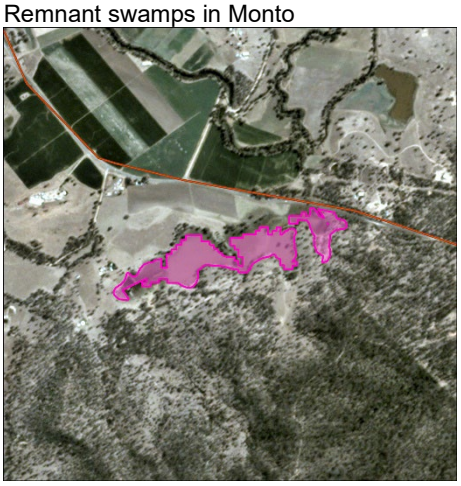
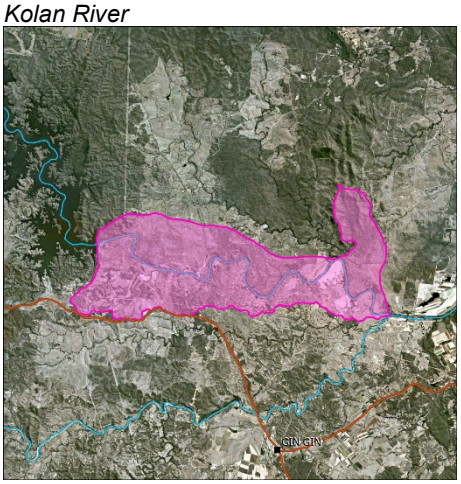
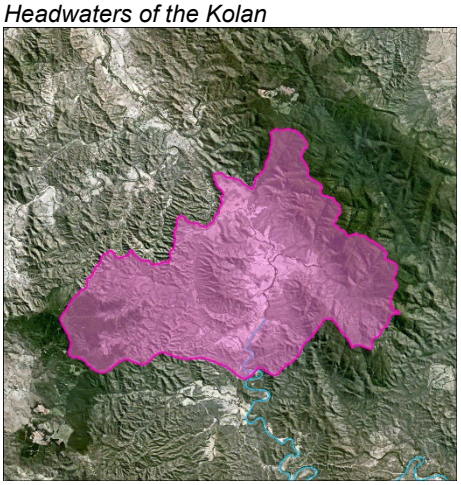
bu_nr_fl_02 Remnant swamps in Monto 	This special feature was identified in the Brigalow Belt Biodiversity Planning Assessment (decision number brbs_fl_34). The following values were identified: Small wetlands with tortoises, wetland birds and jabiru. These wetlands have large *Eucalyptus tereticornis* around their margins and *Eleocharis plana* is present, an indicator of ephemeral wetlands. Criterion Ib (wetland) rating was "y".	6.3.3	2

Table 22. Kolan Riverine ecology special features

Special Feature	Values	CIM	Rating
ko_r_ec_01 *Persistent waterholes associated with the Kolan River* 	The permanent waterholes above Bucca Weir are some of the few remaining waterholes on the Kolan and provide refugia for wildlife. They are the only example of deep semi-natural waterholes in the Kolan and upstream of Fred Haig Dam the waterholes are less persistent.	6.3.1 6.3.4	3 3
ko_r_ec_02 *Headwaters of the Kolan* 	These reaches of the Kolan River include alluvial flats with reasonable examples of regional ecosystem 12.3.3 regrowth, on mostly freehold land. This section of river is positioned between the highlands creating a contained catchment that boasts some permanent waterholes. The area, however, is also subject to some invasion by Cats claw creeper (*Dolichandra unguis-cati*).	6.3.1	3

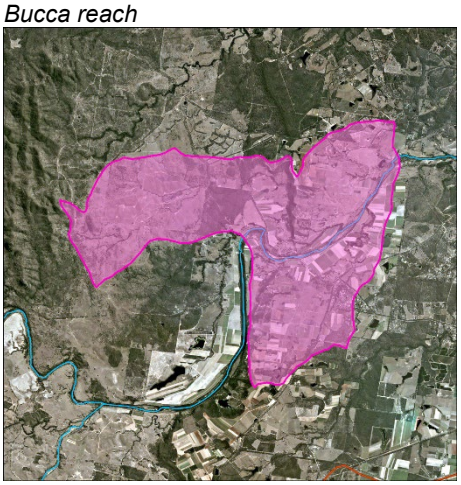
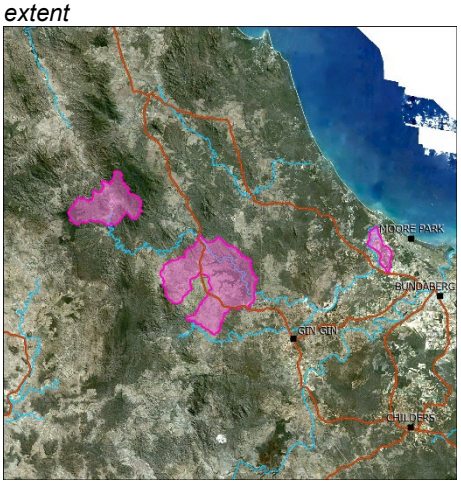
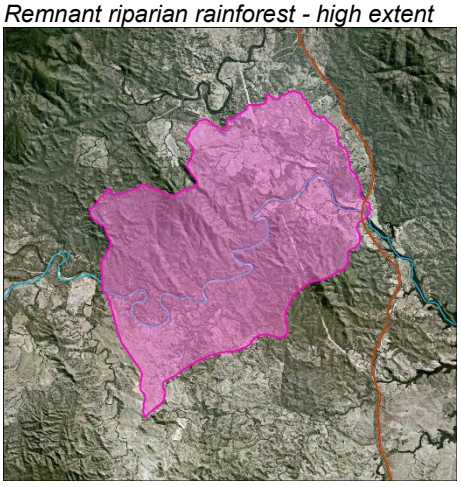
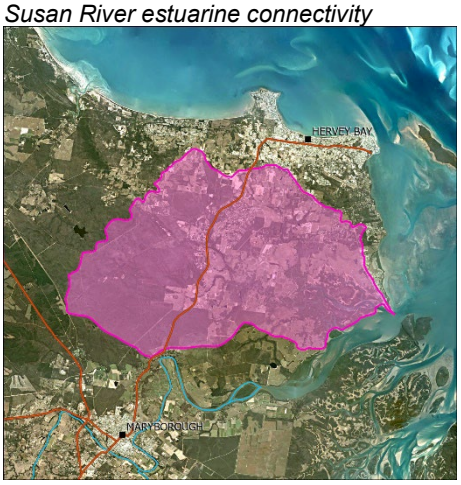
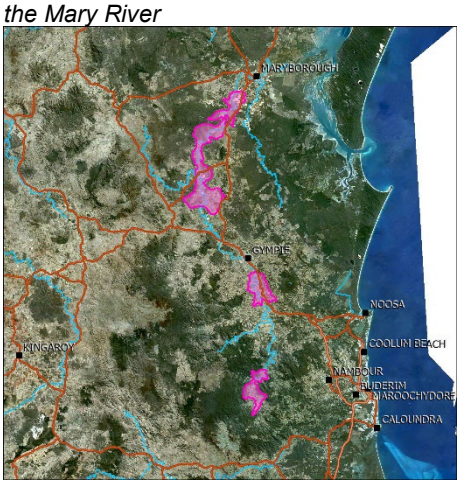
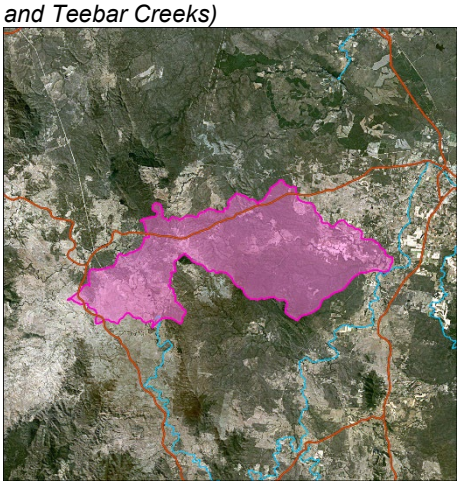
Special Feature	Values	CIM	Rating
ko_r_ec_03 *Bucca reach* 	This reach is the only remaining habitat with a pool riffle sequence within the Kolan. It includes the section below Fred Haig Dam to the top end of the barrage, only sustained through release from Bucca weir. It has a diverse fish community, and its values are only maintained with environmental flows. The riparian area is impacted by Cats claw creeper (*Dolichandra unguis-cati*), but in-stream habitat includes good Vallisneria beds.	6.3.1 6.2.1	4 4
ko_r_ec_04 *Remnant riparian rainforest - medium extent* 	Remnant riparian rainforest was identified by experts for its flora and fauna values including habitat for the 'vulnerable' Black-breasted Button Quail (*Turnix melanogaster*), Southern penda (*Xanthostemon oppositifolius*), *Fontainea rostrata*, Macadamia nut tree (*Macadamia integrifolia*), Gympie nut (*Macadamia ternifolia*) and Richmond birdwing (*Ornithoptera richmondii*). High species diversity occurs particularly on the lowlands where the remaining riparian rainforest is important for fruit-eating birds, many of which migrate seasonally from upland to lowland rainforest areas. The expert panel recommended this decision be implemented across all Wide Bay-Burnet study areas. The implementation of this decision used the Fisher-Jenks algorithm to categorise riverine spatial units as low, medium or high based on the total area of riparian rainforest regional ecosystems present (12.3.1a, 12.3.16, 12.3.17, 12.3.21). Riverine spatial units with a medium riparian rainforest extent were given a score of '3' for AquaBAMM measure 6.3.1. Riverine spatial units with a high riparian rainforest extent were given a score of '4' for AquaBAMM measure 6.3.1.	6.3.1	3
ko_r_ec_05 *Remnant riparian rainforest - high extent* 	Remnant riparian rainforest was identified by experts for its flora and fauna values including habitat for the 'vulnerable' Black-breasted Button Quail (*Turnix melanogaster*), Southern penda (*Xanthostemon oppositifolius*), *Fontainea rostrata*, Macadamia nut tree (*Macadamia integrifolia*), Gympie nut (*Macadamia ternifolia*) and Richmond birdwing (*Ornithoptera richmondii*). High species diversity occurs particularly on the lowlands where the remaining riparian rainforest is important for fruit-eating birds, many of which migrate seasonally from upland to lowland rainforest areas. The expert panel recommended this decision be implemented across all Wide Bay-Burnet study areas. The implementation of this decision used the Fisher-Jenks algorithm to categorise riverine spatial units as low, medium or high based on the total area of riparian rainforest regional ecosystems present (12.3.1a, 12.3.16, 12.3.17, 12.3.21). Riverine spatial units with a medium riparian rainforest extent were given a score of '3' for AquaBAMM measure 6.3.1. Riverine spatial units with a high riparian rainforest extent were given a score of '4' for AquaBAMM measure 6.3.1.	6.3.1	4

