

3 Results

3.1 Transparency of results

The AquaBAMM tool and links to the geographic information system (GIS) have been developed such that the results are available at all levels and calculations/manipulations are transparently summarised and presented.

The end users (resource managers, conservation organisations, etc) of AquaBAMM, and the Aquatic Conservation Assessment (ACA) it produces, are able to interrogate the information at any level within the AquaBAMM hierarchy (AquaScore, Criteria, Indicators and Measures) and at the individual data level. This is made easy through the AquaBAMM tool and/or GIS platform where each spatial unit's Conservation Value can be viewed at any level (see Figure 5). This data access and interrogation ability is important to enable determination of how individual elements influenced the overall AquaBAMM Conservation Value. It is then possible to identify and recognise missing data in the various Measures. A full description of this method is provided in Part A, Section 5 The AquaBAMM Assessment Tool.

The results of the ACA using AquaBAMM can be viewed at any level in the method hierarchy through either of the spreadsheet/database or GIS platforms. In this report, the results of the Burnett River catchment ACA focus only on the levels of the Criterion rating and AquaScore.

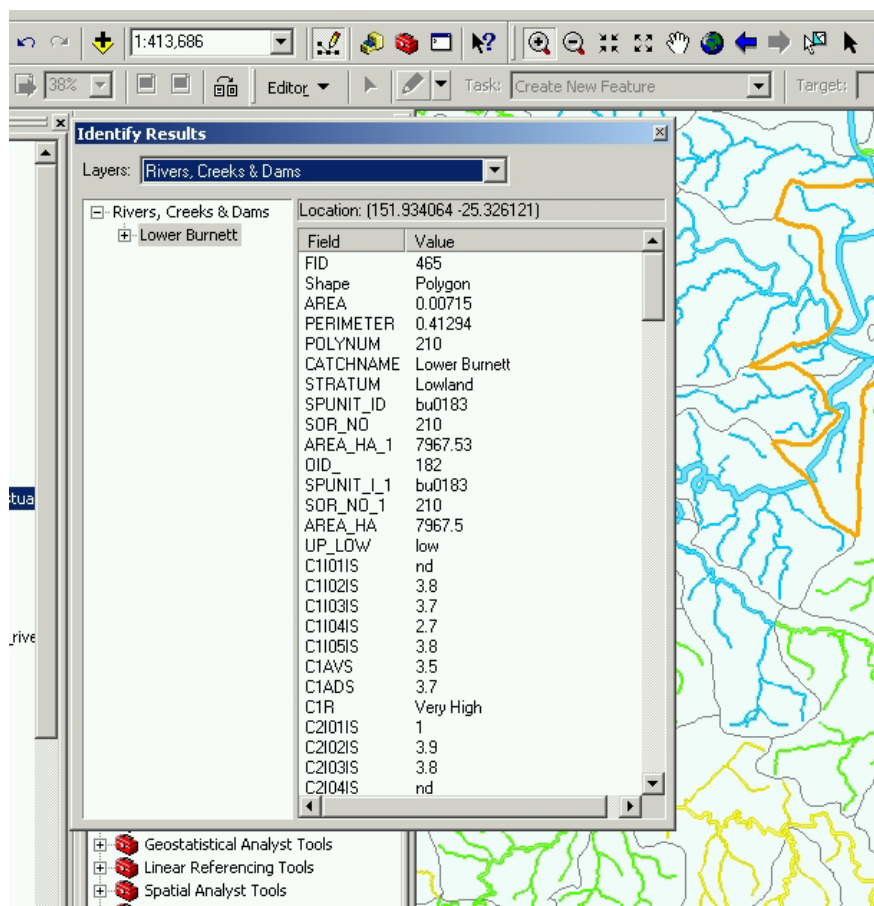


Figure 5 Interrogating the ACA (AquaBAMM) of spatial unit bu0183 in the GIS environment

3.2 AquaScore results

Close to half of the catchment area was rated a Medium value (44%) with 40% being High, 12% Low and 2% each for Very High and Very Low (Figure 6a). All spatial units had better than 30% dependability in their scores and most had reliabilities of more than 40% (Figure 6b) with an overall mean dependability of 50% (SD = 10.1, N = 396). The mean AquaScore dependability ranged between 42 (Low) and 79% (Very High) (Table 16).

The spatial variation of the AquaScore values within the Burnett River catchment is presented in Appendix D, Map D2. There is no particular pattern in spatial unit values, except that the Very Lows tended to be located around the areas of Kingaroy and Murgon.

