Assessment of Freshwater Ecosystem Values *in the* Great Forester River Catchment: Guidance for Water Management

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CFEV project

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Cover Image

Great Forester River near Prosperity Road gauging station.

The Department of Primary Industries and Water (DPIW)

The Department of Primary Industries and Water provides leadership in the sustainable management and development of Tasmania's natural resources. The Mission of the Department is to support Tasmania's development by ensuring effective management of our natural resources.

The Water Resources Division provides a focus for water management and water development in Tasmania through a diverse range of functions, including implementing the *Water Management Act 1999*, the Water Development Plan for Tasmania and the National Water Initiative; design of policy and regulatory frameworks to ensure sustainable use of surface water and groundwater resources; monitoring, assessment and reporting on the condition of the State's freshwater resources; and facilitating water infrastructure development projects.

Glossary

Biophysical class: Biological and physical variables relating to freshwater dependent ecosystems were used to develop a 'biophysical classification' that is applicable at a State-wide level. For riverine ecosystems, the main biophysical classifications are for fish assemblages, geomorphic river types, aquatic plant assemblages, tree assemblages and crayfish assemblages.

CFEV project: The 'Conservation of Freshwater Ecosystem Values' project which has developed a planning and information tool (an analytical framework and database) to support the inclusion of freshwater values within a strategic framework for the management of Tasmania's freshwater resources.

Conservation Management Priority: Summary estimate of the priority for conservation management, integrating assessed conservation value, condition and land tenure security. An ecosystem can be categorised as Very High, High, Moderate or Low Conservation Management Priority.

Distinctiveness: Expressed in two ways: whether the ecosystem unit contains rare classes of ecological components (a rare biophysical class) and/or 'Special Values' (i.e. conservation values other than those selected for representativeness).

DPIW: Department of Primary Industries and Water

Integrated Conservation Value: The conservation value of an ecosystem spatial unit where the Representative Conservation Value has been combined with its Special Value rating.

Naturalness: A measure of the departure from pre European natural reference condition. This was derived for each ecosystem unit within the audit process as a single score based on a variety of sources of biophysical information.

Representativeness: This was assessed by undertaking a biophysical classification of each ecosystem based on pre European settlement natural features (e.g. fish, riparian vegetation, hydrology, etc.). It is defined as the degree to which each ecosystem is representative of the class to which it has been assigned.

Representative biophysical class: Ecological class or group that is used when considering the value of an ecosystem spatial-unit during the conservation evaluation. Determined from the relative rarity of each of the biophysical classes identified for each spatial unit.

Representative Conservation Value: Measure of relative importance of ecosystem units based on the rarity, condition and representation of the representative biophysical class.

Special Values: Unique or 'distinctive' conservation values other than those captured by the representativeness assessment process. These include values such as threatened flora and fauna species, threatened flora and fauna communities, priority geomorphic and limnological features and important bird sites.

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1. Introduction

1.1. Background

Providing water to meet the needs of aquatic ecosystems is a key component of the management of water resources.

In general, Tasmanian unregulated rivers and streams are managed to provide a flow regime that meets the needs of the entire aquatic ecosystem, rather than discrete elements of the ecosystem such as a fish species. The natural flow regime is taken as the best guide to the flow requirements of the entire aquatic ecosystem, and hence the management of flow is based on maintaining or mimicking key flow components of the natural regime.

Tasmania has made a significant financial and scientific investment in developing the Conservation of Freshwater Ecosystem Values Framework, which allows the assessment and identification of freshwater ecosystem values specific to individual catchments.

Whilst broadly aiming to meet the flow requirements of the entire ecosystem, flow management in Tasmania can now be undertaken utilising information on specific freshwater ecosystem values, and integrating the flow requirements of these values within the broader ecosystem context.

The purpose of this assessment is to identify priority freshwater ecosystem values in the Great Forester River catchment, and provide guidance to the management of water resources in the catchment.

1.2. The Great Forester River catchment

The Great Forester River catchment is located in north-east Tasmania and has an area of 637 km^2. The surface water drainage in the Great Forester River catchment, including the Great Forester River and its tributaries, is shown in Figure 1. In the past the Great Forester River and Tuckers Creek in the east of the catchment entered Bass Strait via Trent Water, the estuary near Bridport. However, in the 1920's the Great Forester River, including Tuckers Creek, was diverted to the coast by excavation a of large canel known as Adams Cut. Hurst Creek and Brewers Creek, to the west of the catchment, still enter Bass Strait via Trent Water. The Brid River also flows into Trent Water. The Brid River is independent of the Great Forester River catchment, and will be assessed in a separate Water Management Plan.

The northern and western parts of the Great Forester catchment are a combination of relict terrestrial dune fields, and flat lowland basins containing granitic sediments that border the coastal dune fields. The eastern side of the catchment is moderately steep hill and ridge country that separate V-shaped valleys on metamorphosed sedimentary rock (Mathinna beds). The upper southern part of the catchment is largely steep granite hill country and escarpments.

