Queensland Wetland Classification Scheme

Version 2.0

Queensland Government

Queensland
Wetlands Program

Queensland
Wetlands Program

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October 2023

Contents

1 Introduction

The Queensland Wetlands Program (QWP) was established in 2003 to support projects and programs that enhance the wise use and sustainable management of Queensland's wetlands. Having established a clear wetland definition (Environmental Protection Agency 2005; Department of Environment and Resource Management 2011), one of the first projects undertaken through the QWP was the development of a mapping and classification scheme for wetlands (Environmental Protection Agency 2005) as it was recognised that a consistent, standardised, and repeatable method to comprehensively map and classify wetlands at an appropriate scale was required to facilitate decision making and management activities across the diverse landscapes of Queensland. Knowing where wetlands are and the characteristics (classification) of those wetlands underpins their intrinsic values and the range of services they provide to stakeholders.

At over 1.7 million square kilometres, with approximately 7,000 kilometres of coastline and containing over 2,000 islands Queensland is a large state with diverse climate, geology, landform, rainfall, hydrological regimes, and ecosystems Wetlands are transition areas between land and water, comprising a continuum from episodically wet areas to purely aquatic ecosystems and are difficult to map.

Wetlands are critically important ecosystems that support significant biodiversity. Many wetlands process and remove pollutants, support primary industries by providing water, fish and valuable vegetation, many can sequester and store carbon, they can protect coastlines from storm surges, cyclones and the impacts of climate change, they are critically important to First Nations people and provide for many recreation and tourism opportunities. The importance of wetlands and the need to protect, manage and rehabilitate them has been recognised in the multiple policy and legislative protection mechanisms in different parts of Queensland. Further information on the legislative and policy drivers for the development of wetland mapping is available through 'Programs, Policy, and Legislation'.

The development of accurate baseline mapping and classification of wetlands in Queensland supports the following outcomes:

- acts as a primary tool to meet Government statutory and policy obligations, including international agreements and conventions (e.g. Ramsar)
- enables protection of wetlands through various management and statutory planning processes
- provides a sound basis for conservation and protected area planning and assessment
- informs scientific and technical assessments
- underpins many of the objectives identified in strategic plans and policies
- underpins reporting on Government environmental targets, regional report cards, state of the environment reporting and other reporting processes
- guides investment of natural resource management
- supports statutory decision making, compliance, and planning processes
- provides the basis for reporting on change in extent
- guides research investment
- provides the basis for relevant property level management

1.1 Purpose of this document

This document builds on the original Wetlands Mapping and Classification approach (Environmental Protection Agency 2005) and presents the classification scheme (Section 3) used in developing mapping and classification of lacustrine, palustrine, riverine and some intertidal wetlands above mean sea level in Queensland. It also includes a typology for general management and planning for these wetlands (Section 4.1.1). The document does not detail the definitions adopted for mapping and classification purposes, nor does it provide the detail necessary to operationalise the application of the classification scheme. This latter information is retained in related documents and tools (Section 1.2).

1.2 Version history

Version	Year of Release	Description
1.0	N/A	Draft document for developmental purposes only.
1.1	N/A	Draft document for developmental purposes only.
1.2	2005	Details the methods used by the Queensland Government to classify and map wetlands across Queensland. Environmental Protection Agency (2005) Wetland Mapping and Classification Methodology – Overall Framework – A Method to Provide Baseline Mapping and Classification for Wetlands in Queensland, Version 1.2, Queensland Government, Brisbane. ISBN 0 9757 344 6 6.
	2019	Addendum that provides updates to Table 4 'Local Hydrology/Disturbance Modifiers'. Department of Environment and Science. 2019. Addendum to Wetland Mapping and Classification Methodology – Overall Framework – A Method to Provide Baseline Mapping and Classification for Wetlands in Queensland (Version 1.2). Brisbane: Department of Environment and Science.
2.0	2023	Extracts, compiles, and updates information on the classification scheme presented in the Queensland Wetland Mapping and Classification Method (Version 1.2). Details the classification scheme used by the Queensland to classify palustrine, lacustrine, riverine and intertidal wetlands above man sea level across Queensland including associated themes, components, attributes, and categories. Environmental Protection Agency (2005) Wetland Mapping and Classification Methodology – Overall Framework – A Method to Provide Baseline Mapping and Classification for Wetlands in Queensland, Version 1.2, Queensland Government, Brisbane. ISBN 0 9757 344 6 6.

2 Background and Scope

The classification of wetlands takes an attribute-based approach, identifying and describing physical, biological and chemical attributes of wetlands. The scheme is adaptable and flexible and is based on and complements other attribute-based classification schemes used within Queensland, including:

- the Queensland Intertidal and Subtidal Classification Scheme (Department of Environment and Heritage Protection 2017a)
- the Queensland Wetland Mapping and Classification Method (Environmental Protection Agency 2005)
- the Groundwater Dependent Ecosystem Mapping Method (Department of Science, Information Technology and Innovation 2015)
- the Queensland Waterhole Classification Scheme (Department of Environment and Science 2020c)
- the Australian National Aquatic Ecosystem Classification Scheme (Aquatic Ecosystems Task Group 2012)
- the interim Queensland River Classification Scheme (Department of Environment and Science 2023b).

While the wetlands mapping and classification methods developed in 2005 provided the key concepts and principles for the classification scheme, the Queensland Intertidal and Subtidal Classification Scheme, and the Queensland Waterhole Classification Scheme have added to this conceptual underpinning. It primarily covers lacustrine, palustrine, and intertidal wetlands above mean sea level. While some attributes are provided for riverine wetlands these are not complete and will be updated in future based on the interim river classification scheme (Department of Environment and Science 2023b).

2.1 Definitions

Attribute

Attributes are "descriptive characteristics [or features] of…ecosystems" (modified from Aquatic Ecosystem Task Group 2012).

Attribute Theme

Attribute themes are broad groups used to describe components and attributes.

Category

Categories are a list of discrete values for an attribute. The list of categories must be complete, appropriate for the scale of application, and mutually exclusive.

Classification

"A process of simplifying complex, and sometimes continuous, data and information and converting it into practical categories to make it more usable" (Department of Environment and Science 2020a).

Component

Components are the "physical, chemical and biological parts that make up the environment" (modified from Aquatic Ecosystem Task Group 2012).

Inventory

Inventory involves the recording of standardised data about a taxonomic group, habitat, or ecosystem from available data sources or through survey (Wetlands 2013c).

Lacustrine

See 'Queensland Wetland Definition Guideline' (Department of Environment and Science 2022a).

Level

The spatial hierarchy at which ecosystems occur is referred to as levels.

Metric

A metric is "a specification for how an attribute will be measured" (Aquatic Ecosystems Task Group 2012).

Palustrine

See 'Queensland Wetland Definition Guideline' (Department of Environment and Science 2023a).

Riverine

See 'Queensland Wetland Definition Guideline' (Department of Environment and Science 2023a).

Scale

Scale refers to the relationship between distance on a map and the corresponding distance on the ground. A larger scale has a smaller ratio between the distance on a map and the corresponding distance on the ground and therefore can capture smaller sized features in comparison to a smaller scale. The identified scale also determines the minimum size of wetland and non-wetland features that can be delineated at a site and the positional accuracy of a mapped boundary line (Table 1).