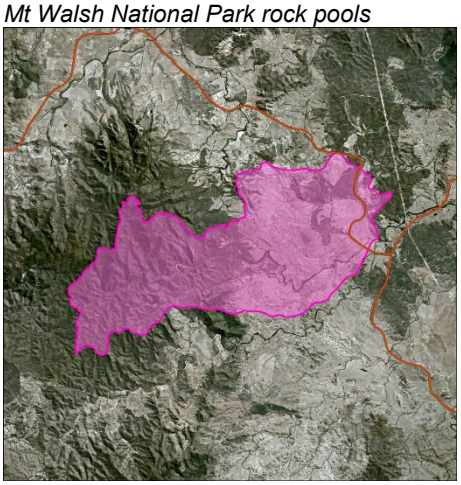
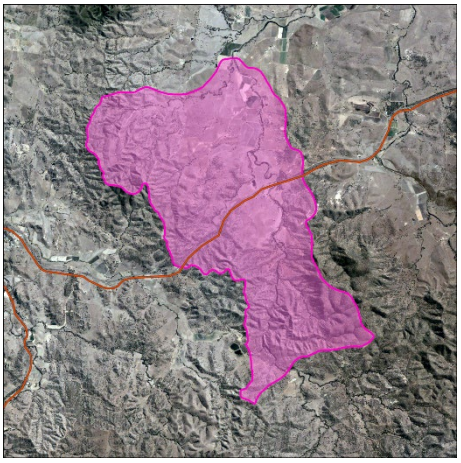
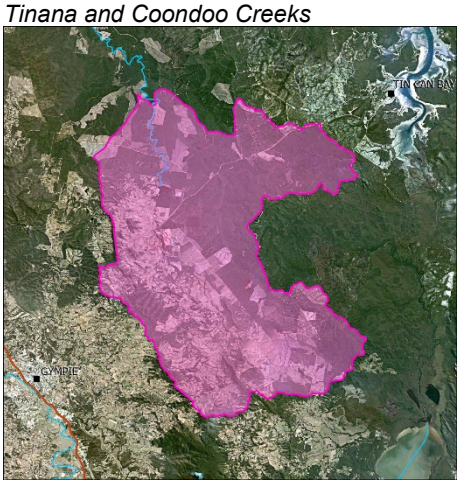
Table 23. Kolan Non-Riverine fauna special features

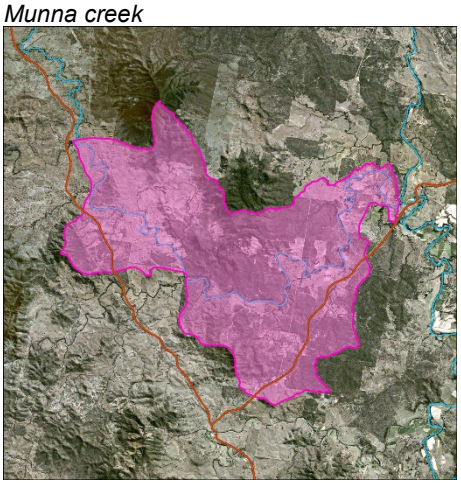
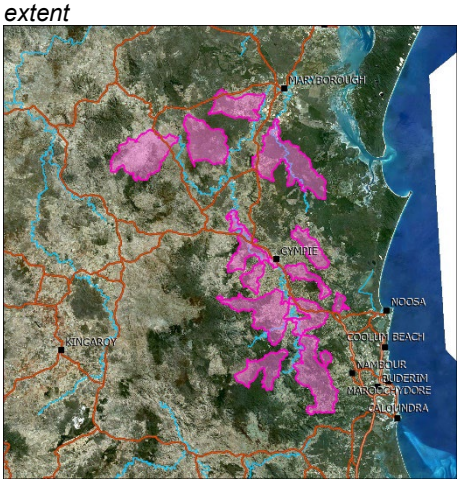
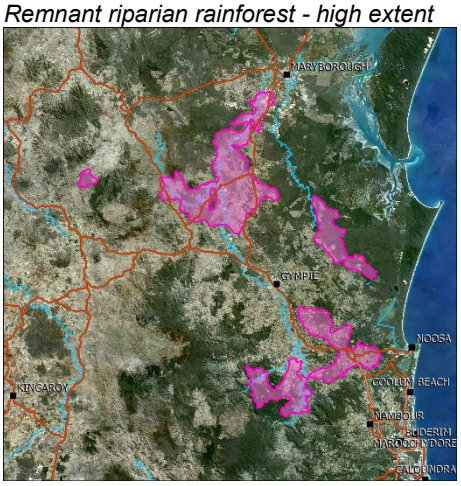
Special Feature	Values	CIM	Rating
ko_nr_fa_01 *Moore Park coastal wetlands* 	Significant coastal wetlands occurring as swales and lakes within parallel dunal systems. Parts of this area is subject to tidal influence and vegetation is in good condition. Broad vegetation types include *Melaleuca* wetlands, littoral rainforest (Maria Zann pers. comm., July 2023) and eucalypt/rainforest mix. Wetlands include *Melaleuca quinquenervia /Livistona decipiens*, fringing Casuarinas and rushes/sedges.	6.3.1	3