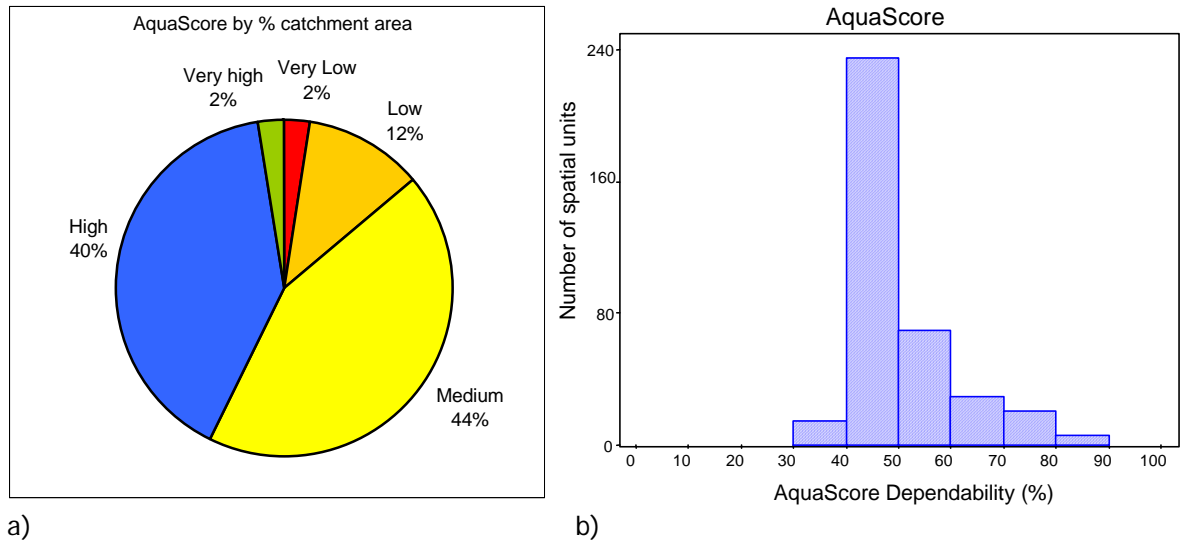


Figure 6 The Overall AquaBAMM Conservation Values or AquaScores for the Burnett River catchment are depicted as a pie chart (a) and the associated AquaScore dependability percent is presented as a histogram (b)

Table 16 The mean and standard deviation for the AquaScore value dependability

AquaScore	# Spatial units	Mean dependability	Standard deviation
Very Low	18	42.7	3.1
Low	45	42.2	4.6
Medium	153	46.5	6.0
High	152	54.0	10.6
Very High	8	79.4	6.0
Overall	376	49.6	10.1

Spatial units with Very High and Very Low values may be of particular interest for management purposes or further investigation. Also, spatial units adjacent to these may be of interest. Table 17 shows the spatial units with Very High and Very Low values by way of example.

Table 17 A list of spatial units assessed by AquaBAMM to be Very High or Very Low conservation value (or AquaScore) in the Burnett River catchment. The nearest town and main stream associated with each spatial unit is provided

Spatial unit	Aqua Score	Locality	Nearest town & stream	Value
bu0175	Very High	This spatial unit contains Mingo Crossing and is within the impoundment of the Paradise Dam on the Burnett River. The Burnett River is the major feature of this spatial unit.	Biggenden, Burnett R.	As for bu318.
bu0181	Very High	Mt Olympus is within this spatial unit which adjoins bu0181. Degilbo Creek, a tributary of the Burnett River, is the main feature of this spatial unit.	Biggenden, Degilbo Ck.	As for bu318.
bu0183	Very High	It is located immediately downstream from Paradise Dam on the Burnett River, south-west of Bundaberg. The Burnett River is the major riverine feature of this spatial unit.	Biggenden, Burnett R.	As for bu318.
bu0189	Very High	This spatial unit contains Wallaville and a section of the impoundment of Ned Churchward Weir on the Burnett River, south-west of Bundaberg. The Burnett River is the major riverine feature of this spatial unit.	Bundaberg, Burnett R.	As for bu318.
bu0204	Very High	This spatial unit contains part of the impoundment of Ned Churchward Weir upstream from bu0189. The Burnett River is the major riverine feature of this spatial unit.	Bundaberg, Burnett R.	As for bu318.
bu0283	Very High	This spatial unit is located south-west of Mundubbera on the Auburn River.	Mundubbera, Auburn R.	As for bu318.
bu0318	Very High	This spatial unit is located immediately downstream from Ned Churchward Weir on the Burnett River, south-west of Bundaberg. The Burnett River is the major riverine feature of this spatial unit.	Bundaberg, Burnett R.	This spatial unit has high or very high values of aquatic naturalness and a combination of other values rated as very high: catchment naturalness, diversity and richness of species or