Table 1. Recommended data resolution for various map scales (adapted from Neldner et al. 2019)

	Minimum Size on Map	1:5,000	1:10,000	1:25,000	1:50,000	1:100,000	1:250,000
Area of smallest feature depicted	2 x 2 mm	0.05 ha	0.1 ha	0.25 ha	1 ha	4 ha	25 ha
Minimum width of linear features depicted	1 mm	5 m	10 m	25 m	50 m	100 m	250 m
Precision of line-work	±0.5 mm	5 m	10 m	25 m	50 m	100m	250 m

Threshold

Threshold is a 'cut-off' value that is applied to divide continuous metrics of an attribute into groups, creating discrete values for a category.

Tier

Tiers refer to the ecological resolution of a category depending on the resolution of ecological pattern at the relevant level and the extent to which it is delineated.

Typology

A typology provides a hierarchical set of rules to apply to the attribute classification to identify types for a specific purpose (Aquatic Ecosystem Task Group 2013).

Wetland

See 'Queensland Wetland Definition Guideline' (Department of Environment and Science 2022a).

2.2 The distinction between classification, typology, and mapping

The Queensland wetlands classification scheme separates classifications, typology, and mapping into three separate steps, although it is possible to classify and type habitats without mapping them.

Classification

Classification provides definitions and attributes and the categorisation of these attributes, independent of one another.

Typology

Classification is the pre-cursor to a typology that provides rules that can be applied to attributes to group similar ecosystems into types for a particular purpose (Aquatic Ecosystems Task Group 2012). Different typologies can be applied to the same classification for different purposes. A typology must have a hierarchy in which the rules are applied based on the purpose of the typology, therefore, not every component will be required in the application of a specific typology.

Mapping

Mapping is produced by the spatial extension of classification (Neldner et al. 2019) using available spatial data such as aerial photography, satellite imagery, and other spatial data.

3 The Queensland Wetland Classification Scheme

3.1 Introduction

The Queensland Wetland Classification Scheme (the Scheme) is designed to support consistent, state-wide, baseline classification of lacustrine, palustrine, riverine, and some intertidal wetlands above mean sea level across Queensland. The Queensland Wetland Program Wetland Definition as outlined in the Queensland Wetland Definition Guideline (Department of Environment and Science 2023a) is adopted for the purposes of developing and applying the Scheme. The Scheme is differentiated into four sub-schemes: 'lacustrine', 'palustrine', 'riverine' and 'intertidal'. The main products of the Scheme are (1) a consistent, comprehensive classification scheme for palustrine, lacustrine, riverine and some intertidal wetlands above mean sea level that can be applied across Queensland, and (2) a consistent, comprehensive typology of palustrine, lacustrine, riverine, and intertidal wetlands for general planning and management purposes that can be applied across Queensland. Department of Environment and Science (2020a) present a complementary scheme for the classification of intertidal and subtidal wetlands and Department of Environment and Science (2023b) provides a more comprehensive classification for rivers.

3.2 Attribute themes, Attributes, Categories, and Levels

The hierarchy of the scheme uses the approach and terms shown in Figure 1. The terms used in the diagram are described in 2.1. All attribute themes, attributes, categories, and levels of the Scheme (Figure 1) are described in the accompanying Queensland Wetland Classification Database (QWCD).
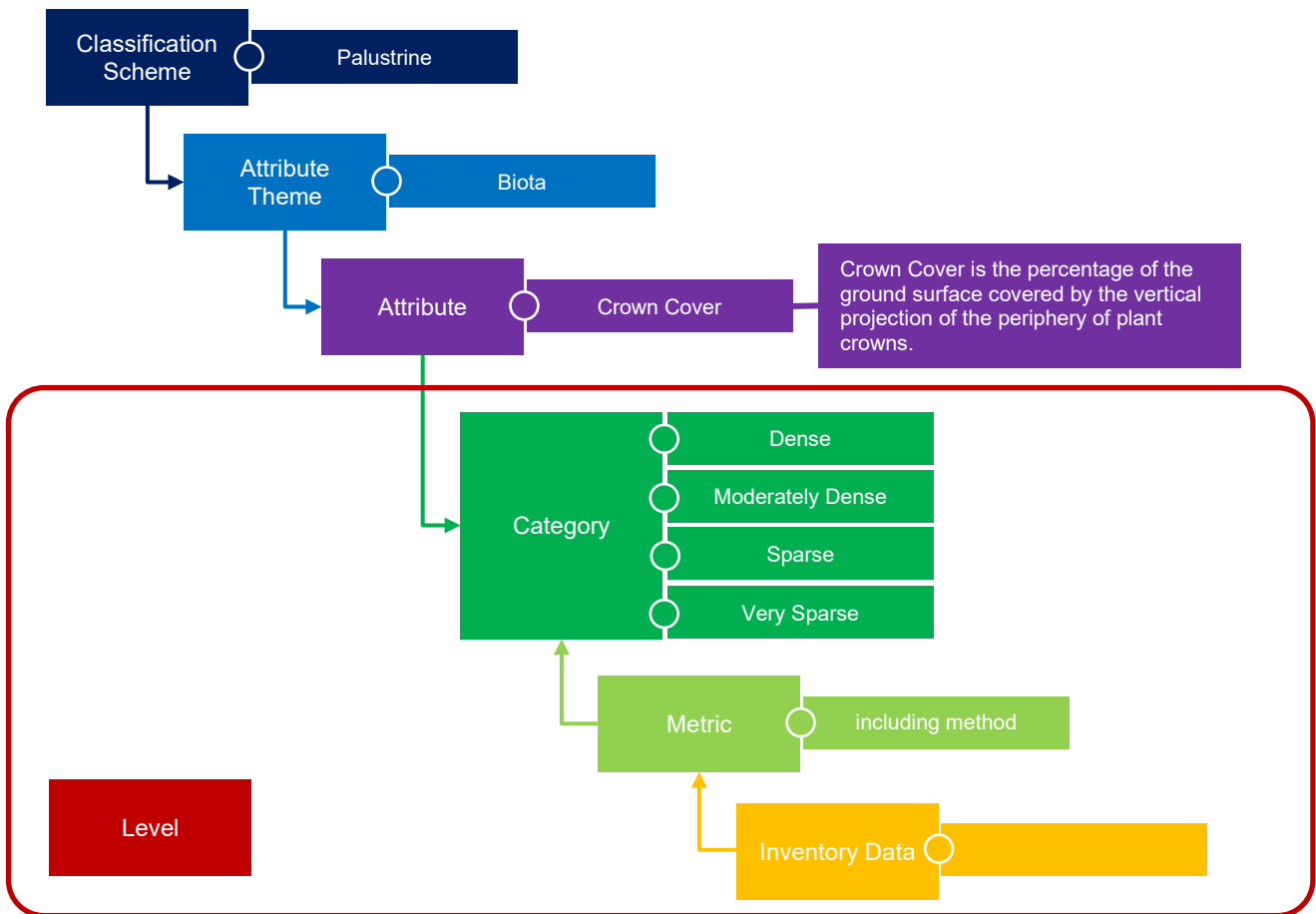
Figure 1. Diagram of the structure of the classification scheme.