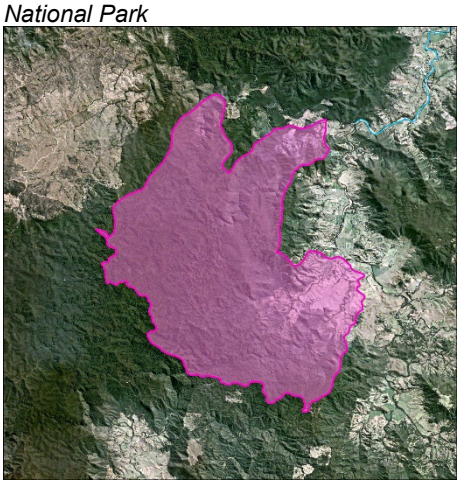
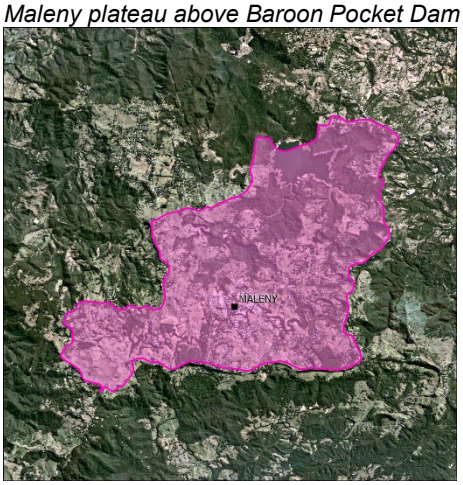
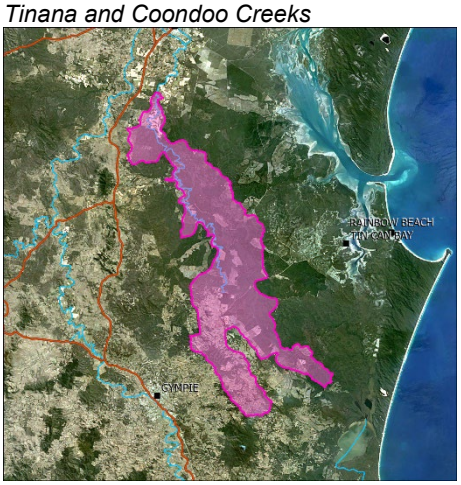
Table 24. Mary Riverine ecology and fauna special features

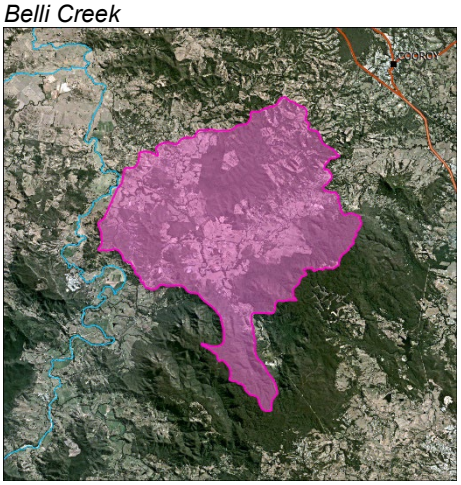
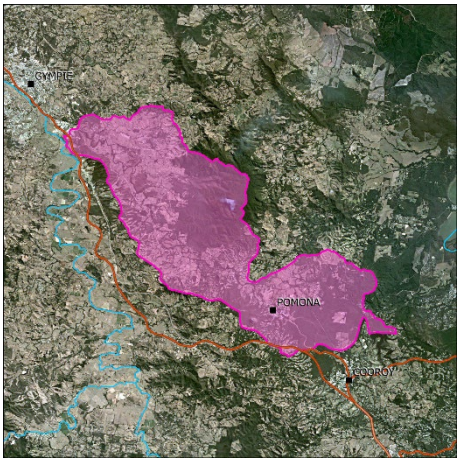
Special Feature	Values	CIM	Rating
my_r_ec_01 *Susan River estuarine connectivity* 	The Susan River catchment is notable for its intact connectivity between estuarine and freshwater systems which is important for diadromous fish migration. This area was originally nominated by the fauna panel subsequently reviewed by the wetland ecology panel, who endorsed it as an ecology decision. The wetland ecology panel noted that the Susan River has similar geology and systems to the Cherwell River in that it drains to the RAMSAR boundary, has similar wallum wetland system, good fish habitat at the bottom end of the system and intact catchment values. Acid frog habitat occurs within the upper catchment wetlands and *Melaleuca* wetlands occur along most of the drainage lines. Its upper catchment has unusual geology with perched wetlands located on landzone 5 (similar to Cherwell River values). The wetland ecology panel also observed that an improvement in wetlands mapping is required in the Upper Susan River catchment.	6.3.1 7.5.1	4 4

Special Feature	Values	CIM	Rating
my_r_ec_02 *Pools, riffles and sand bars sequences on the Mary River* 	Pool, riffle and sand bar sequences commence above the upper end of the Mary barrage impoundment, but also occur upstream chiefly along the main trunk of the Mary River. The crucial functional elements are the provision of a very diverse range of instream and riparian physical habitats in close proximity to each other , with a high degree of variability both spatially and temporally. These habitats are important at different times of the year and different stages of the life cycle of a number of long-lived threatened species. Pools in the sequences vary in length from tens of metres to several kilometres in length. Fauna utilising these sequences include the Mary River Cod (*Maccullochella peelii mariensis*) (pools), Mary River Turtle (*Elusor macrurus*) (pool, riffles and sandbar) and the Australian lungfish (*Neoceratodus forsteri*). The Mary River turtle (*Elusor macrurus*) is dependent on pools for adult habitat, riffles for juvenile habitat associated with their macroinvertebrate diet, and sand bars for nesting habitat (Flakus and Connell 2008). There was some discussion during the wetland ecology panel that sequences of pools, riffles and sand bars can apply to the whole catchment and this is a representative example of the values. This area was originally nominated by the fauna panel and was reviewed and endorsed by the wetland ecology panel.	6.1.1 6.2.1 6.3.1 6.3.4	4 4 4 4
my_r_ec_03 *Myrtle Creek (also encompassing Aramara and Teebar Creeks)* 	This area of riparian wetlands in a western Mary catchment occurs mostly within forestry areas however they are in good condition and have retained good longitudinal connectivity. These wetlands have important values including shallow lagoons and wallum-style wetlands on a sandy base. Species present include *Melaleuca*, reed, acacia and banksia species. This area was originally nominated by the fauna panel but underwent further review by the wetland ecology panel. This decision also includes wetlands and lagoons along drainage lines within Aramara and Teebar Creek catchments. These wetlands are high in native fish diversity (e.g. Purple-spotted and Firetailed gudgeons (*Mogurnda adspersa* and *Hypseleotris galii respectively*), Australian smelt (*Retropinna semoni*) and flyspecked hardyheads (*Craterocephalus stercusmuscarum*)). Wetland plants recorded in the area include the Giant water lily (*Nymphaea gigantea*) and the Water snowflake (*Nymphoides indica*). Bird species present include Jabiru (*Ephippiorhynchus asiaticus*), black swans (*Cygnus atratus*), magpie geese (*Anseranas semipalmata*) and other wader species. The wetland ecology panel also noted that this area contains potential turtle and Australian lungfish (*Neoceratodus forsteri*) habitat as well as sandy wallum vegetation, that is unusual this far west.	6.3.1	3

Special Feature	Values	CIM	Rating
my_r_ec_04 *Mt Walsh National Park rock pools* 	The values outlined for this area are primarily associated with the Coongarra Falls rock pools at the headwaters of Eel Creek. This series of small rock pools leading to one big pool within big open granite slabs is different geologically and ecologically, maintaining a constant water source during dry periods. The water level also remains constant. The pools contain freshwater fish (not yet surveyed) and riparian vegetation is high in regional ecosystem diversity including hoop pine, vine scrub, riparian vegetation and regional ecosystem 12.3.3.	6.1.1 6.3.1	4 4
my_r_ec_05 *Kinbombi Falls* 	This area is a unique gorge with permanent water in a dry landscape, occurring on the Brisbane-Barambah volcanics, an area that is geologically distinct within the Mary. Kinbombi Creek captures part of an adjoining sub-catchment and the waterfall feature located in this area is rare within the Mary catchment.	6.1.1	4
my_r_ec_06 *Tinana and Coondoo Creeks* 	Tinana and Coondoo Creeks are important Mary River cod (*Maccullochella peelii mariensis*) habitat and are one of two areas left unstocked. The area is identified as an area of high ecological value (HEV) and values listed in the HEV report (EPP Water 2009) include the only self-sustaining naturally occurring populations of cod in the Mary catchment (and Qld), supports Ornate Rainbow (*Rhadinocentrus ornatus*), Honey Blue Eye (*Pseudomugil mellis*) and Oxleyan Pygmy Perch (*Nannoperca oxleyana*). In-stream and riparian habitat are natural, intact and high in quality, although it is naturally low in fish and aquatic plant species richness. Threatened species of frog include the Giant barred (*Mixophyes iteratus*) and wallum frogs. Water quality is good upstream of the impoundments although pH levels are low. This area was originally nominated by the fauna panel and later reviewed by both the flora and wetland ecology panes. The flora panel commented that there are significant macrophyte beds as well as being is a centre of *Quassia bidwillii* distribution. The wetland ecology panel endorsed this as an ecology decision and noted its value as a complete functioning system with reasonable riparian buffers. Note: This decision also applies as a fauna decision (decision number my_r_fa_03).	6.3.1 6.4.1	4 4