Spatial unit	Aqua Score	Locality	Nearest town & stream	Value
				communities, has one or more threatened species or ecosystem, has one or more priority species or ecosystem, contains a significant special feature (e.g. gorge, macrophyte beds, unique geomorphology) or it is important for maintaining aquatic connectivity either downstream or upstream in the catchment.
bu0334	Very High	This spatial unit is located north-east of Gayndah on the Burnett River. Grays Waterhole is partly within this spatial unit.	Gayndah, Burnett R.	As for bu318.
bu0004	Very Low	This spatial unit lies north-east of Nanango with Reedy Creek and Little Oakey Creek the main riverine features.	Nanango, Reedy Ck.	As for bu130.
bu0089	Very Low	This spatial unit lies north-west of Nanango with Horse Creek the main riverine feature.	Nanango, Horse Ck.	As for bu130.
bu0097	Very Low	This spatial unit is located west of Kingaroy with Reedy Creek the main riverine feature.	Kingaroy, Reedy Ck.	As for bu130.
bu0122	Very Low	This spatial unit lies immediately east of Wondai having Yellow Waterhole as the main riverine feature.	Wondai, Yellow Waterhole	As for bu130.
bu0124	Very Low	This spatial unit lies west of Murgon and north-west of Wondai and adjoins bu0166. There is no named stream (stream order 1) within this spatial unit.	Murgon/ Wondai, no name (stream order 1)	As for bu130.
bu0130	Very Low	This spatial unit is located north of Murgon having Cloyna Creek as the dominant riverine feature.	Murgon, Cloyna Ck.	This spatial unit has only limited aquatic and catchment naturalness values and lacks any other known significant value.
bu0140	Very Low	This spatial unit contains the township of Proton with the main riverine feature being Dangora Creek.	Proston, Dangora Ck.	As for bu130.
bu0150	Very Low	This spatial unit lies west of Wondai and adjoins bu124. Home Creek is the main	Wondai, Home Ck.	As for bu130.

Spatial unit	Aqua Score	Locality	Nearest town & stream	Value
		riverine feature.		
bu0154	Very Low	This spatial unit lies south of Wondai and adjoins bu0122. There is no named stream (stream order 1) within this spatial unit.	Wondai, no name (stream order 1)	As for bu130.
bu0155	Very Low	This spatial unit is located north-east of Kingaroy and has Frickey Creek as its main riverine feature.	Kingaroy, Frickey Ck.	As for bu130.
bu0165	Very Low	This spatial unit lies west of Murgon and north-west of Wondai. There is no named stream (stream order 1) within this spatial unit.	Murgon/ Wondai, no name (stream order 1)	As for bu130.
bu0166	Very Low	This spatial unit lies west of Murgon and north-west of Wondai and adjoins bu0165. There is no named stream (stream order 1) within this spatial unit.	Murgon/ Wondai, no name (stream order 1)	As for bu130.
bu0243	Very Low	This spatial unit is located immediately upstream of Mungungo Weir on Monal Creek north of Monto.	Monto, Monal Ck.	As for bu130.
bu0278	Very Low	This spatial unit contains the township of Binjour with the main riverine feature being Philpott Creek.	Binjour, Philpott CK.	As for bu130.
bu0360	Very Low	This spatial unit is located west of Rawbelle Station having Montour Creek as the main riverine feature.	Rawbelle Station/ Monto, Montour Ck.	As for bu130.
bu0367	Very Low	This spatial unit is located north of Murgon. There is no named stream (stream order 1) within this spatial unit.	Murgon, no name (stream order 1)	As for bu130.
bu0368	Very Low	This spatial unit adjoins bu0376 and is located north of Murgon. Oakey Creek is the main riverine feature.	Murgon, Oakey Ck.	As for bu130.
bu0372	Very Low	This spatial unit lies west of Nanango and adjoins bu0089. There is no named stream (stream order 1) within this spatial unit.	Nanango, no name (stream order 1)	As for bu130.

3.3 Criteria results

For each Criterion, the spatial units' conservation values are summarised, a map of the GIS output is provided in Appendix D and the geographic patterns of conservation value within the Burnett River catchment and the AquaScore dependability are briefly discussed. The Measures for each Criterion are presented in Table 15, p.53.