3.3 Tiers

Categories of an attribute may be resolved into one or more tiers based on the resolution of ecological pattern at the relevant level or the data available to distinguish them. This Scheme uses up to three hierarchical tiers: master, broad, and fine. All tiers are detailed in the accompanying QWCD.
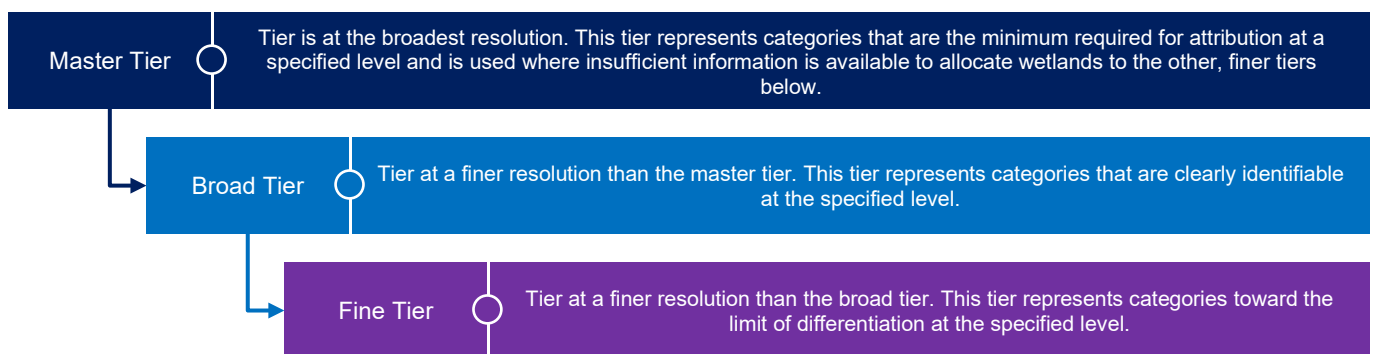

Figure 2. Diagram of category tiers and their definitions.

3.4 Attribute Qualifiers

Ecosystems are dynamic and can undergo shifts in state and conditions. This may be natural variation or be influenced by anthropogenic pressures. In classifying and mapping ecosystems, consideration must be given to how both natural and anthropogenic variability influences their structure and function.

Attribute qualifiers provide extra information on the category of an attribute and are like modifiers in other classification schemes (Cowardin et al, 1979). These qualifiers are not standalone attributes but should be implemented, where appropriate, by attaching additional information to the categories of existing attributes. For example, the 'naturalness' attribute qualifier describes the extent of human-induced change such as anthropogenic structures like dams and weirs placed in channels.

Qualifiers are also available to denote the variability of attributes and categories over time. The 'temporal' qualifier provides information on the variability of a component over time (e.g. trend, constant, cyclic, increasing). All qualifiers are detailed in the accompanying QWCD.

# 4 Example of the Queensland Wetland Classification Scheme
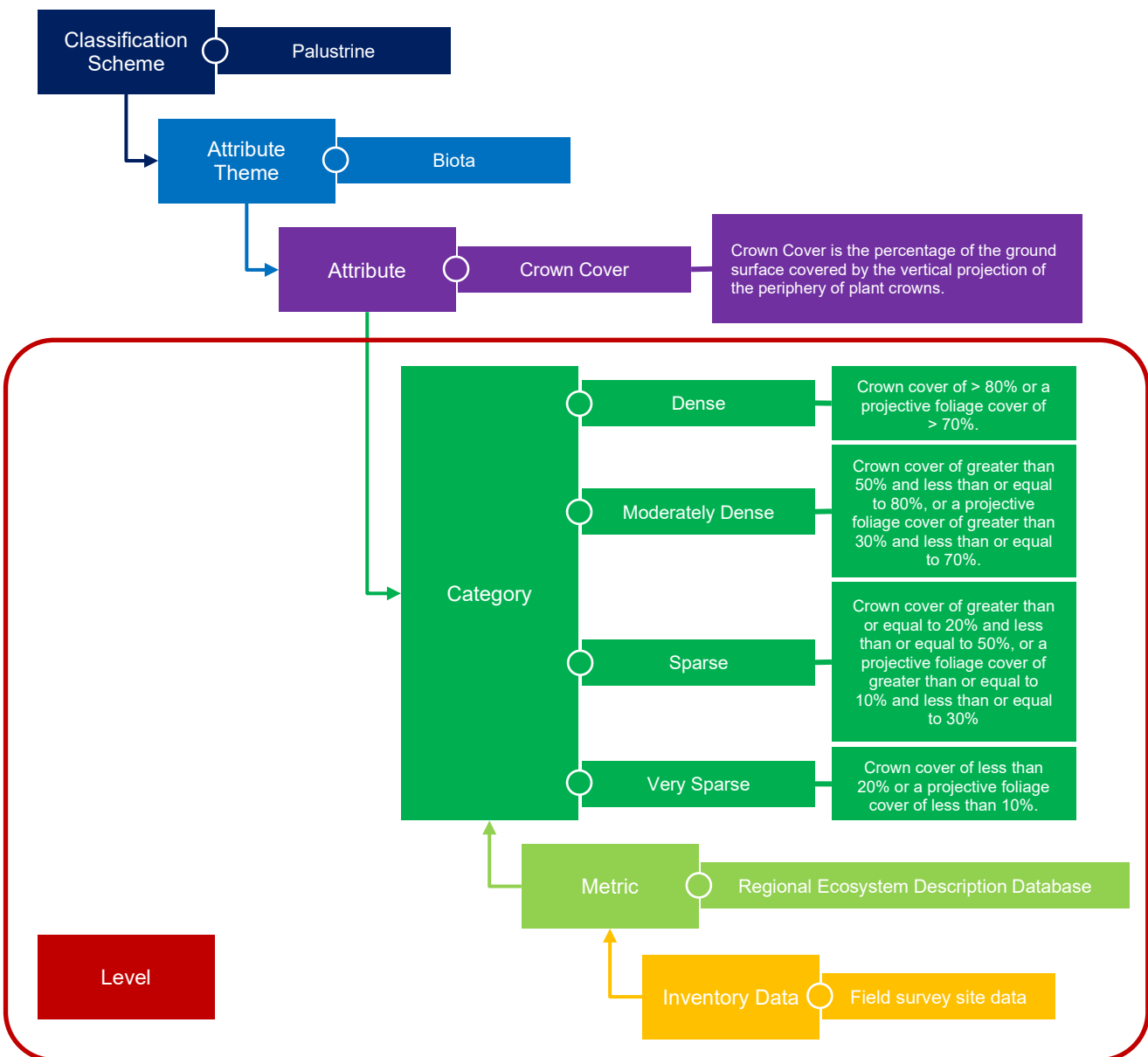
Figure 3. An example of the classification scheme using the crown cover attribute which exists within the biota theme, at the habitat level. The example includes the thresholds, metrics and inventory data required to apply the attribute.
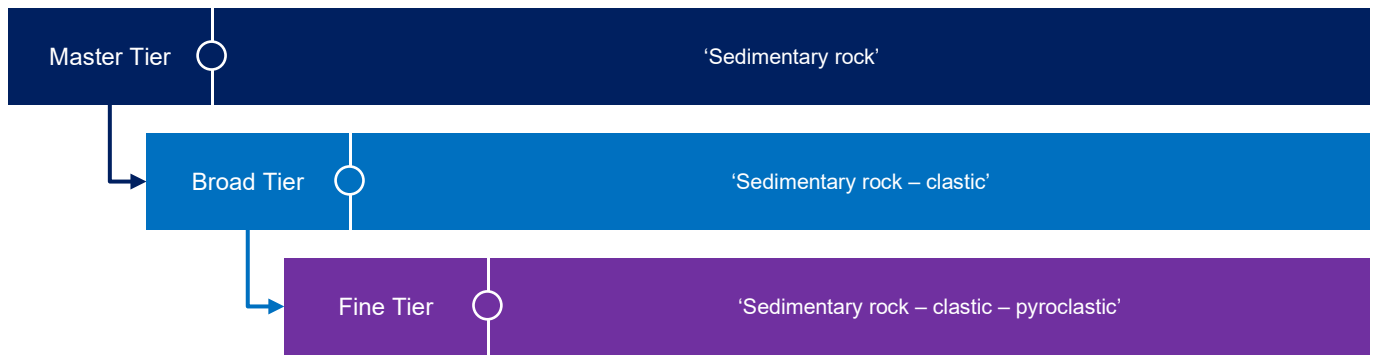
Figure 4. Example of category tiers and their definitions using the geological rock type attribute.