The Great Forester catchment can be divided into four subregions. The first subregion is comprised of the Western Forester creeks, rivulets and the estuary including Hurst Creek, Coxs Rivulet, Brewers Creek, Tuckers Creek, and Trent Water. The second subregion includes the lower part of the Great Forester River, and the Waterhouse wetland area. The eastern tributaries subregion includes Oxberry Creek and Pearly Brook, which flow into the lower Great Forester subregion. The fourth subregion is the upper part of the Great Forester River and its tributaries including Mackenzie Rivulet, Hogarth Rivulet, Parrs Rivulet and the Arnon River.

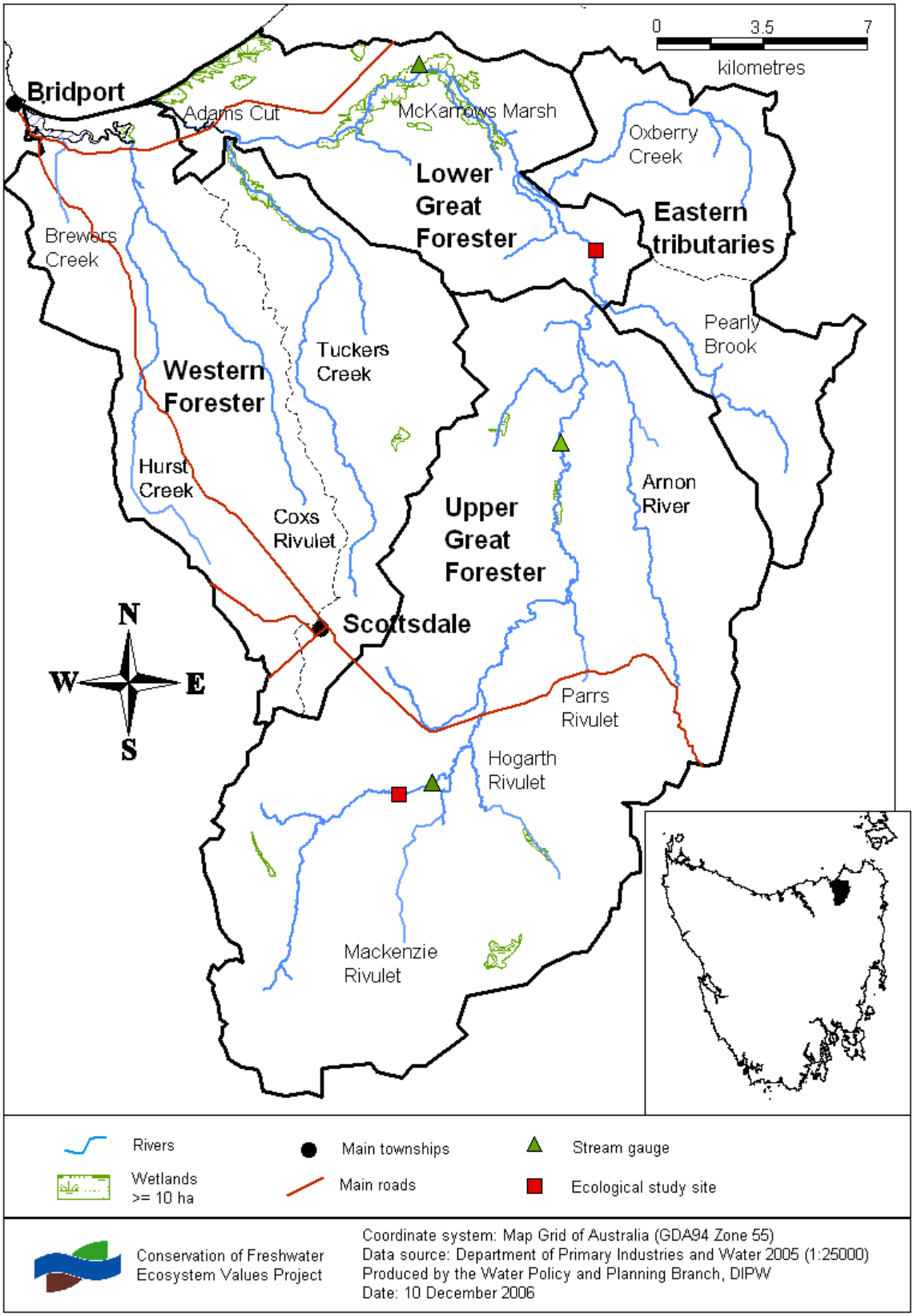

Figure 1. Surface water drainage in the Great Forester Water Management Region catchment including the stream gauging stations, ecological study sites and subregions and subcatchments. CFEV, © State of Tasmania and the LIST.

1.3. Conservation of Freshwater Ecosystems Values Framework

Freshwater ecosystem values in the Great Forester River catchment were assessed using the Conservation of Freshwater Ecosystems Values (CFEV) Framework (CFEV, 2005).

The CFEV Framework (Figure 2) was developed in order to rate the conservation value and management priority of all mapped examples of freshwater ecosystems in Tasmania. The Framework uses a systematic approach based on Naturalness*, Representativeness*, and Distinctiveness*, and a set of data which identify the natural biophysical character and condition of the ecosystems in a standardised way.