Special Feature	Values	CIM	Rating
my_r_ec_07 *Persistent waterholes associated with the Munna creek* 	Persistent deep waterholes associated with Munna creek provide habitat for snapping turtles, Australian lungfish (*Neoceratodus forsteri*), and other aquatic species common to the region. These waterholes provide important refugial values making them important in the context of future climate change. These waterholes may dry out completely during a severe drought.	6.2.1 6.3.1 6.3.4	4 4 4
my_r_ec_08 *Remnant riparian rainforest - medium extent* 	Remnant riparian rainforest was identified by experts for its flora and fauna values including habitat for the 'vulnerable' Black-breasted Button Quail (*Turnix melanogaster*), Southern penda (*Xanthostemon oppositifolius*), Fontainea rostrata, Macadamia nut tree (*Macadamia integrifolia*), Gympie nut (*Macadamia ternifolia*) and Richmond birdwing (*Ornithoptera richmondii*). High species diversity occurs particularly on the lowlands where the remaining riparian rainforest is important for fruit-eating birds, many of which migrate seasonally from upland to lowland rainforest areas. The expert panel recommended this decision be implemented across all Wide Bay-Burnett study areas. The implementation of this decision used the Fisher-Jenks algorithm to categorise riverine spatial units as low, medium or high based on the total area of riparian rainforest regional ecosystems present (12.3.1a, 12.3.16, 12.3.17, 12.3.21). Riverine spatial units with a medium riparian rainforest extent were given a score of '3' for AquaBAMM measure 6.3.1. Riverine spatial units with a high riparian rainforest extent were given a score of '4' for AquaBAMM measure 6.3.1.	6.3.1	3
my_r_ec_09 *Remnant riparian rainforest - high extent* 	Remnant riparian rainforest was identified by experts for its flora and fauna values including habitat for the 'vulnerable' Black-breasted Button Quail (*Turnix melanogaster*), Southern penda (*Xanthostemon oppositifolius*), Fontainea rostrata, Macadamia nut tree (*Macadamia integrifolia*), Gympie nut (*Macadamia ternifolia*) and Richmond birdwing (*Ornithoptera richmondii*). High species diversity occurs particularly on the lowlands where the remaining riparian rainforest is important for fruit-eating birds, many of which migrate seasonally from upland to lowland rainforest areas. The expert panel recommended this decision be implemented across all Wide Bay-Burnett study areas. The implementation of this decision used the Fisher-Jenks algorithm to categorise riverine spatial units as low, medium or high based on the total area of riparian rainforest regional ecosystems present (12.3.1a, 12.3.16, 12.3.17, 12.3.21). Riverine spatial units with a medium riparian rainforest extent were given a score of '3' for AquaBAMM measure 6.3.1. Riverine spatial units with a high riparian rainforest extent were given a score of '4' for AquaBAMM measure 6.3.1.	6.3.1	4

Special Feature	Values	CIM	Rating
my_r_fa_01 *Reaches associated with Conondale National Park* 	This special feature covers the stream sections associated with the lower reach of Little Yabba Creek within Conondale National Park. Fauna values include the presence of freshwater crayfish, threatened frog species, and Richmond birdwing butterfly (*Ornithoptera richmondii*).	6.3.1	4
my_r_fa_02 *Maleny plateau above Baroon Pocket Dam* 	This area is a basalt red soil plateau, the most extensive one within the Mary catchment and is unique in fluvial-geomorphic terms. As such it is considered an important groundwater recharge area which provides flow to the western upper Mary, as it has a high rainfall of around 1800 mm per annum. Existing rainforest riparian vegetation remains in places (e.g. (i) some intact rainforest drainage lines are mapped as regional ecosystem 12.3.1 between Baroon Pocket Dam and Maleny; and (ii) Mary Cairncross Park rainforest drainage lines with palm wetlands, representative of the former more extensive palm forest wetlands are thought to have occurred across the plateau before clearing). Remaining biodiversity values include: - freshwater crayfish (*Euastacus hystricosus*); and also the pink underwing moth (*Phyllodes imperialis*) and the Richmond birdwing butterfly (*Ornithoptera richmondia*) which both utilise riparian rainforest habitat. Historically it is extensively cleared, but prior to clearing it could have been a chain-of-ponds system. Weed infestation is now an issue. Note: This decision is related to my_r_fa_10.	6.3.1 7.3.2	3 3
my_r_fa_03 *Tinana and Coondoo Creeks* 	Tinana and Coondoo Creeks contain important self-sustaining Mary River cod (*Maccullochella peelii mariensis*) populations. It is the only area now containing wild stocks. These creeks support fish species including ornate rainbow (*Rhadinocentrus ornatus*), honey blue eye (*Pseudomugil mellis*) and oxleyan pygmy perch (*Nannoperca oxleyana*). Frog species include the giant barred frog (*Mixophyes iteratus*) and wallum frogs. The flora panel commented on the significant macrophyte beds of these tributaries. It is also the centre of *Quassia bidwillii* distribution. This area was originally nominated by fauna panel but was considered to have multiple values. The wetland ecology panel agreed that this should also be an ecology decision, observing that Tinana and Coondoo Creeks are more of a complete functioning system with reasonable riparian buffers. These are scheduled as High Ecological Value (HEV) waters: Upstream of the impoundments has good water quality and streams are characterised by low pH levels. Note: This decision was also applied as an ecology decision (decision number my_r_ec_06).	6.3.1 6.4.1	4 4

Special Feature	Values	CIM	Rating
my_r_fa_04 *Belli Creek* 	Belli Creek is a deep pool alluvial system which remains relatively intact and is one of the few well-connected reaches in the Mary River. It has a high frog species diversity including threatened frog species such as the giant barred frog (*Mixophyes iteratus*), the cascade treefrog (*Litoria pearsoniana*) and the tusked frog (*Adelotus brevis*); the Richmond birdwing butterfly (*Ornithoptera richmondii*); natural records of Mary River cod (*Maccullochella peelii mariensis*) and good cod habitat with deep pools and riffles. The area contains riparian rainforest vegetation (regional ecosystem 12.3.1) and includes threatened plant species.	6.3.1 7.3.2	3 3
my_r_fa_05 *Six Mile Creek* 	This tributary of the Mary was recognised within the Mary Water Resource Plan especially for its values as Mary River cod (*Maccullochella peelii mariensis*) habitat and one of three known significant cod breeding populations (as per Mary River Cod Recovery Plan). This species requires deep pools with in-stream large woody debris (e.g. logs) as well as canopy closure to reduce noise and provide stream shading. All values are linked back to the riparian vegetation. This means that if there is no vegetation it is of no habitat value for the species. Six Mile Creek is an unusual alluvial system in that it is a sandy stream without gravel riffles which are formed by large woody debris and exhibits all the above features. Riparian vegetation in this area has been mapped at a finer scale appropriate to identify habitat. Six Mile Creek has good connectivity, despite being impounded in its upper reach. Its water quality is statistically different from other tributaries of the Mary due to its significantly lower pH. In addition to the Mary River cod, other notable fauna species include threatened frog species such as the giant barred frog (*Mixophyes iteratus*) and the tusked frog (*Adelotus brevis*); the Australian lungfish (*Neoceratodus forsteri*) and honey blue eye (*Pseudomugil mellis*). The panel indicated this decision should also include the rock pools and streams of Mothar Mountain, which is the northern limit of the cascade treefrog (*Litoria pearsoniana*) south of Kroombit. The wetland ecology panel also recommended extending this area to include Dingo, Coomber, Sandy and Boulder creeks which have slightly different ecological values including remnant lowland rainforest, tall messmate and significant cultural values. However, following further consideration, this decision remained as a fauna panel decision.	6.3.1	4