Criterion 1 Naturalness Aquatic

A majority of the catchment area was rated a Medium value (68%) with 18% being High, 13% Very High and the remaining 1% rated as having Low values for Naturalness Aquatic (Figure 7a). Most spatial units for this criterion had a Criterion rating dependability between 30% and 40% (Figure 7b). These relatively low dependability scores are due to the nature of some datasets being site specific with comparatively few available data (e.g. water quality, macroinvertebrates, exotic flora/fauna). All spatial units had better than 30% dependability in their scores and many had data for all Measures.

The spatial variation of Naturalness Aquatic values within the Burnett River catchment is presented in Appendix D, Map D3. There is no apparent pattern in spatial unit values with all conservation value categories occurring in each of the lowland and upland strata.

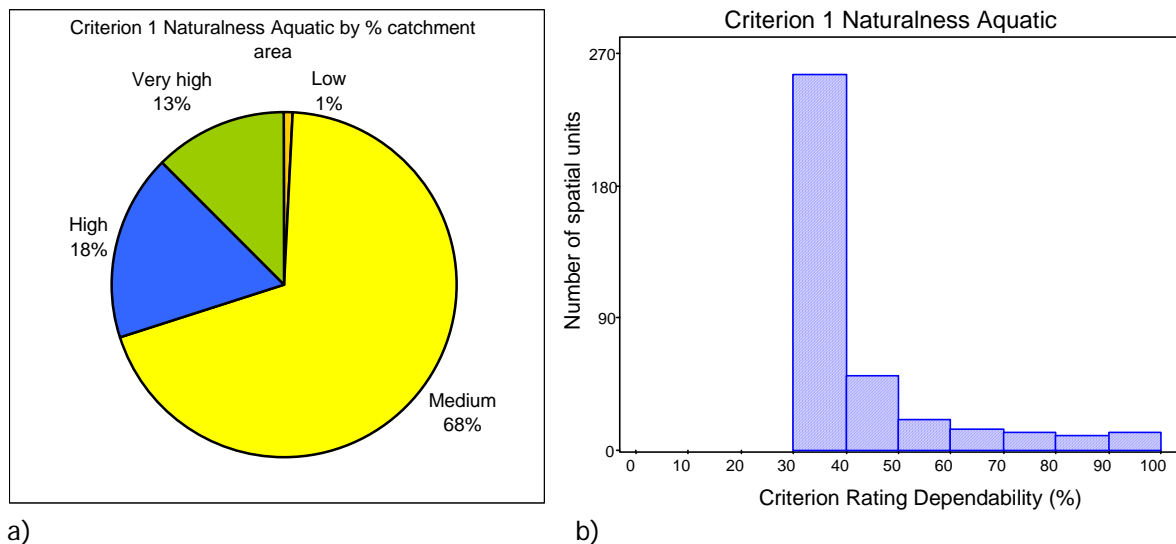


Figure 7 The AquaBAMM Criterion 1 Naturalness Aquatic values for the Burnett River catchment are depicted as a pie chart (a) and the associated Criterion rating dependability (a total of 21 Measures) is presented as a histogram (b)

Criterion 2 Naturalness Catchment

A majority of the catchment area was rated a High value (61%) with 20% being Medium, 17% Very High and the remaining 2% rated as having Low values for Naturalness Catchment (Figure 8a). Most spatial units for this criterion had a Criterion rating dependability greater than 70% (Figure 8b). These relatively high dependability scores are due to the nature of most datasets being broadly assessed across the entire catchment area (e.g. land use indices, vegetation indices). All spatial units had better than 50% dependability in their scores and many had data for all Measures.

The spatial variation of Naturalness Catchment values within the Burnett River catchment is presented in Appendix D, Map D4. Spatial units containing Barakula State Forest and other forested areas along the Great Dividing Range, Auburn Range and Burnett Range and central Burnett were identified as Very High for Naturalness Catchment. No particular pattern or cluster of High valued spatial units is evident. Similarly, Medium valued spatial units are spread across the Burnett River catchment, but a number were clustered to the north and east of Gayndah and around the southern parts of the catchment near Kingaroy, Nanango, Elginvale and Tansey. Spatial units valued as Low for Naturalness Catchment were located predominantly in the more settled/developed areas of Kingaroy and Murgon in the southern part of the Burnett River catchment.