The CFEV Framework provides an assessment of the relative conservation value of an ecosystem unit, based on the relative rarity of its features and their condition. The Framework also provides data on the natural features and condition of single or multiple ecosystem units. These data are used for a variety of purposes, including reporting, resource planning, and environmental impact assessment.

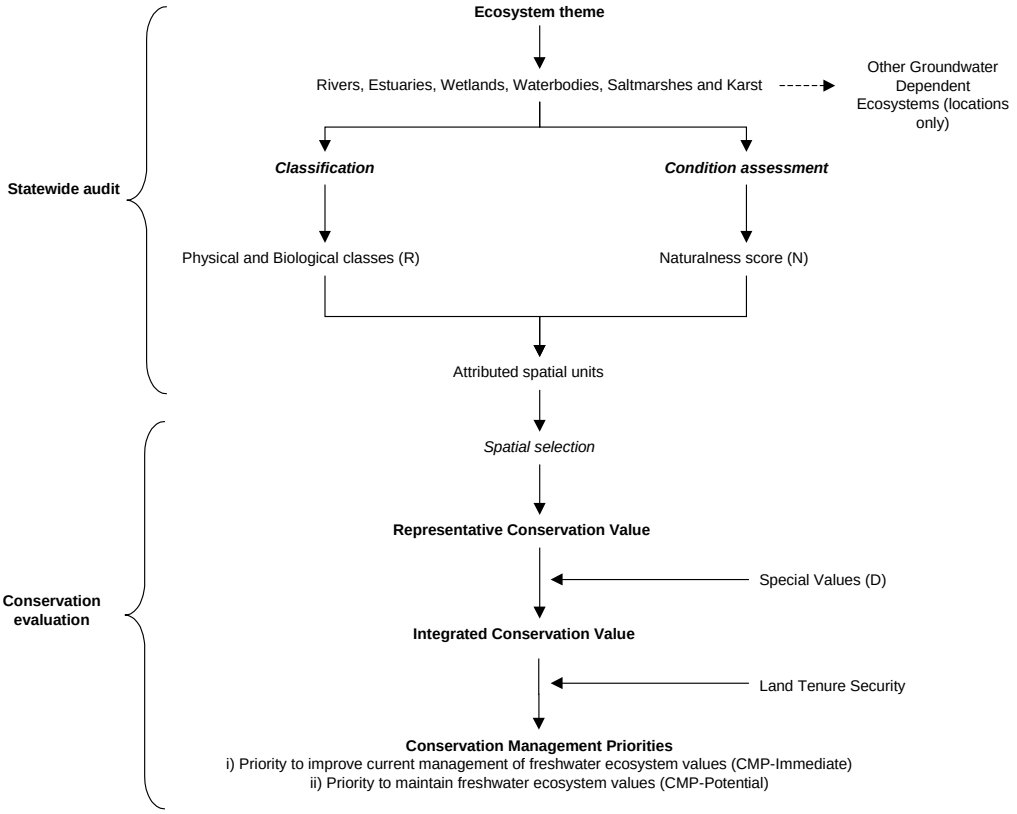

Figure 2. Assessment of Tasmanian freshwater-dependent ecosystems under the CFEV Framework, based on the state-wide audit and conservation evaluation (DPIW, in prep.).

Through a comprehensive state-wide audit, the CFEV Framework has identified the natural characteristics and current condition of freshwater ecosystems in Tasmania. A biophysical classification of each ecosystem unit, based on pre-European settlement natural features, provides the Representativeness aspect, which is defined as the degree to which each ecosystem unit is representative of the class to which it has been assigned.

*see Glossary for definition of these words or terms.

An assessment of change from pre-European or "natural" reference condition provides the Naturalness aspect.

Through the classification, a suite of associated biophysical classes* are described for each ecosystem unit. The CFEV Framework determines a representative biophysical class* for each identified ecosystem spatial-unit (e.g. river sections and water-bodies). The representative biophysical class is the ecological class or group that is used when considering the value of an ecosystem spatial-unit during the conservation evaluation.

The representative biophysical class is determined from the relative rarity of the different biological and physical classes identified in each spatial unit from the state-wide audit (with rarity partly contributing to the Distinctiveness aspect). The representative biophysical class may be a native fish assemblage, tree assemblage, crayfish assemblage, macro-invertebrate assemblage, or type of geomorphology. In wetlands, the representative biophysical class may also be a frog assemblage or a representative vegetation type.

Using the rarity of the representative biophysical class and the Naturalness of each spatial unit, a spatial selection algorithm ranks all of the spatial units in each ecosystem type, to indicate the relative importance or Representative Conservation Value* of each spatial unit (Figure 2).

To ensure that specific unique and important values are captured in the conservation evaluation, an assessment of Special (Freshwater) Values* is also included (the second part of the Distinctiveness aspect). Each Special Value has a priority-based rating, which is added to the Representative Conservation Value* to produce an Integrated Conservation Value* (Figure 2).

Some types of land tenure are considered to provide greater protection for freshwater dependent ecosystem values than others. A ranking based on the type of land tenure security is added to the Integrated Conservation Value to provide the conservation management priorities* (Figure 2).