5 The Queensland Wetland General Habitat Typology

The following typology is designed to support general management and planning purposes at a habitat level including the generation of meaningful statistics to meet various wetland extent reporting needs. This typology applies only to natural and slightly modified palustrine, lacustrine, and some intertidal wetland systems as defined in Department of Environment and Science (2023a).

5.1 Components, Attributes and Categories

The following components and attributes are used in the Queensland Wetland General Habitat Typology.

- climate region
- floodplain
- flora composition
- flora growth form
- groundwater flow system
- permanence of water
- salinity
- source aquifer
- structural macrobiota composition
- substrate composition
- substrate grain size
- wetland system

Climate Region

Table 2. Climate region categories for the purposes of the Queensland Wetland General Habitat Typology

Attribute Categories	Categories for Typology
Arid and semi-arid	Arid and semi-arid
Coastal and sub-coastal	Coastal and sub-coastal
Unknown	

Floodplain

Table 3. Floodplain categories for the purposes of the Queensland Wetland General Habitat Typology

Attribute Categories	Categories for Typology
Within a floodplain	Floodplain
Occurs within a floodplain and outside of a floodplain	Non-floodplain
Not within a floodplain	
Unknown	

Flora Composition

Table 4. Flora composition categories for the purposes of the Queensland Wetland General Habitat Typology

Attribute Categories	Categories for Typology
Avicennia	Avicennia
Ceriops	Ceriops
Duma	Duma
Corymbia and Eucalyptus	Melaleuca and Eucalypt
Melaleuca	
Rhizophora	Rhizophora
Aegiceras	Mangrove
Bruguiera	
Nepa	
Mixed - Mangrove	
Archontophoenix	Palm
Corypha	
Licuala	
Mixed - Palm	
Acacia	Other
Allocasuarina	
Banksia	
Casuarina	
Chenopodium	
Eleocharis	
Eragrostis	

Gahnia	
Lepironia	
Maireana	
Pseudoraphis	
Sporobolus	
Tecticornia	
Xanthorrhoea	
Mixed - Other	
Other	
None	
Unknown	

Flora Growth Form

Table 5. Flora growth form categories for the purposes of the Queensland Wetland General Habitat Typology

Attribute Categories	Categories for Typology
Grasses	Grasses, sedges, and herbs
Herbs	
Sedges	
Shrubs	Shrubs
Trees	Trees
Macrophytes	Other
Other	
Not applicable	Unknown
Unknown	

Groundwater Flow System

Table 6. Groundwater flow system categories for the purposes of the Queensland Wetland General Habitat Typology

Attribute Categories	Categories for Typology
Perched flow system	Perched flow system
Local flow system	Other flow system
Intermediate flow system	
Regional flow system	
None	None
Unknown	Unknown

Permanence of Water

Table 7. Permanence of water categories for the purposes of the Queensland Wetland General Habitat Typology

Attribute Categories	Categories for Typology
Permanent	Permanent
Near permanent	Non-permanent
Intermittent	
Ephemeral	
Unknown	

Salinity

Table 8. Salinity categories for the purposes of the Queensland Wetland General Habitat Typology

Attribute Categories	Categories for Typology
Saline	Saline
Hypersaline	
Fresh	Non-saline
Brackish	
Unknown	

Source Aquifer

Table 9. Source aquifer categories for the purposes of the Queensland Wetland General Habitat Typology

Attribute Categories	Categories for Typology
GAB	Great Artesian Basin
Non-GAB	Non- Great Artesian Basin
Not applicable	

Structural Macrobiota Composition

Table 10. Structural Macrobiota Composition categories for the purposes of the Queensland Wetland General Habitat Typology

Attribute Categories	Categories for Typology
GAB	Great Artesian Basin
Non-GAB	Non- Great Artesian Basin
Not applicable	

Substrate Composition

Table 11. Substrate composition categories for the purposes of the Queensland Wetland General Habitat Typology

Attribute Categories	Categories for Typology
Casuarina	Casuarina
Other trees – Melaleuca, Casuarina	Other trees – Melaleuca, Casuarina
Mangrove	Mangrove
Grass/herb/sedge	Grass/herb/sedge
All other categories	Other
Unknown	

Substrate Grain Size

Table 12. Grain size categories for the purposes of the Queensland Wetland General Habitat Typology

Attribute Categories	Categories for Typology
Clay	Clay
Clay - Fine	
Silt	Other
Sand	
Sand – Fine	
Sand – Coarse	
Gravel	
Gravel – Fine	
Gravel – Medium	
Gravel - Coarse	
Cobbles	
Stones	
Boulders	
Unknown	

Wetland System

Table 13. Wetland system categories for the purposes of the Queensland Wetland General Habitat Typology

| Attribute Categories	Categories for Typology
Palustrine	Palustrine
Lacustrine	Lacustrine
Riverine	Riverine
Intertidal	Intertidal