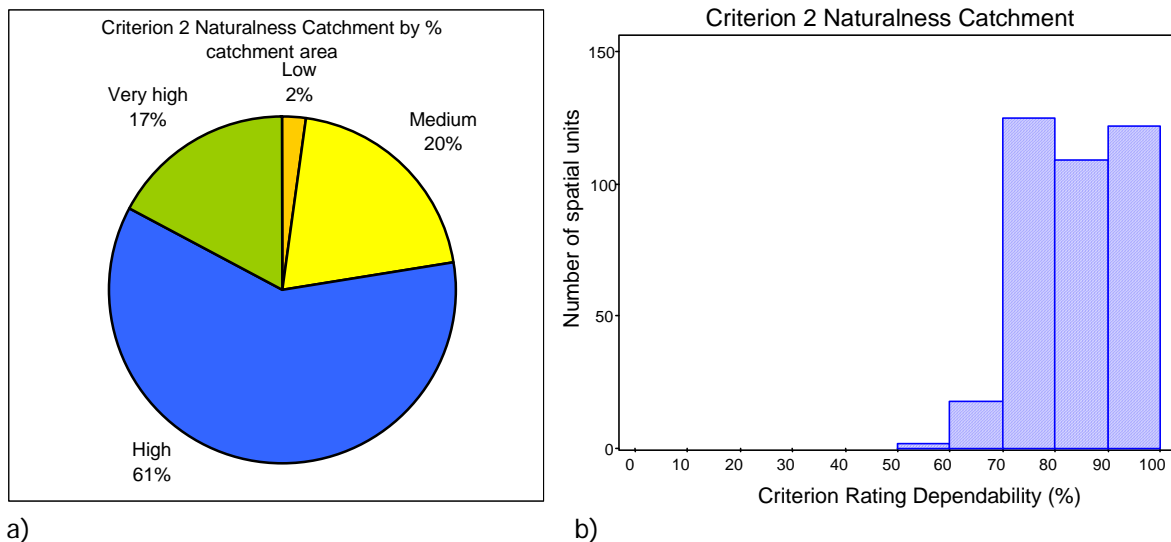


Figure 8 The AquaBAMM Criterion 2 Naturalness Catchment values for the Burnett River catchment are depicted as a pie chart (a) and the associated Criterion rating dependability (a total of 10 Measures) is presented as a histogram (b)

Criterion 3 Diversity and Richness

A majority of the catchment area was rated a Medium value (46%) or a High value (44%), 7% of the area was rated Low and the remaining area (3%) rated as having Very High values for Diversity and Richness (Figure 9a). Most spatial units for this criterion had a Criterion rating dependability between 40% and 80% (Figure 9b). This spread of dependability scores is due to the mix of species datasets (individual records) and the vegetation community and geomorphology data being broadly assessed across the catchment area. All spatial units had better than 30% dependability in their scores.

The spatial variation of Diversity and Richness values within the Burnett River catchment is presented in Appendix D, Map D5. Several spatial units along the Burnett River were identified as Very High with one spatial unit having a Very High value on each of the Boyne River, Barambah Creek and the Bunya Mountains. No particular pattern or cluster of High and Medium valued spatial units is evident. Spatial units identified as Low for Diversity and Richness are generally located in the more settled/developed areas of Kingaroy, Wondai and Murgon in the southern part of the Burnett River catchment.