The results of the audit and conservation evaluation are used to identify conservation values and rank the conservation management priorities of freshwater ecosystems across the state. Conservation management priorities may be 'Immediate', indicating areas where immediate management actions are required to ensure the protection of significant conservation values, or 'Potential', indicating areas that need to be considered where future developments or changes to land or water management are proposed.

It should be acknowledged that the CFEV Framework employs a wide variety of data sources, of varying resolution. The assessment data for many sites are derived from complex models, and as a result, care should be taken when using specific variables at specific locations. Any results with important management implications should be corroborated by on-ground surveys. The strength of the CFEV data lies with its comprehensive coverage of Tasmania, which allows broad scale comparisons, summaries, and the combination of complicated data sets into readily interpreted indices.

For further information on the CFEV Framework and how the different values are derived, see the references given in the "Further Information" section on page 14.

*see Glossary for definition of these words or terms.

2. Ecosystem Values in the Great Forester River Catchment

2.1. Assessment of Freshwater Ecosystem Values in the Great Forester River Catchment

The purpose of this assessment of freshwater ecosystem values in the Great Forester River catchment is to provide guidance to the management of water resources. The assessment is based on Integrated Conservation Value, because it provides an indication of the freshwater ecosystem values (including the different biophysical classes and special values) that need to be considered in any future development of the catchment's water resources.

Integrated Conservation Values in the Great Forester River catchment are presented in Figure 3. Areas of high and very high Integrated Conservation Value include the lower parts of Hurst Creek, Coxes Rivulet and Tuckers Creek, lower to central parts of the Great Forester River, and the upper most parts of Mackenzie Rivulet, Hogarth Rivulet and the Great Forester River.

Summary information indicating the contribution of each of the drivers that lead to high and very high Integrated Conservation Values, in each of the sub-catchments of the Great Forester River Catchment, were extracted from the CFEV database (Table 1). The main biophysical classes identified in the catchment are shown in Table 2. The Naturalness or condition, and the Representative Conservation Value of freshwater ecosystems in the Great Forester catchment are presented in Figures 4 and 5.

The areas assessed in the Great Forester River catchment are river sections and wetlands of medium to very high Integrated Conservation Value that are in or near the main river or stream channels, and that are most likely to be impacted by any future flow modification in the catchment. Headwater streams that are likely to retain their natural flow, and are not likely to be impacted by any future water extraction, were not assessed for the purposes of this report.

The Great Forester River catchment is highly variable in its Naturalness rating (Table 1, Figure 4). Freshwater ecosystems near Scottsdale and in the upper parts of the Anon River are generally in poor condition, as are many river sections and wetlands within 5 km of the coast (Figure 4).

Most ecosystems identified as having high Integrated Conservation Value are also in good condition (Table 1, Figure 3). However a number of areas in good condition or with a high degree of naturalness have only a medium or low Representative Conservation Value (Table 1, Figure 5). In such areas, the main biophysical class identified may not be the most representative of its class in Tasmania, or the class may not be very rare. Examples include some of the Waterhouse wetlands, and river sections in Oxberry Creek and Pearly Brook, which have a high degree of naturalness, but only a few sections of high Integrated Conservation Value (Figures 2 and 4).

Some areas that are in poor condition, such as river sections in the upper parts of the Great Forester River, can have a highly representative or rare biophysical class leading to a high Representative Conservation Value (Figures 2 and 5).

In other cases, river sections or wetlands may be in relatively poor condition and have a low Representative Conservation Value, but may exhibit a high or very high Integrated Conservation Value. In this case the high rating is obtained by the occurrence of Special Values. Examples of areas of low Naturalness and Representative Conservation Value, but a High Integrated Conservation Value include Trent Water, McKerrows Marsh,

wetlands in the lower part of Tuckers Creek, and some river sections in the Upper Great Forester area, such as Ruby Creek (Figure 2 and 4). Most stream sections and ecosystems of very high Integrated Conservation Value result from the occurrence of Special Values.