5.2 Attribute Hierarchy
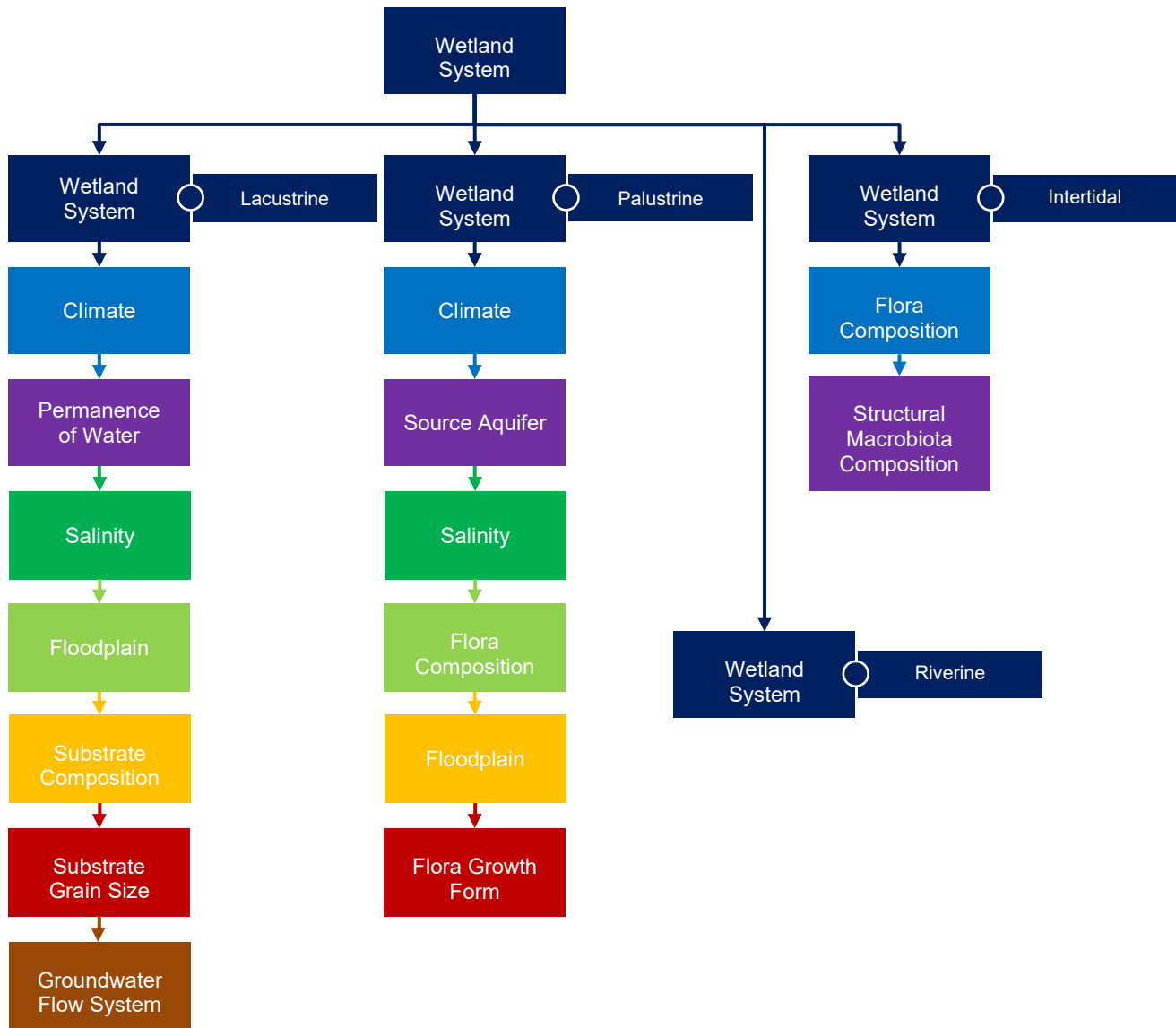
Figure 5. Diagram of the structure of the component and attribute hierarchy for the Queensland Wetland General Habitat Typology.

5.3 Wetland Types

5.3.1 Lacustrine Wetland Types from Typology Process

Table 14. Lacustrine Wetland Types derived from the Queensland Wetland General Habitat Typology

Wetland Type Code	Wetland Type Name
LA17	Arid and semi-arid permanently inundated lakes
LA14	Arid and semi-arid saline lakes
LA15	Arid and semi-arid floodplain lakes
LA16b	Arid and semi-arid non-floodplain clay pan lakes
LA16a	Arid and semi-arid other non-floodplain lakes
LC06	Coastal and sub-coastal floodplain lakes
LC07	Coastal and sub-coastal non-floodplain rock lakes
LC08b	Coastal and sub-coastal non-floodplain sand (perched) lakes
LC08a	Coastal and sub-coastal non-floodplain sand (window) lakes
LC08	Coastal and sub-coastal non-floodplain sand lakes
LC09	Coastal and sub-coastal non-floodplain soil lakes
XX99	Unknown

5.3.2 Palustrine Wetland Types from Typology Process

Table 15. Palustrine Wetland Types derived from the Queensland Wetland General Habitat Typology

Wetland Type Code	Wetland Type Name
PA13	Arid and semi-arid Great Artesian Basin fed spring swamps
PA10	Arid and semi-arid saline swamps
PA11a	Arid and semi-arid floodplain tree swamps
PA11b	Arid and semi-arid floodplain shrub swamps
PA11c	Arid and semi-arid floodplain grass, sedge, and herb swamps
PA11d	Arid and semi-arid other floodplain swamps
PA12a	Arid and semi-arid non-floodplain tree swamps
PA12b	Arid and semi-arid non-floodplain shrub swamps
PA12c	Arid and semi-arid non-floodplain grass, sedge, and herb swamps
PA12d	Arid and semi-arid other non-floodplain swamps
PC03	Coastal and sub-coastal Great Artesian Basin fed spring swamps
PC01	Coastal and sub-coastal saline swamps
PC05	Coastal and sub-coastal tree (palm) swamps
PC04a	Coastal and sub-coastal floodplain tree (Melaleuca and Eucalypt) swamps
PC04d	Coastal and sub-coastal floodplain wet heath swamps
PC04e	Coastal and sub-coastal other floodplain swamps
PC04c	Coastal and sub-coastal floodplain grass, sedge, and herb swamps
PC02a	Coastal and sub-coastal non-floodplain tree (Melaleuca and Eucalypt) swamps
PC02b	Coastal and sub-coastal non-floodplain wet heath swamps
PC02c	Coastal and sub-coastal non-floodplain grass, sedge, and herb swamps
PC02d	Coastal and sub-coastal other non-floodplain swamps
XX99	Unknown

5.3.3 Intertidal Wetland Types from Typology Process

Table 16. Intertidal Wetland Types derived from the Queensland Wetland General Habitat Typology

Wetland Type Code	Wetland Type Name
INT01	Mangroves
INT01a	Mangroves – Casuarina
INT01b	Mangroves - Other
INT02	Salt marsh and salt flats
XX99	Unknown

5.3.4 Riverine Wetland Types from Typology Process

Table 17. Riverine Wetland Types derived from the Queensland Wetland General Habitat Typology