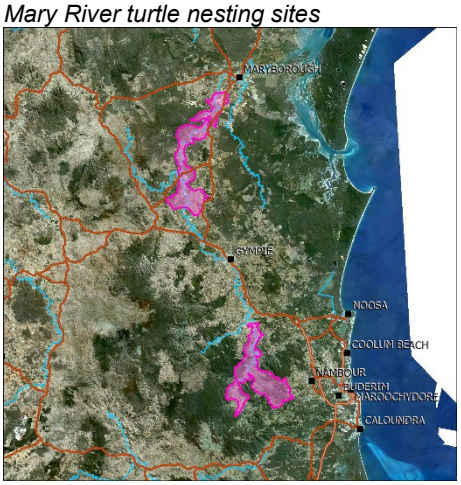
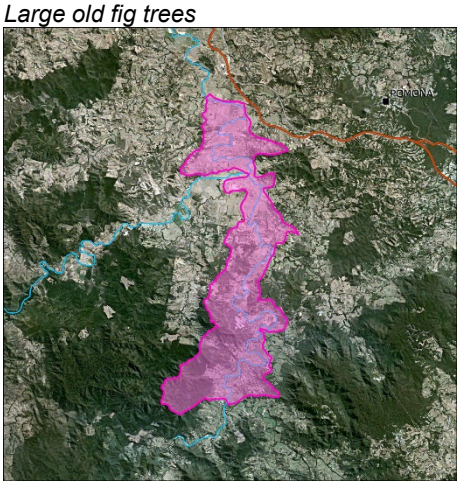
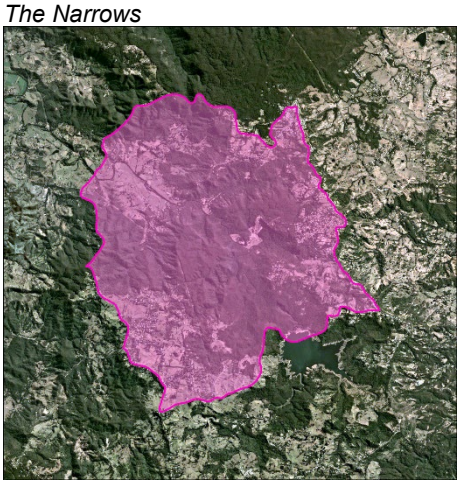
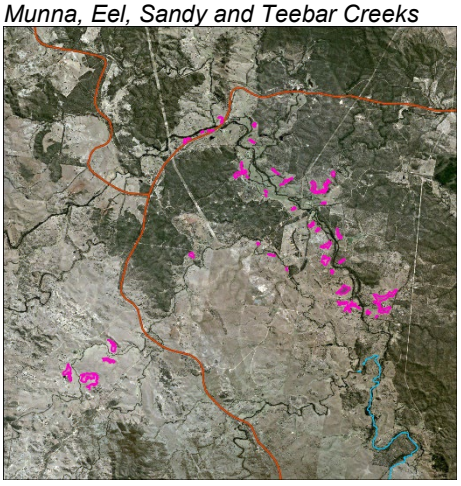
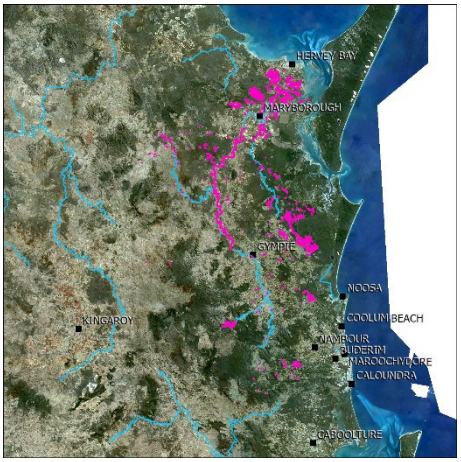
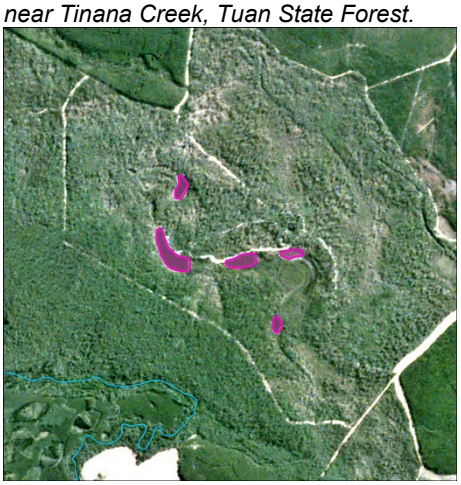
Special Feature	Values	CIM	Rating
my_r_fa_06 *Mary River turtle nesting sites* 	Significant Mary River turtle (*Elusor macrurus*) nesting sites exist on the Mary River from Emery's Bridge to upstream of the Mary River barrage ponded reach, and upstream from the junction of the Mary River and Yabba Creek.	6.3.1	4
my_r_fa_08 *Large old fig trees* 	The fig species (*Ficus racemosa*) occurs at its range limit in this area and is a food tree for the southern snapping turtle (*Elseya albagula*), the grey headed flying fox (*Pteropus poliocephalus*), and the Australian lungfish (*Neoceratodus forsteri*). Anecdotal evidence suggest platypus (*Ornithorhynchus anatinus*) may prefer to build nesting burrows in this area under *F. racemosa*. This area was also flagged by the Kabi Kabi, Jinibara and Butchulla traditional custodians as having important cultural values in the vicinity.	6.3.1	4
my_r_fa_10 *The Narrows* 	This special feature includes the Obi Obi Gorge in Kondalilla National Park, which is a non-fishing area for about 3 km downstream under the Fisheries Act 1994. This is a key spawning area for the Mary River cod (*Maccullochella peelii mariensis*) as far as the confluence with Baxter Creek from Kondalilla National Park. It also includes Kondalilla Falls which was original habitat for the presumed extinct gastric brooding frog (*Rheobatrachus silus*), as well as habitat for the cascade treefrog (*Litoria pearsoniana*), the giant barred frog (*Mixophyes iteratus*) and the tusked frog (*Adelotus brevis*). The subsection downstream of Baroon Pocket Dam (i.e., my_00154) has better values than the subsection upstream (i.e., my_00161), however the reaches in this subsection are dependent upon flows from (and the water quality of) the upstream subsection above the Baroon Pocket Dam. Note: This decision is related to my_r_fa_02.	6.3.1 6.4.1	4 4

Table 25. Mary Non-Riverine ecology special features

Special Features	Values	CIM	Rating
my_nr_ec_01 *Munna, Eel, Sandy and Teebar Creeks* 	These are unusual wetlands with a natural rocky base, intermittent streams and deep pools. The area was originally nominated by the fauna panel but underwent review by the wetland ecology panel. The wetland ecology panel noted that these wetlands are ecologically more similar to the Burnett Basin rather than the Mary in which they are situated. The wetlands have aquatic flora values (e.g. Monochoria and Aponogeton species). Waterbirds use these wetlands. Groundwater linkages here require more scientific investigation. Munna Creek is potentially of high ecological value because of its unusual hydrology. While it can dry out for 3 or 4 consecutive years, there is anecdotal evidence of large cod populations and a need for further cod surveys is required.	6.1.1	3
my_nr_ec_02 *Saltwater Creek* 	This area is a small wetland with high waterbird diversity and nesting sites for threatened species such as Brolgas (*Grus rubicunda*), Jabirus (*Ephippiorhynchus asiaticus*) and *Quassia bidwillii*. While the wetland itself is in good condition, the riparian boundary and surrounding areas are highly impacted. The decision was originally nominated by flora panel, who noted the presence of significant reed beds, and underwent further review by the wetland ecology panel. The wetland ecology panel noted that while the area is surrounded by cane, it has connectivity with the creek and water bird values.	6.3.1	3
my_nr_ec_03 *Permanently wet wetlands - Mary catchment* 	These wetlands are refugia for non-riverine dependent species in an otherwise relatively dry landscape. Note: This decision also applies to the Burnett catchment (decision number bu_nr_ec_02).	6.3.1	4

Special Features	Values	CIM	Rating
my_nr_ec_04 *Garnetts Lagoon and Tandoora Lagoon* 	These lagoons are freshwater lagoons close to estuarine wetlands with high waterbird and migratory wader bird richness as well as good species diversity. The area boasts higher numbers of waterbird species than the rest of the Great Sandy Strait and surveys by the Qld Wader Study Group have recorded 26 waterbird species present. This area is also a hotspot for migratory and resident shorebirds.	5.1.4	4
my_nr_ec_05 *Kooringa wetland* 	This wetland is a paperbark and reed swamp wetland of approximately 20 acres on the Mary River flood plain (although the wetland is located at a much higher elevation and is very rarely flooded by the river). While it is surrounded by regrowth and sugar cane, it is geomorphically/hydrologically unique in relation to its location high above the floodplain. The water source comes from either seepage or within a localised catchment. Some Salvinia is present.	6.4.1	2
my_nr_ec_06 *Acid swamp wetlands, Murphys Lakes - near Tinana Creek, Tuan State Forest.* 	Wallum frogs have been recorded in this area including *Litoria lesueuri*, *Litoria fallax*, *Litoria freycineti* and *Adelotus brevis*. Native fish species known to be present include *Hypseleotris galii*, *Hypseleotris klunzingeri*, *Craterocephalus stercusmuscarum fulvus* and, *Melanotaenia duboulayi*. The area is also high in invertebrate diversity: notably twenty one butterflies, two moths, three dragonflies, three damselflies, two beetles and four crustaceans. Six wetland bird species have also been recorded. Exotic species such as cane toads (*Rhinella marina*) and eastern gambusia (*Gambusia holbrooki*) are also present. This special feature was identified in the South East Queensland Biodiversity Planning Assessment (decision number seqn_fl_40). The following values were identified: Wildlife refugia (Criterion Ib). Rating for Ib (wildlife refugia): VERY HIGH. Located at Murphys Lakes, near Tinana Creek, Toolara State Forest. Additional comments from the Wide Bay-Burnett flora panel include: These lakes are located on the mainland, but have similar characteristics to those on Fraser Island.	6.3.1 6.1.1 6.3.2 6.3.3 6.3.4	3 3 3 3 3

7 Connectivity

Aquatic ecosystem connectivity refers to the connections between and within aquatic ecosystems. An understanding of the connections between wetlands and broader catchment processes and functioning is important for effective management decisions (DEHP 2017).