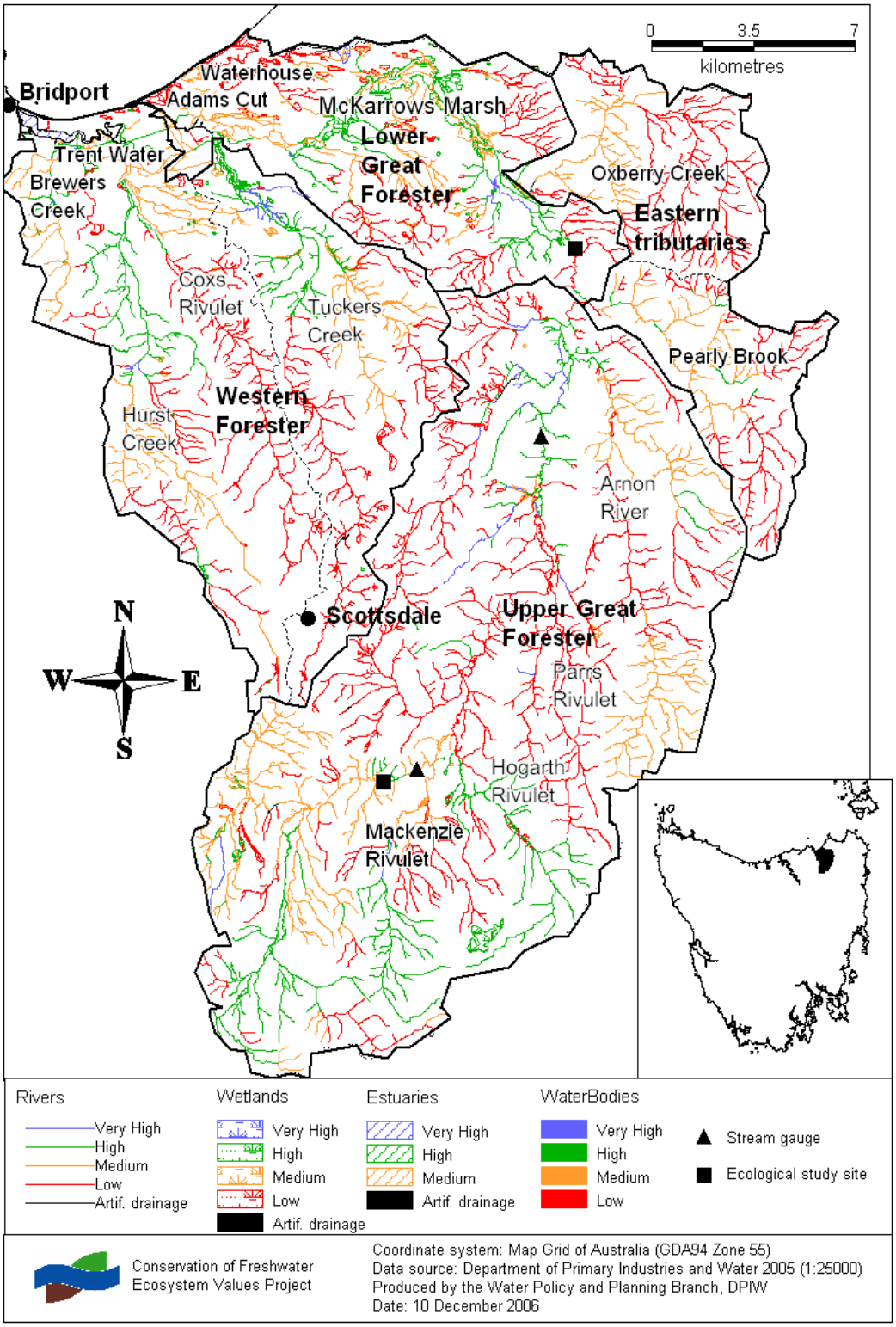

Figure 3. The Great Forester River catchment, subcatchments and Integrated Conservation Value according to the CFEV Framework. CFEV, ©State of Tasmania and the LIST, © State of Tasmania.