Wetland Type Code	Wetland Type Name
RIV	Riverine
XX99	Unknown

6 Applying the General Habitat Typology in Queensland Wetland Data

6.1 Section 1
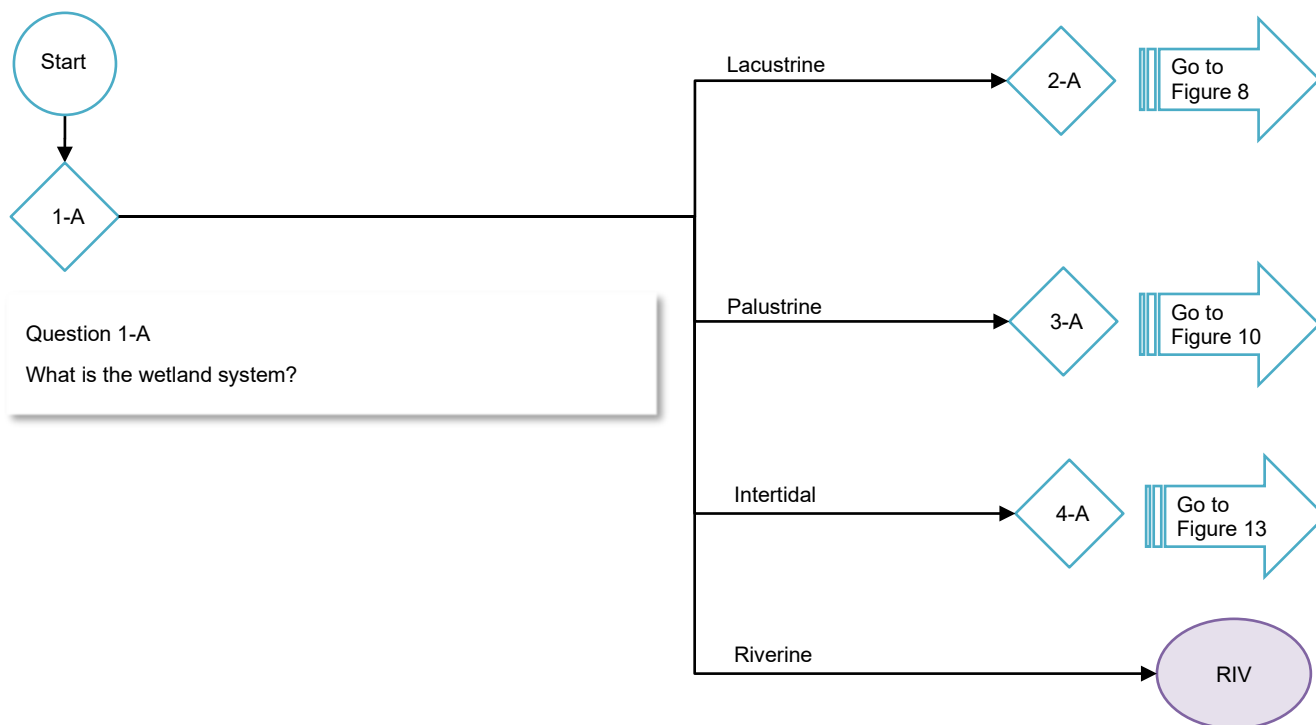
Figure 6 Classification tree for applying the Queensland Wetland General Habitat Typology.

Question 1-A. What is the wetland system?

Lacustrine ……………………………………………………………………………………….. Proceed to Section 6.2

Palustrine ……………………………………………………………………………………….... Proceed to Section 6.3

Intertidal…………………………………………………………………………………………Proceed to Section 6.4

Riverine………………………………………………………………………………………….. TYPE RIV

Figure 7 Classification key for applying the Queensland Wetland Typology.

6.2 Section 2 – Lacustrine Wetlands
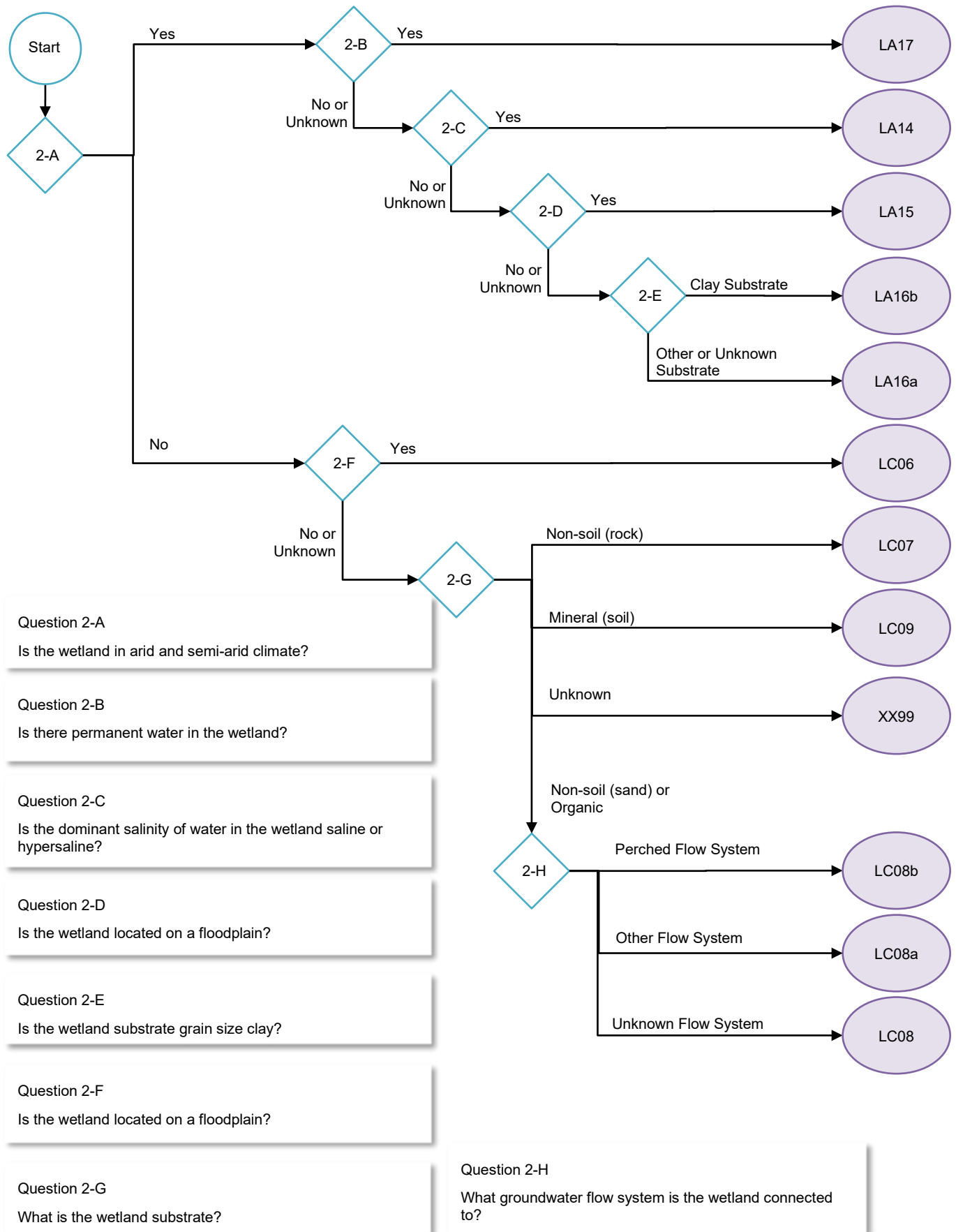
**Figure 8 Lacustrine classification tree for applying the Queensland Wetland General Habitat Typology.**

Question 2-A

Is the wetland in arid and semi-arid climate?

Question 2-B

Is there permanent water in the wetland?

Question 2-C

Is the dominant salinity of water in the wetland saline or hypersaline?