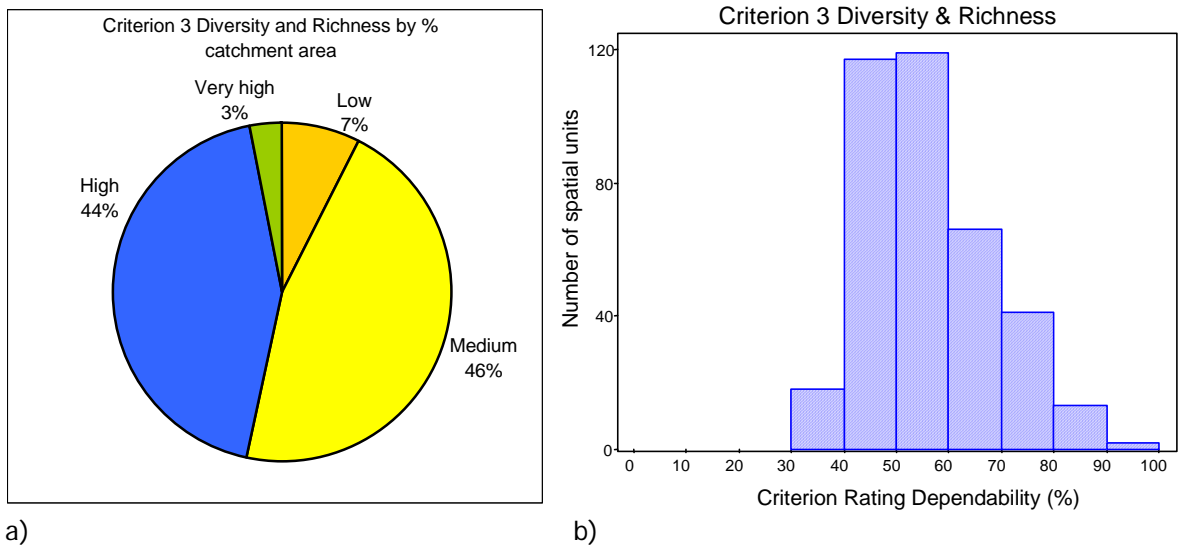


Figure 9 The AquaBAMM Criterion 3 Diversity and Richness values for the Burnett River catchment are depicted as a pie chart (a) and the associated Criterion rating dependability (a total of 9 Measures) is presented as a histogram (b)

Criterion 4 Threatened Species and Ecosystems

Close to half of the catchment area was rated a Low value (46%) with 21% being High, both Medium and Very High being 8% of the area, and no data accounted for 17% of the catchment area (Figure 10a). Most spatial units for this criterion had a Criterion rating dependability between 30% and 40% (Figure 10b). The spread of dependability scores is a result of there being only three Measures for this criterion. Consequently, a spatial unit will have 0% dependability (no data), 33% dependability (one out of three Measures), 67% dependability (two out of three Measures) or 100% dependability (all three Measures).

The spatial variation of Threatened Species and Ecosystems values within the Burnett River catchment is presented in Appendix D, Map D6. There is no apparent pattern in spatial unit values with all conservation value categories occurring in each of the lowland and upland strata.

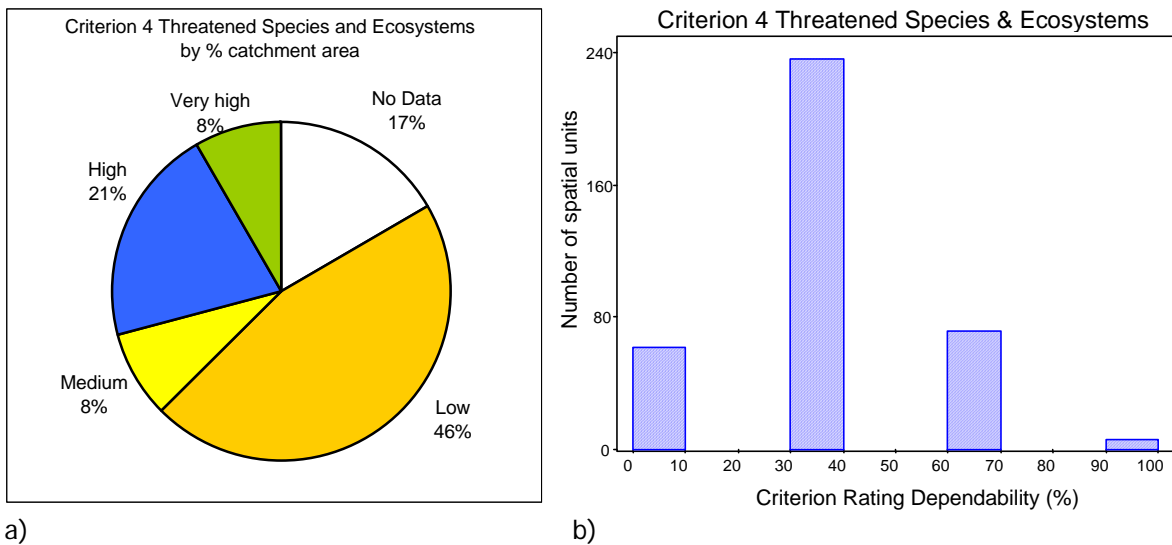


Figure 10 The AquaBAMM Criterion 4 Threatened Species and Ecosystems values for the Burnett River catchment are depicted as a pie chart (a) and the associated Criterion rating dependability (a total of 3 Measures) is presented as a histogram (b)

Criterion 5 Priority Species and Ecosystems

A majority of the catchment area did not receive a rating (68% had no data) under this criterion with 19% High and 13% Very High (Figure 11a). Of the spatial units having data, the criterion rating dependability was spread between 20% and 90% (Figure 11b). The spread of dependability scores is a result of there being only five Measures for this criterion. Consequently, a spatial unit will have 0% dependability (no data), 20% dependability (one out of five Measures), 40% dependability (three out of five Measures), 60% dependability (three out of five Measures), 80% dependability (four out of five Measures) or 100% dependability (all five Measures).