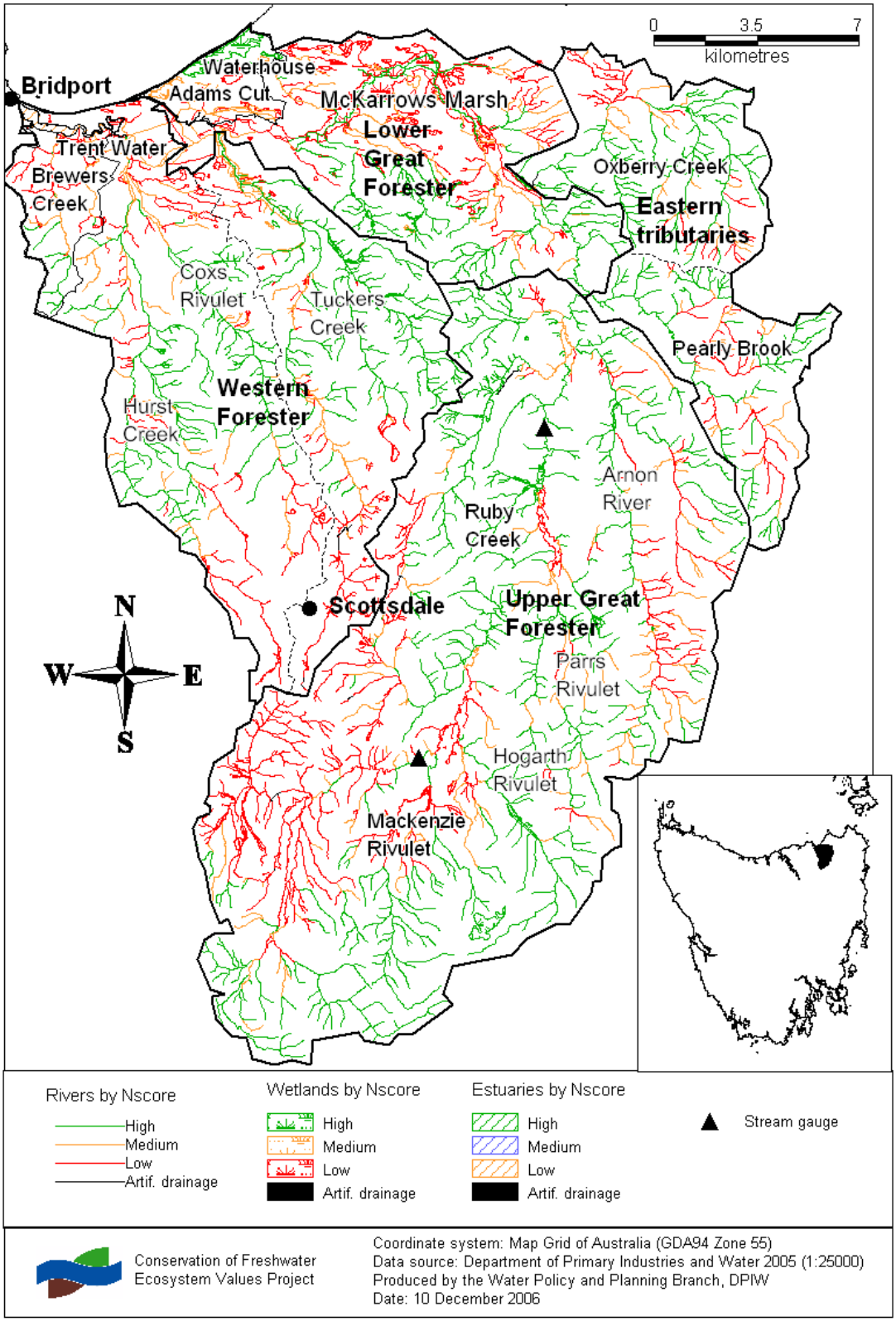

Figure 4. Naturalness or condition of freshwater ecosystems in the Great Forester River catchment according to the CFEV Framework.

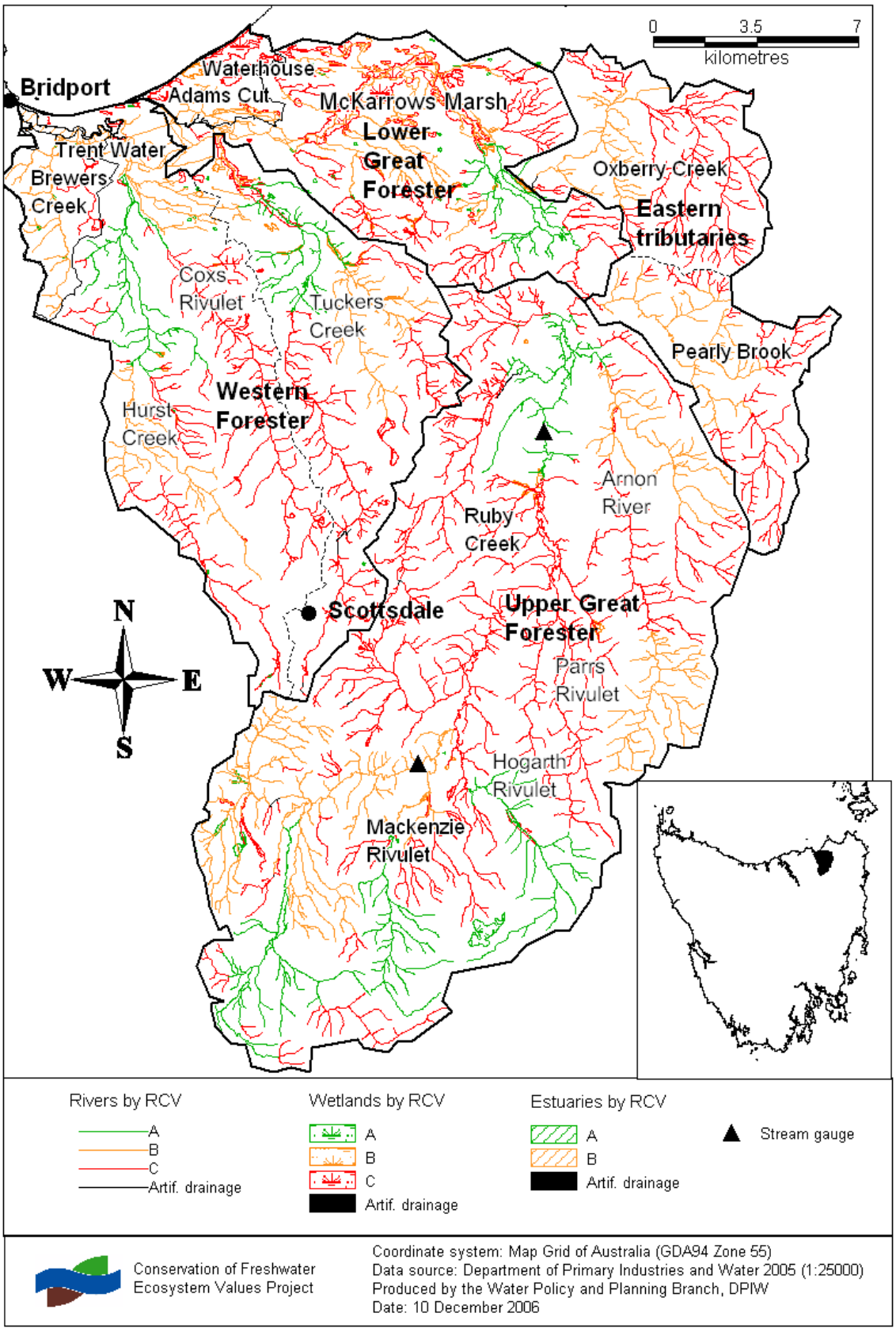

Figure 5. Representative Conservation Value of stream sections and wetlands in the Great Forester River catchment according to the CFEV Framework