Question 2-D

Is the wetland located on a floodplain?

Question 2-E

Is the wetland substrate grain size clay?

Question 2-F

Is the wetland located on a floodplain?

Question 2-G

What is the wetland substrate?

Question 2-H

What groundwater flow system is the wetland connected to?

Question 2-A. Is the wetland in arid and semi-arid climate?

Yes ………………………………………………………………………………...… Proceed to Question 2-B

No …………………………………………………………………….……… Proceed to Question 2-F

Question 2-B. Is there permanent water in the wetland?

Yes …………………………………………………………..…………………...… TYPE LA17

No or Unknown …………………………………………………….……… Proceed to Question 2-C

Question 2-C. Is the dominant salinity of water in the wetland saline or hypersaline?

Saline or Hypersaline …………………………………………………….….…...… TYPE LA14

Other or Unknown …………………………………………………….……… Proceed to Question 2-D

Question 2-D. Is the wetland located on a floodplain?

Yes …………………………………………………………………………...…… TYPE LA15

No or Unknown …………………………………………………….……………… Proceed to Question 2-E

Question 2-E. Is the wetland substrate grain size clay?

Yes …………………………………………………………….…………………..… TYPE LA16b

No or Unknown ………………………………………………………………… TYPE LA16a

Question 2-F. Is the wetland located on a floodplain?

Yes …………………………………………………….…………………….…… TYPE LC06

No or Unknown …….……………………………………...……….…….…………… Proceed to Question 2-G

Question 2-G. What is the substrate of the wetland?

Non-soil (rock) ……………………………………………………………...……. TYPE LC07

Non-soil (sand) …………………………………………………………… Proceed to Question 2-H

Mineral (soil) ………………………………………………………………… TYPE LC09

Unknown ……………………………………………………..………………… INDETERMINATE TYPE

Question 2-H. What groundwater flow system is the wetland connected to?

Perched groundwater flow system ……………………………………….……………....…….. TYPE LC08b

Other groundwater flow system ……………………………………………….…………… TYPE LC08a

Unknown groundwater flow system ………………………...…….………………… TYPE LC08

Figure 9 Lacustrine classification key for applying the Queensland Wetland General Habitat Typology.

6.3 Section 3 – Palustrine Wetlands

Question 3-A

Is the wetland in arid and semi-arid climate?

Question 3-B

Is the wetland receiving groundwater from the Great Artesian Basin?

Question 3-C

Is the dominant salinity of water in the wetland saline or hypersaline?

Question 3-D

Is the wetland located on a floodplain?

Question 3-E

What is the growth form flora in the wetland?

Question 3-F

What is the growth form flora in the wetland?

Figure 10 Palustrine classification tree for applying the Queensland Wetland General Habitat Typology in Arid and Semi-Arid Climates.
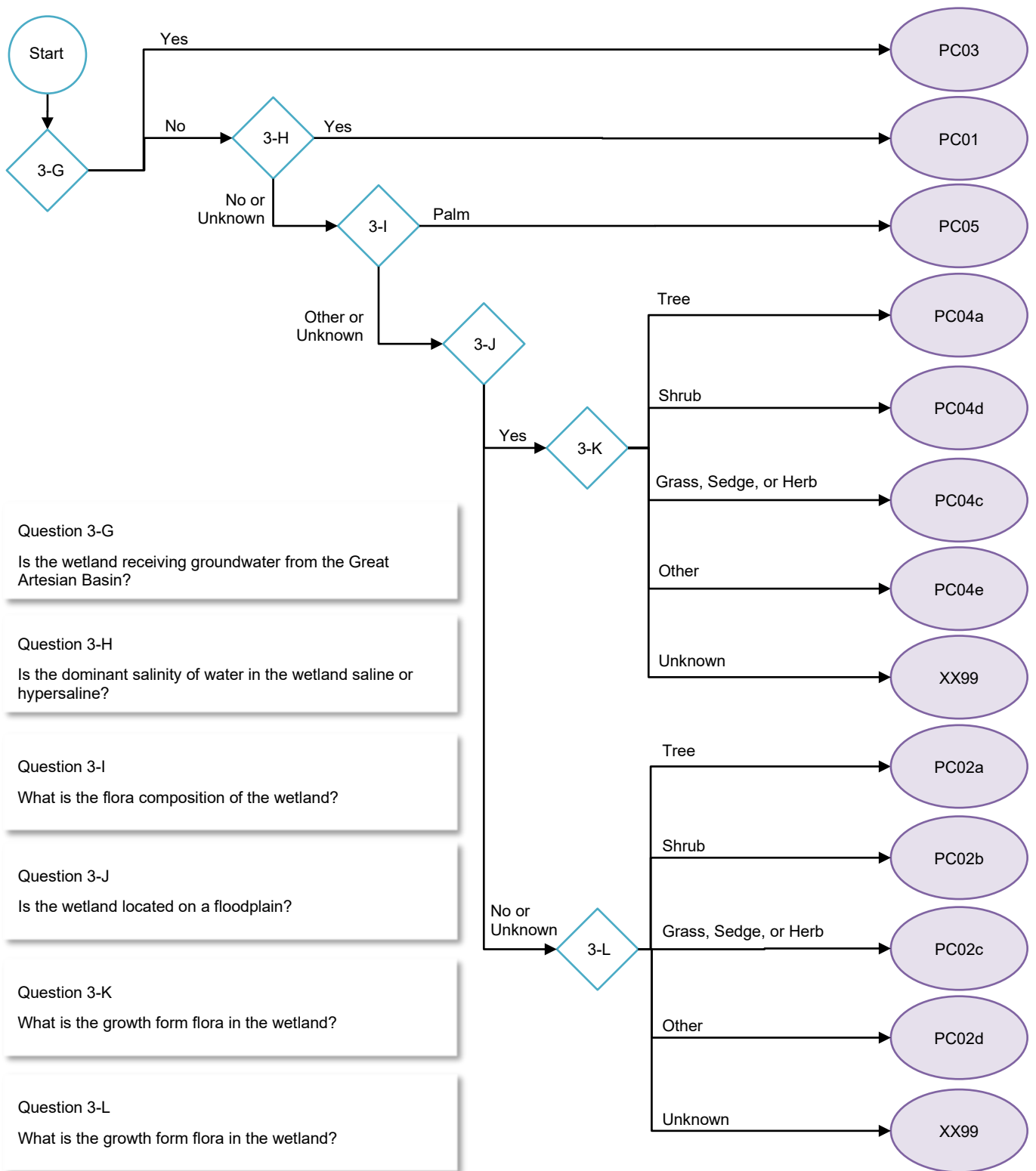
Figure 11 Palustrine classification tree for applying the Queensland Wetland General Habitat Typology in Coastal and Sub-Coastal Climates.

Question 3-G

Is the wetland receiving groundwater from the Great Artesian Basin?

Question 3-H

Is the dominant salinity of water in the wetland saline or hypersaline?

Question 3-I

What is the flora composition of the wetland?

Question 3-J

Is the wetland located on a floodplain?

Question 3-K

What is the growth form flora in the wetland?

Question 3-L

What is the growth form flora in the wetland?

Question 3-A. Is the wetland in arid and semi-arid climate?