The spatial variation of Priority Species and Ecosystems values within the Burnett River catchment is presented in Appendix D, Map D7. There is no particular pattern in spatial unit values with High and Very High values occurring in each of the lowland and upland strata.

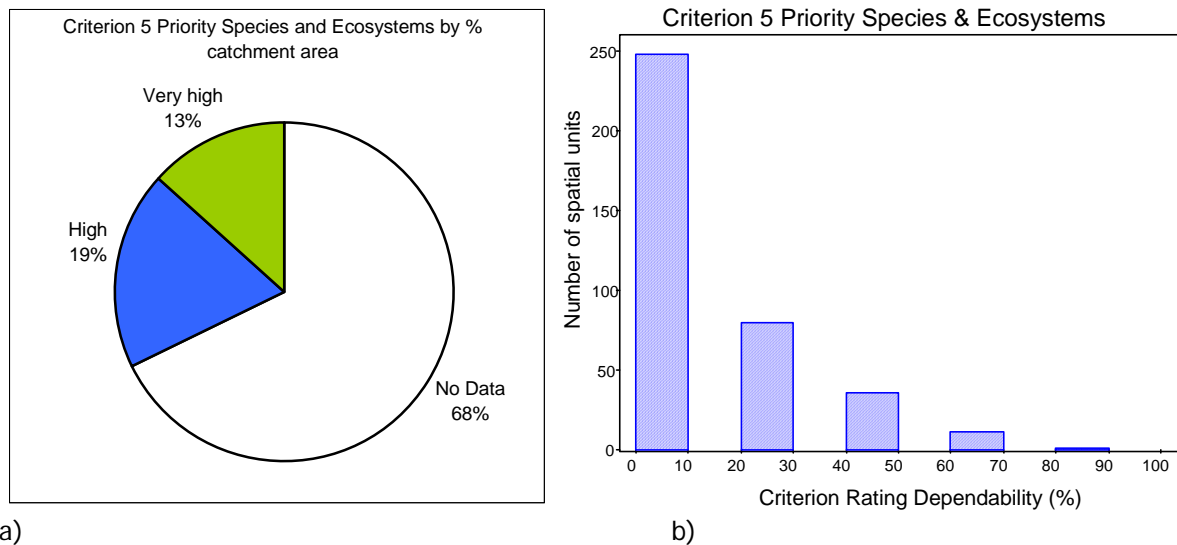


Figure 11 The AquaBAMM Criterion 5 Priority Species and Ecosystems values for the Burnett River catchment are depicted as a pie chart (a) and the associated Criterion rating dependability (a total of 5 Measures) is presented as a histogram (b)

Criterion 6 Special Features

About two-fifths of the catchment area was rated a Medium value (39%) with 29% being Low, 16% Very High, 11% High and 5% without any available data (Figure 12a). Of the spatial units having data, the criterion rating dependability was spread between 20% and 90% (Figure 12b). The spread of dependability scores is a result of there being only three Measures that were implemented for this criterion. Consequently, a spatial unit will have 0% dependability (no data), 33% dependability (one out of three Measures), 67% dependability (two out of three Measures) or 100% dependability (all three Measures).

The spatial variation of Special Features values within the Burnett River catchment is presented in Appendix D, Map D8. There is no particular pattern in spatial unit values.