Table 1. Summary table showing the drivers of the freshwater ecosystem units with medium to very high Integrated Conservation Value in each of the subcatchments and the estuary in the Great Forester River catchment. Naturalness refers to the condition of the ecosystem, or modification compared to pre European conditions. Representative Conservation Value is a measure of relative importance of ecosystem units based on the rarity of their representative biophysical class and condition. In some cases the drivers can have multiple classifications because river sections and wetland ecosystems with different drivers are grouped together to form the summary of drivers in each subcatchment. Platypus is a special value in most river sections in the Great Forester River Catchment. Refer to Table 2 for biophysical class codes.

Location	Integrated Conservation Value	Representative Conservation Value	Naturalness	Representative Biophysical Classes (class code in brackets)	Special Values
Western Forester					
Trent Water	Very High	B	Low	Large mesotidal river estuary located along the north coast.	Whitebait (northern stock) Eastern curlew, Caspian tern, Fairy tern, Great crested grebe White-bellied sea-eagle
Hurst Creek, Coxes Rivulet & Brewers Creek Lower	High to Very High	A-B	Low to High	Fish assemblage (F3, F12) Tree assemblage (T9 & T4)	*Melaleuca ericifolia* swamp forest Shrubby *Eucalyptus ovata* forest. Riparian priority floral communities Phreatoicid (Isopod)
Upper (impacted)	Medium to High	C B	Medium to Low	Tree assemblage (T8) Fish assemblage (F27)	*Melaleuca ericifolia* swamp forest
Wetlands	High	A & C	Low	Geomorphology (WLP9, WLP20, WLP2) Tree species (T4 & DV-ME)	*Melaleuca ericifolia* swamp forest Green and golden frog
Tuckers Creek (& Devils Creek) Lower	High to Very High	A-B	High	Fish assemblage (F3, F9) Tree assemblage (T9 & T4)	*Melaleuca ericifolia* swamp forest Hydrobiid snail – Fern Creek
Wetlands	High	A-B	Low to High	Geomorphology (WLP9 & WLP13, T4)	
Lower Great Forester					
Lower Great Forester Rivers	High to very High	A-B	Low to high	Tree species (T9, T14, T4) Fish species (F3, F9, F12, F13)	*Melaleuca ericifolia* swamp forest Harsh ground fern Giant freshwater crayfish Whitebait (northern stock) Australian Grayling
Wetlands	High to Very High	C	Low	Tree assemblage (T4) Geomorphology (WLP9)	*Melaleuca ericifolia* swamp forest Short paperbark swamp Dwarf galaxias Green and golden frog
Waterhouse Rivers	Medium to High	B	Low to High	Tree assemblage (T4)	Giant freshwater crayfish
Wetlands	Medium to Very High	B-C	Medium to High	Wetland geomorphology (WLP9)	Swamp wallaby grass Little tern Caspian tern
Eastern tributaries					
Pearly Brook	High to Medium	B-C	High	Fish assemblage (F27 & F3) Tree assemblage (T12 & T8)	Scottsdale Hydrobiid snail Giant freshwater crayfish Harsh ground fern
Oxberry Creek	High to Medium	B	High	Fish assemblage (F3 & F13) Invertebrate assemblage (BC7F)	Platypus only
Upper Great Forester					
Lower	High to Very High	A	High	Geomorphology (G9) Fish assemblage (F13,F22, F27) Tree assemblage (T14, T8)	Shrubby *Eucalyptus ovata* forest Narrow leaved tree fern Giant freshwater crayfish Scottsdale burrowing crayfish
Upper	High to Very High	A-C	Low to High	Fish assemblage (F27, F35) Fewer (F44, F42, F28) Geomorphology (G9) Tree assemblages (T12, T13, T14, T8)	Mt. Arthur burrowing crayfish Scottsdale Hydrobiid snail Fern Creek Hydrobiid snail

2.2 Representative biophysical classes and Special Values in the Great Forester River catchment.

The classification of areas of high and very high Integrated Conservation Value in the Great Forester River catchment is largely based on the highly representative native fish assemblages, riparian tree assemblage and Special Values including several species of riparian flora, fish, crayfish and Hydrobiid snails (Table 1).