Yes ………………………………………………………………………..… Proceed to Question 3-B

No ………………………………………………………………………….… Proceed to Question 3-G

Question 3-B. Is the wetland receiving groundwater from the Great Artesian Basin?

Yes ……………………………………………………………………..… TYPE PA13

No or Unknown…………………………………………………………… Proceed to Question 3-C

Question 3-C. Is the dominant salinity of water in the wetland saline or hypersaline?

Yes …………………………………………………………………..… TYPE PA10

No or Unknown ………………………………………………………… Proceed to Question 3-D

Question 3-D. Is the wetland located on a floodplain?

Yes …………………………………………………………………… Proceed to Question 3-E

No or Unknown …………………………………………………….……… Proceed to Question 3-F

Question 3-E. What is the growth form flora in the wetland?

Tree ……………………………………………………………….…..… TYPE PA11a

Shrub ………………………………………………………………….… TYPE PA11b

Grass, Sedge, Herb ………………………………………...……………..…… TYPE PA11c

Other …………………………………………………………………..… TYPE PA11d

Unknown ………………………………………………………………… INDETERMINATE TYPE

Question 3-F. What is the growth form flora in the wetland?

Tree ……………………………………………………………….…….… TYPE PA12a

Shrub ………………………………………………………..……………… TYPE PA12b

Grass, Sedge, Herb ………………………………………………………….… TYPE PA12c

Other …………………………………………………………..……………..… TYPE PA12d

Unknown ………………………………………………………………… INDETERMINATE TYPE

Question 3-G. Is the wetland receiving groundwater from the Great Artesian Basin?

Yes ……………………………………………………………………..… TYPE PC03

No ………………………………………………………………….……… Proceed to Question 3-H

Question 3-H. Is the dominant salinity of water in the wetland saline or hypersaline?

Yes ……………………………………………………….…………………..……...…. TYPE PC01

No or Unknown ……………………………………………………….……… Proceed to Question 3-I

Question 3-I. What is the flora composition of the wetland?

Palm ……………………………………………………………………….… TYPE PC05

Other or Unknown …………………………………………..…...…………..……… Proceed to Question 3-J

Question 3-J. Is the wetland located on a floodplain?

Yes ………………………………….…………………………………… Proceed to Question 3-K

No or Unknown ……..……………………………………………….………..… Proceed to Question 3-N

Question 3-K. What is the growth form flora in the wetland?

Tree ……………………………………………………………………………..………… TYPE PC04a

Shrub ……………………………………………………………..……………………… TYPE PC04d

Grass, Sedge, Herb ……………………………………………...…………………………..… TYPE PC04c

Other ……………………………………………………………….………………………...… TYPE PC04e

Unknown ………………………………………………………………………………… INDETERMINATE TYPE

Question 3-L. What is the flora composition of the wetland?

Tree ……………………………………………………………………………..…… TYPE PC02a

Shrub ……………………………………………………..…………………………..… TYPE PC02b

Grass, Sedge, Herb ……………………………………………...…………………………… TYPE PC02c

Other ……………………………………………………………….………………………...… TYPE PC02d

Unknown ………………………………………………………………………………… INDETERMINATE TYPE

Figure 12 Palustrine classification key for applying the Queensland Wetland General Habitat Typology.

6.4 Section 3 – Intertidal Wetlands

Figure 13 Intertidal classification tree for applying the Queensland Wetland General Habitat Typology.
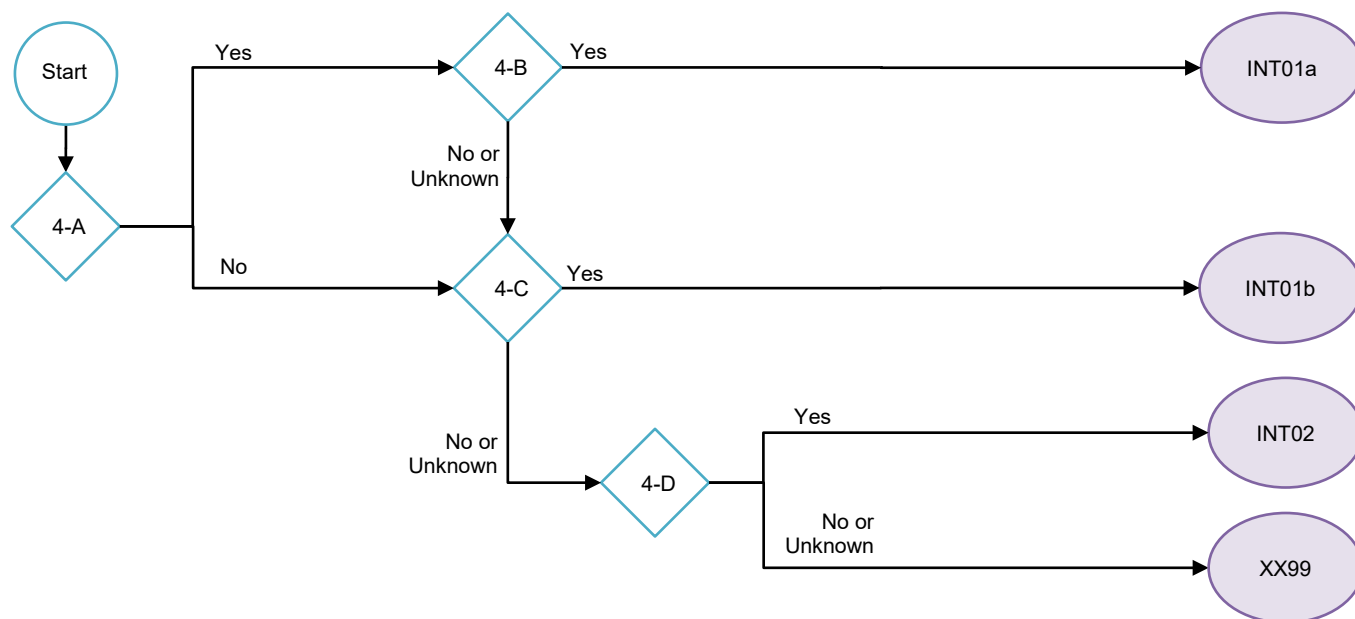
Question 4-A. Is the flora composition of the wetland Casuarina?

Yes ……………………………………………………………………………...… Proceed to Question 4-B

No ………………………………………………………………………….………… Proceed to Question 4-C

Question 4-B. Is the structural macrobiota composition of the wetland other trees - Melaleuca, Casuarina?

Yes ……………………………………………………………………….……….….. TYPE INT01a

No or Unknown……………………………………………………………………… Proceed to Question 4-C

Question 4-C. Is the structural macrobiota composition of the wetland mangrove?

Yes ……………………………………………………..………….…..….… TYPE INT01b

No or Unknown …………………………………………………………….……… Proceed to Question 4-D

Question 4-D. Is the structural macrobiota composition of the wetland grass/herb/sedge?

Yes ……………………………………………………………………….….… TYPE INT02

No or Unknown ……..…………………………………………………….………… INDETERMINATE TYPE

Figure 14 Intertidal classification key for applying the Queensland Wetland General Habitat Typology.

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