The principles for measuring AquaBAMM aquatic connectivity were originally developed by the Burnett River Aquatic Conservation Assessment ecology expert panel (Clayton et al. 2006). Subsequent ecology expert panels have discussed the importance of connectivity, and the principals and approach concepts that could be used to determine wetland connectivity.

7.1 Importance of connectivity

The importance of connectivity processes to the health and functioning of wetlands is well understood. An inherent connectivity (or lack of connectivity in drier periods) is a significant feature of Queensland's riverine and non-riverine wetlands. For example, in arid-zones and most riverine floodplains, an irregular flow regime resulting in sporadic wetland connectivity events underpins the conservation of instream and floodplain wetland biota such as invertebrate assemblages (Sheldon et al. 2002). Similarly, this relationship is evident for maintaining the health and productivity of end-of-river estuarine systems (Cullen 2003). A largely unknown and unseen linkage can also occur within the hyporheic zone between surface waters and groundwater ecosystems sustaining many endemic or relictual invertebrate fauna (Boulton et al. 2003). The expert panel made the following general comments regarding wetland connectivity across the study areas:

a. Connectivity can occur at different temporal and spatial scales within and between study area catchments.
b. Flow intermittency is a key process in all rivers especially in the west.
c. Under natural conditions opportunities for fish movement and dispersal is frequently constrained by flow intermittency (e.g., on average less than 44% of the time (Marshall et al., 2016)).
d. Lateral connectivity between the riverine systems and adjacent floodplain wetland ecosystems was recognised by the panel as an important value.
e. Instream connectivity between freshwater systems and adjacent intertidal systems was recognised as a very important value.
f. During low or no-flow periods, persistent waterholes provide reach scale refugia habitat for fish and other aquatic/semi-aquatic species (i.e., birds, reptiles, amphibians, invertebrates).
g. To assess connectivity appropriately, the components of an ecosystem, and the processes affecting them, must be considered.

7.2 Applying principles for measuring connectivity

Experts at the expert panel workshops agreed that connectivity should be considered as part of this ACA. Experts also noted that the practicalities of measuring connectivity for aquatic environments are complex, making general principles and spatially explicit models difficult to develop and implement.

Connectivity in its broadest meaning incorporates hydrological processes (quantity and quality, temporal and spatial variability), organism dispersal (barriers) and disturbances from natural conditions. Connectivity can be bi-directional movements within a stream (e.g., fish passage), uni-directional contributions to downstream areas, or lateral connectivity between instream areas and non-riverine floodplain wetlands or groundwater ecosystems. These aspects of connectivity combine to provide a matrix of competing and differing values from an ecological conservation viewpoint.

7.3 Connectivity Indicators and Measures

7.3.1 Significant species or populations

The measures under this indicator were identified by the panel as not being scientifically rigorous or suitable for measuring the connectivity within the landscape for species populations. As advised by the panel further research and development was required.

So far, one measure has currently been developed in time for the riverine ACA. The measure is 7.1.4 (Instream fragmentation due to anthropogenic barriers within a sub-catchment, based on an acknowledged metric) which identifies an instream fragmentation index within the wider sub-catchment scale. The index is based on the CAFI (Catchment Area Fragmentation Index) metric developed by Jumani, et al. (2022). The calculation identifies fauna

pass-ability of anthropogenic instream barriers and the cumulative catchment area above each barrier.

Future research on this index will be to incorporate additional hydrological and ecological attributes like average rainfall and barrier pass-ability for different taxa groups dispersing upstream and/or downstream within the river system.

7.3.2 Floodplain and wetland ecosystems

Measure 7.3.2 (Extent to which the wetland retains critical ecological and hydrological connectivity, where it should exist, with floodplains, rivers, groundwater, etc.) assesses the extent to which each spatial unit retains critical ecological and hydrological connectivity, where it should exist, with floodplains, rivers, groundwater, etc. The panel assigned this measure to special features as outlined in section 6 (page 66).

Further research and development on additional measures which consider a broader landscape view are under consideration.

7.3.3 Terrestrial ecosystems

Measure 7.4.2 (Terrestrial natural area connectivity within a subsection, based on an acknowledged metric) is a new measure developed for the WBBGBRCC riverine and non-riverine ACA. It looks at the connectivity between terrestrial natural areas for the migration or dispersal of fauna species between wetlands.

The index was originally developed by the Australian Government Department of Climate Change, Energy, the Environment and Water as the National Connectivity Index. It was created to assist in the monitoring and prioritising the maintenance and restoration of Australia's heavily modified landscapes.

For Measure 7.4.2, the index has been adapted to include the Regional Ecosystem remnant and regrowth mapping.

7.3.4 Estuarine and marine ecosystems

Measure 7.5.1 (The contribution of the spatial unit to the maintenance of estuarine and marine ecosystems with significant biodiversity values) assess the contribution of each spatial unit to the maintenance of an intertidal and/or marine ecosystem. The panel assigned this measure to special features as outlined in section 6 (page 66).

Further research and development on additional measures which consider a broader landscape view are under consideration.

8 Stratification

AquaBAMM stratification attempts to mitigate the effect of data averaging across large study areas. Stratification is particularly useful when ecological diversity is high. For example, in the Wet Tropics bioregion stratification would be appropriate because higher numbers of native amphibian species (i.e. Measure 3.1.1 Richness of native amphibians (riverine wetland breeders)) are known to inhabit upland areas compared to adjacent lowland floodplains. Stratification is unwarranted for measures where there is an equal probability of species throughout the study area.

Study area stratification is not mandatory for a successful assessment. In fact, the AquaBAMM makes provision for one or more measures to be stratified in any manner determined to be ecologically appropriate. Decisions concerning how to stratify are typically considered by the ecology expert panel. To date, assessments have been stratified based on elevation (e.g. 150m ASL for coastal catchments and 400 m ASL for catchments west of the Great Dividing Range in the Murray-Darling Basin) or bioregional boundaries.

For the WBBGBRCC ACA, the ecology expert panel noted that fish and some frog assemblages are likely to vary significantly between rainforest communities, lowland coastal wallum, and all other habitat types within the Wide Bay-Burnett study areas. On the panel's advice we attempted to stratify the five Wide Bay-Burnett study areas into three strata: rainforest, coastal wallum, and all other communities for the purpose of assessing like systems for Measures 3.1.1 (Richness of native amphibians (riverine wetland breeders), 3.1.2 (Richness of native fish) and 3.1.6 (Richness of native amphibians (non-riverine wetland breeders). However, after much deliberation there was no clear landscape distinction between areas and so it was decided to not use stratification for this ACA.

9 Summary

Expert panels were held for the WBBGBRCC ACAs in May 2023 and drew on the knowledge and experience of experts. AquaBAMM expert panel processes are based on the premise of scientific reasoning, multiple lines of evidence, and consensus building, and allow the incorporation of unpublished data and anecdotal evidence into the assessment process. The WBBGBRCC process sought to review and update special features mapped as part of the 2010 expert panel process, and the addition of new decisions or spatial implementations either not captured or not implemented in 2010. In this respect, new decisions were added for values associated with large fig trees, remnant riparian rainforest, natural flowing riverine habitat with permanent waterholes in the Burnett, and persistent waterholes associated with the Munna creek. Also, the water permanence attribute added in v6.0 of the Queensland Wetland Mapping was used to reimplement the persistent wetlands decisions for the Burnett (i.e., bu_nr_ec_02) and Mary (i.e., my_nr_ec_03) study areas. This attribute uses information sourced from the Geoscience Australia Wetland Insight Tool and is based timeseries Landsat data. One of the limitations is that small or smaller linear wetlands may not have water permeance data due to the 30m spatial resolution of the Landsat imagery.