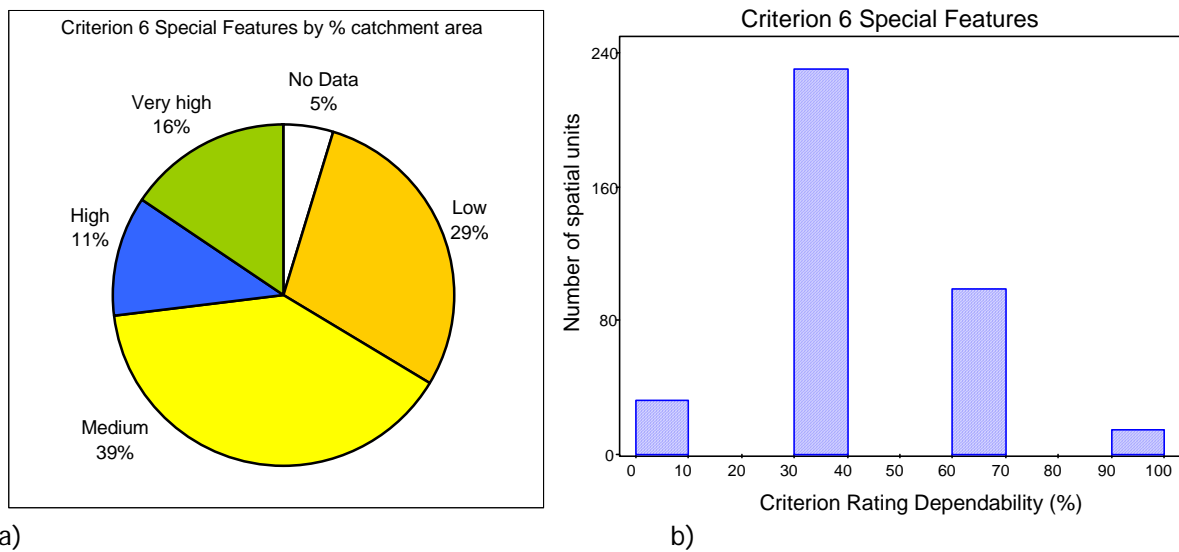


Figure 12 The AquaBAMM Criterion 6 Special Features values for the Burnett River catchment are depicted as a pie chart (a) and the associated Criterion rating dependability (a total of 4 Measures) is presented as a histogram (b)

Criterion 7 Connectivity

A third of the catchment area was rated a Medium value (34%) with 29% being High or Very High and 8% rated as Low (Figure 13a). Most of the spatial units have a criterion rating dependability of 66% (Figure 13b). The spread of dependability scores is a result of there being three Measures that were implemented for this criterion. Consequently, a spatial unit will have 33% dependability (one out of three Measures), 67% dependability (two out of three Measures) or 100% dependability (all three Measures).

The spatial variation of Special Features values within the Burnett River catchment is presented in Appendix D, Map D9. There is no particular pattern in spatial unit values; however, the Auburn, Burnett and Nogo Rivers have several Very High spatial units for Connectivity.

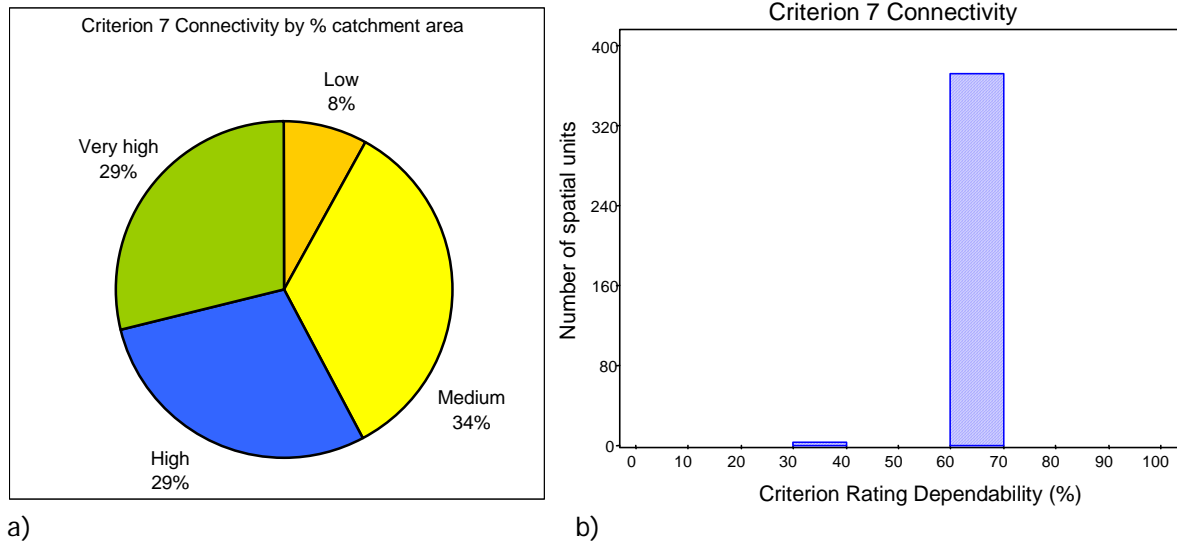


Figure 13 The AquaBAMM Criterion 7 Connectivity values for the Burnett River catchment are depicted as a pie chart (a) and the associated Criterion rating dependability (total of 7 Measures) is presented as a histogram (b)