Unlike the non-riverine assessment, which use spatial units based on the Queensland Wetlands Mapping, the riverine assessment uses fine-scale catchments representing specific riverine reaches or groups of reaches. Therefore the riverine special features described in this report may only apply to a specific reach, group of reaches, or discrete locations (e.g. instream waterholes) within one or more riverine spatial units. Where this occurs, the special feature values descriptions include additional descriptive information to help interpret the location and/or spatial extent of the special feature.

The spatial scale of the Queensland Wetlands Mapping (v6.0) means small or linear non-riverine wetlands, such as instream waterholes, oxbows etc., may not be represented well in this assessment. For example, wetland systems below the scale or minimum threshold size of the Queensland Wetlands Mapping are not mapped by the Queensland Herbarium and are therefore not assessed as part of the WBBGBRCC assessments. Springs are also poorly mapped in the region, and ground water dependent ecosystem mapping needs to be updated for South East Queensland and rolled out for the rest of the GBR connecting catchments.

The species lists in this report are based on a combination of the sightings records compiled for the assessments and the knowledge of the exerts who participated in the expert panel process. There may be additional taxa frequenting the area that are not contained within our lists. The sightings records are also subject to survey bias, and we do not account for survey bias or sampling effort in any of our measure calculations. We haven’t used Atlas of Living Australia or Birdlife Australia data due to data quality concerns and the associated overhead with checking and processing these records.

Comprehensive modelling of ecological connectivity of aquatic ecosystems was not undertaken as part of the assessments. In some cases, spatial units providing ecological or hydrological connectivity known to support key aquatic components or processes were flagged by experts as part of the special feature delineation process.

AquaBAMM provides the scope and flexibility for inclusion of comprehensive connectivity models. Modelling of aquatic connectivity values could be undertaken as part of future revisions of the WBBGBRCC ACA but would require additional resources and budget. The 'Walking the landscape' (DEHP, 2012) – a whole-of-system framework for understanding and mapping environmental processes and functioning – could provide a useful framework for integrating existing data with expert knowledge to develop conceptual models of connectivity linked to real world components.

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Appendix I – Expert Panel Terms of Reference

Flora Expert Panel

The role of the Flora Expert Panel is to provide expert advice on aquatic floristic values for the waterways and wetlands of the study area. This advice is a critical component of the Aquatic Conservation Assessment (ACA).

The panel membership will consist of experts in the field of aquatic flora values including species, communities and processes.

The advice provided by the expert panel at the workshop will be incorporated into the ACA results where appropriate.

The tasks to be undertaken by the panel include, but without limitation, the following:

- Review relevant existing spatial data (species point records) and available information (reports etc.).
- Provide advice on aquatic dependent rare or threatened flora species habitat and localities.
- Provide advice on aquatic dependent priority flora species habitat and localities.
- Identify priority ecosystems or areas important for significant flora communities or species.
- Provide advice on aquatic dependent exotic flora species localities and abundance.
- Weight Measures relative to their importance for an Indicator. Due to time this was not considered by the panel.
- Rank Indicators relative to their importance for a Criterion. Due to time this was not considered by the panel.

Fauna Expert Panel

The role of the Fauna Expert Panel is to provide expert advice on aquatic fauna values for the waterways and wetlands of the study area. This advice is a critical component of the Aquatic Conservation Assessment (ACA).

The panel membership will consist of experts in the field of aquatic fauna values including species, communities and processes.

The advice provided by the expert panel at the workshop will be incorporated into the ACA results where appropriate.

The tasks to be undertaken by the panel include the following:

- Review relevant existing spatial data (species point records) and available information (reports etc.).
- Provide advice on aquatic dependent rare or threatened fauna species habitat and localities.
- Provide advice on aquatic dependent priority fauna species habitat and localities.
- Identify priority ecosystems or areas important for significant faunal communities or species.
- Provide advice on aquatic dependent exotic fauna species localities and abundance.
- Weight measures relative to their importance for an Indicator. Due to time this was not considered by the panel.
- Rank Indicators relative to their importance for a Criterion. Due to time this was not considered by the panel.

Ecology Expert Panel

The role of the Ecology Expert Panel is to provide expert advice on aquatic values for the freshwater wetlands and waterways of the study area. This advice is a critical component of the Aquatic Conservation Assessment (ACA) and is based on experience and demonstrated scientific theory on natural geological, geomorphological and hydrological processes as well as identifying connectivity within and between aquatic systems.

The panel membership consists of experts in the fields of ecological and hydrological processes, geomorphology, connectivity, water quality and river health assessment.

The advice provided by the expert panel at the workshop will be incorporated into the ACA results where appropriate.

The tasks to be undertaken by the panel include the following:

- Identify areas of significant geomorphological, ecological or hydrological values (Special Features).
- Provide advice on biodiversity areas of particular significance for species or communities.
- Provide advice on identifying and applying the Connectivity Criterion for the study area.
- Provide advice on whether to stratify the study area.
- Weight measures relative to their importance for an Indicator. Due to time this was not considered by the panel.
- Rank Indicators relative to their importance for a Criterion. Due to time this was not considered by the panel.

Appendix II – Expert Panel Definitions

General

Riverine wetland (QLD Herbarium and Biodiversity Science definition)

"The Riverine System…includes all wetlands and deepwater habitats contained within a channel, with two exceptions:

1. wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and
2. habitats with water containing ocean-derived salts in excess of 0.5‰. A channel is 'an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water' (Langbein and Iseri 1960:5)." (Cowardin et al. 1979)

Non-Riverine wetland

Non-riverine wetlands are made up of lacustrine and palustrine wetlands as defined by the Queensland Herbarium.

Lacustrine wetland

"The Lacustrine System…includes wetlands and deepwater habitats with all of the following characteristics:

1. situated in a topographic depression, natural channel constriction that acts as a dam, or a dammed river channel
2. lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage
3. total area exceeds 8 ha…Similar wetland and deepwater habitats totalling less than 8 ha are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 2 m…at low water. Lacustrine waters may be tidal or nontidal, but ocean-derived salinity is always less than 0.5‰." (Cowardin et al. 1979).

Palustrine wetland

"The Palustrine System…includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5‰." (Cowardin et al. 1979) It also includes wetlands lacking such vegetation, but with all the following three characteristics:

1. where active waves are formed or bedrock features are lacking
2. where the water depth in the deepest part of basin less than 2 m at low water; and
3. the salinity due to ocean-derived salts is still less than 0.5‰. (adapted from Cowardin et al. 1979).

Estuarine wetland (QLD Herbarium and Biodiversity Science definition)

Estuarine Systems consist of wetlands with oceanic water that is at least occasionally diluted with freshwater run-off from the land (adapted from Cowardin et al. 1979).

For those estuarine systems within a channel and which consequently often contain water, the Queensland Water Quality Guideline (Environmental Protection Agency 2005a) definition of estuaries has been adapted. An estuary is:

1. the mouth of a river where the tidal effects are evident and where freshwater and seawater mix; and/or
2. the part of a tidal river that widens out as it approaches the coastline; and/or
3. a body of water semi-enclosed by land with sporadic access to water from the open ocean, and where the ocean water is at least occasionally diluted by freshwater run-off from the land; and/or
4. a body of water where salinity is periodically increased by evaporation to a level above that of the open ocean (such a water body is termed a reverse estuary).

Coastal wetlands (Coastal Protection and Management Act 1995)

Coastal wetlands include tidal wetlands, estuaries, salt marshes, Melaleuca swamps (and any other coastal swamps), mangrove areas, marshes, lakes or minor coastal streams regardless of whether they are of a saline, freshwater or brackish nature.

Adapted (QLD Herbarium and Biodiversity Science definition)

Possessing a feature that fits the organism to the environment. Environmental Protection Agency (1999) comments that ‘typically, wetlands include areas which show evidence of adaptation of soil or vegetation to periodic water-

logging', and it is this adaptation that differentiates wetland soils, vegetation and also wetland animals from the terrestrial soils and species.

Dependent (QLD Herbarium and Biodiversity Science definition)

Relies on the provision of essential resources required to support critical life cycle functions including reproduction, certain (even all) life stages, water, food, shelter, refuge and so on.

Life cycle

The cyclic events of life through which individuals pass, including seed/egg, fertilisation/birth, propagation/growth, survival to maturity, producing of offspring (reproduction) and death.

Wet conditions (QLD Herbarium and Biodiversity Science definition)

Defined as areas where the root zone becomes periodically saturated or inundated during the growing season.

Flora Expert Panel

Wetland indicator flora species (WIS)

Flora wetland indicator species are those species that are adapted to and dependent on living in wet conditions for all (aquatic species) or part (semi-aquatic species) of their life cycle and are found either within or immediately adjoining a riverine or non-riverine wetland.

This definition of a flora wetland indicator species extends beyond the more traditional definition of submerged and floating aquatic plants to include plants inhabiting the littoral zone (water's edge) and plants that usually have 'wet feet' on the toe of the bank and other ground-water dependent species. The definition is designed to depict floristic richness at a given location.

For additional information on Flora Wetland Indicator Species, go to:

http://wetlandinfo.des.qld.gov.au/wetlands/ecology/components/flora/flora-indicator-species-list.html

Aquatic Species (QLD Herbarium and Biodiversity Science definition)

Aquatic flora species are defined as those growing in or on permanent water (obligate).

Semi-aquatic Species (QLD Herbarium and Biodiversity Science definition)

Semi-aquatic flora species are defined as those that can withstand near-permanent shallow water and require only periodic temporary inundation – bordering permanent water, in bogs and shallow swamps.

Priority Species (Flora)

A priority species is not listed as Endangered, Vulnerable or Near-threatened and exhibits one or more of the following significant values:

1. It forms significant macrophyte beds (in shallow or deep water)
2. It is an important/critical food source
3. It is important/critical habitat
4. It is implicated in spawning or reproduction for other fauna and/or flora species
5. It is at its distributional limit or is a disjunct population
6. It provides stream bank or bed stabilisation or has soil-binding properties
7. It is a small population and subject to threatening processes
8. Taxa vulnerable to impacts of climate change - Species that are considered to be adversely affected by the predicted changes in climate, e.g. increasing temperatures, sea level rise and increasing frequency of extreme weather events (drought, flood & cyclones). Species can only be listed under this reason if there is sufficient knowledge of species' biology and its interaction with climate that would support an assessed impact under climate change scenarios.

Exotic Flora

Exotic flora species are defined as plants that cause, or have the potential to cause, significant detrimental impact on wetland ecosystems. Impact examples include outcompeting native species for light, air, space, nutrients; production of toxic substances; hybridisation with native plants; fouling of water and altering water flows etc.

For measure 1.1.2 (aquatic and semi-aquatic exotic flora species), these exotic species significantly impact wetland ecology and are adapted to and dependent on wet conditions for all or part of their life cycle. They are generally found within or adjacent to riverine or non-riverine wetlands.

For measure 2.1.1 (terrestrial exotic flora species), these species are not necessarily restricted to wetland indicator species. They may also include plants that are not adapted to or dependent on wet conditions for all or part of their life cycle, but nevertheless, significantly affect wetland ecology. Examples include rubber vine, Cats claw creeper and Leucaena.

Aquatic Conservation Assessment – Flora species measures

Measure 1.1.2 – Presence of exotic aquatic and semi-aquatic plants within the wetland

Measure 2.1.1 – Presence of exotic terrestrial plants in the assessment unit

Measure 3.1.5 – Richness of native aquatic plants

Measure 4.1.2 – Presence of rare or threatened aquatic ecosystem dependent flora species – NC Act, EPBC Act

Aquatic Conservation Assessment – Flora priority ecosystems measures

Measure 5.1.2 – Presence of aquatic ecosystem dependent 'priority' flora species

Measure 5.2.1 – Presence of priority Aquatic Ecosystem

Aquatic Conservation Assessment – Flora special feature measures

Measure 6.1.1 – Presence of distinct, unique or special geomorphic features

Measure 6.2.1 – Presence of (or requirement for) distinct, unique or special ecological processes

Measure 6.3.1 – Presence of distinct, unique or special habitat

Measure 6.3.3 – Ecologically significant wetlands identified through expert opinion and/or documented study

Measure 6.3.4 – Areas important as refugia from the predicted effects of climate change (e.g. source of species re-population

Measure 6.4.1 – Presence of distinct, unique or special hydrological regimes (e.g. spring fed stream, ephemeral stream, boggomoss)

Fauna Expert Panel

Wetland indicator fauna species (WIS)

Fauna wetland indicator species are species that are adapted to, and dependent on, living in wetlands for all, or part of their life cycle.

Wetland ecosystems tend to include species evolved for wet conditions. Some of these species are dependent on the presence of water for every stage of their life cycle, and need to be immersed in water, while others require water for most of their life cycle stages or for a critical stage in their development. For example, these species include those that are highly mobile moving from wetland to wetland, less mobile species that are able to wait for water to return or those fauna that inhabit non-vegetation ecosystems like shoals and mudflats. These species are considered as WIS unlike those that may only access a wetland to drink.

The WIS includes the more common fauna species. Most rare species and all vagrant fauna species have not been included as they are considered too poorly known or erratic. Species, other than those listed, may be accepted as a wetland indicator for a certain locality given expert recommendation and reliable site-specific data.

Waterbirds

Bird species that are dependent on freshwater wetland environments. As a rule of thumb, if the wetland disappeared so too would the waterbird species.

Significant Waterbird Habitat Area (M5.1.4)

Past panels have used the following two criteria for a wetland to be considered habitat for a significant number of waterbirds:

1. a significant proportion of the single species breeding population (> one per cent for waterbirds) occurs in the waterbody (Ramsar criterion 6 for waterbirds).
2. high density concentrations of non-breeding waterbirds (multiple species) in the hundreds of thousands for identified wetland habitats (e.g. one per cent of global population).

Priority Species (Fauna)

A priority species is NOT listed as Critically Endangered, Endangered, Vulnerable or Near-threatened and exhibits one or more of the following significant values:

3. It is endemic to the study area (>75% of its distribution is in the study area/catchment)
4. It has experienced, or is suspected of experiencing, a serious population decline
5. It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment
6. It is currently a small population and threatened by loss of habitat
7. It is a significant disjunct population
8. Migratory species (other than birds)
9. A significant proportion of the breeding population (>1% for waterbirds, >75% other species) occurs in the waterbody. (see Ramsar Criterion 6 for waterbirds)
10. Taxa vulnerable to impacts of climate change - Species that are considered to be adversely affected by the predicted changes in climate, e.g. increasing temperatures, sea level rise and increasing frequency of extreme weather events (drought, flood & cyclones). Species can only be listed under this reason if there is sufficient knowledge of species' biology and its interaction with climate that would support an assessed impact under climate change scenarios.

Migratory Species

Bird species that are dependent on wetland environments whose entire population or any geographically separate part of the population cyclically and predictably cross one or more national jurisdictional boundaries. This definition excludes those species listed as "nomadising" or "range extensions" and those travelling less than 100 km.

(Based on Convention on Migratory Species; use JAMBA, CAMBA and ROKAMBA lists as a starting list)

Exotic Fauna Species

Exotic fauna species are defined as animals that cause, or have the potential to cause, significant detrimental impact on wetland ecosystems. Impact examples include outcompeting native species for light, air, space, nutrients; production of toxic substances; fouling of water and altering water flows etc.

Aquatic Conservation Assessment – Fauna species measures

Measure 1.1.1 – Presence of ‘alien' fish species within the wetland

Measure 1.1.3 – Presence of exotic invertebrate fauna within the wetland

Measure 1.1.4 – Presence of feral/exotic vertebrate fauna (other than fish) within the wetland

Measure 3.1.1 – Richness of native amphibians (riverine wetland breeders)

Measure 3.1.2 – Richness of native fish

Measure 3.1.3 – Richness of native aquatic dependent reptiles

Measure 3.1.4 – Richness of native waterbirds

Measure 3.1.6 – Richness of native amphibians (non-riverine wetland breeders)

Measure 3.1.7 – Richness of native aquatic dependent mammals

Measure 3.2.1 – Richness of macroinvertebrate species

Measure 4.1.1 – Presence of rare or threatened aquatic ecosystem dependent fauna species – NCA, EPBC

Aquatic Conservation Assessment – Fauna priority ecosystems measures

Measure 5.1.1 – Presence of aquatic ecosystem dependent 'priority' fauna species (expert panel list/discussion or other lists such as ASFB, WWF, etc)

Measure 5.1.3 – Habitat for, or presence of, migratory species (Expert Panel list/discussion and/or JAMBA / CAMBA agreement lists and/or Bonn Convention)

Measure 5.1.4 – Significant waterbird habitat areas

Measure 5.2.1 – Priority ecosystems

Aquatic Conservation Assessment – Fauna special feature measures

Measure 6.1.1 – Presence of distinct, unique or special geomorphic features

Measure 6.2.1 – Presence of (or requirement for) distinct, unique or special ecological processes

Measure 6.3.1 – Presence of distinct, unique or special habitat

Measure 6.3.4 – Areas important as refugia from the predicted effects of climate change (e.g. source of species re-population

Measure 6.4.1 – Presence of distinct, unique or special hydrological regimes (e.g. spring fed stream, ephemeral stream, boggomoss)