2.2.1. Fish Assemblages

The native fish assemblage with a high representative value in the lower coastal parts of the catchment is described as "native fish found in river sections and water bodies along the north east coast of Tasmania" (F13). The assemblage includes short-finned eel (*Anguilla australis*), spotted galaxias, (*Galaxias truttaceus*), short headed lampray (*Geotria australis*), pouched lampray *(Mordacia mordax*), Australian grayling *(Prototroctes maraena*), Tasmanian mudfish (*Neochanna cleaveri*), freshwater flathead *(Pseudaphritis urvillii*) Blackfish *(Gadopsis marmoratu*), long-finned eel *(Anguilla reinhardtii*), Jollytail *(Galaxias maculatus*) and Dwarf galaxias *(Galaxiella pusilla*). Other assemblages found in the lower parts of the catchment may include additional species like Tasmanian Smelt (*Retropinna tasmanica*) (F3) and sometimes also includes Pygmy Perch *(Nannoperca australis*) (F9) associated with coastal streams and water bodies.

Higher in the catchment the fish assemblage changes to that of inland river sections and water bodies near the coast in north-east Tasmania, which is similar to the coastal assemblage, but does not contain Jollytail or Dwarf galaxias (F27).

At some steeper highland sites in the south of the catchment, Tasmanian mudfish are not present (F35), or the lampreys are sometimes missing from the fish assemblage (F42). At a few sites Jollytail are found without the lampreys (F44).

2.2.2. Riparian Tree Assemblages

Tree assemblages occurring in the lower parts of the catchment are described as coastal dry forests and damp sclerophyll forest (T9) and coastal dry forests and wet scrub mosaics (T4). Adjacent to the Great Forester River, dry and damp sclerophyll forest with tea tree and paperbark are present (T14). In upper parts of the catchment, dry sclerophyll forest, tall wet Eucalypt forests and scrubs (T8) are present, and wet and damp sclerophyll are present in the steeper eastern and southern areas (T12) (Tables 1 and 2).

2.2.3 Special Values

Special Values are vulnerable, threatened or endangered species or communities that have been identified in a river section or ecosystem.

Fauna of special value found in most parts of the Great Forester catchment include giant freshwater crayfish and platypus in river sections, and the green and golden frog at many wetland sites (Table 1).

Melaleuca ericifolia coastal swamp forest is a common Special Value in the lower part of the catchment. Short paperbark swamp and shrubby *Eucalyptus ovata* are also found in some river sections and wetlands throughout the catchment. Other flora of special value, including swamp wallaby grass and the Harsh Ground fern, are found in the northern half of the catchment. Sites containing priority riparian floral assemblages have been identified in the lower parts of the western forester creeks.

The Scottsdale burrowing crayfish and Mt. Arthur burrowing crayfish have also been identified at a number of sites in the upper Great Forester subregion in addition to other flora and fauna already discussed. Two species of Hydrobiid Snail are present in the upland parts of the Great Forester catchment including Pearly Brook and Tuckers Creek.

Trent Water and coastal wetland areas of the Great Forester catchment are nesting and breeding areas for the fairy turn, caspian turn, eastern curlew, great crested grebe and white-bellied sea eagle. The northern stock whitebait is present in Trent Water and coastal streams and rivers.

Table 2. Common biophysical classes in the Great Forester River catchment, including class codes, class descriptions and species compositions.

Class Code	Class description	Species Composition
G9	North-east wet granite. Headwaters wet	steep Mathinna hills (west) or granite (east); Mid catchment flowing through basin (east); North-east coastal dunefields in lower catchment
BC7f	Macro-invertebrate assemblage Headwater first order streams, depauperate form of assemblage C7 and located in same areas.	Indicator taxa (EPTC groups): *Elmidae A, Notalina bifaria, Tasmanophlebia* sp. AV1, *Taschorema asmanum, Triplectides similis, Nousia* sp. AV8, *Agapetus* sp. AV1.
F3	Fish assemblage found in coastal streams and waterbodies in the north-eastern part of the state	*Anguilla australis, Galaxias truttaceus, Geotria australis & Mordacia mordax, Prototroctes maraena, Neochanna cleaveri, Pseudaphritis urvillii, Gadopsis marmoratus, Anguilla reinhardtii, Galaxias maculatus, Retropinna tasmanica, Galaxiella pusilla*
F9	Fish assemblage associated with coastal streams and waterbodies in the north-east.	*Anguilla australis, Galaxias truttaceus, Geotria australis & Mordacia mordax, Prototroctes maraena, Neochanna cleaveri, Pseudaphritis urvillii, Gadopsis marmoratus, Anguilla reinhardtii, Nannoperca australis, Galaxias maculatus, Retropinna tasmanica, Galaxiella pusilla*
F13	Fish assemblage found in river sections and waterbodies along the north-east coast of Tasmania.	*Anguilla australis, Galaxias truttaceus, Geotria australis & Mordacia mordax, Prototroctes maraena, Neochanna cleaveri, Pseudaphritis urvillii, Gadopsis marmoratus, Anguilla reinhardtii, Galaxias maculatus, Galaxiella pusilla*
F27	Fish assemblage found in inland river sections and waterbodies near the coast in the north-east region of the state, from east of the Tamar River to Georges Bay	*Anguilla australis, Galaxias truttaceus, Geotria & Mordacia, Prototroctes maraena, Neochanna cleaveri, Pseudaphritis urvillii, Gadopsis marmoratus, Anguilla reinhardtii*
F35	Fish assemblage found in inland rivers sections in the north-east region of the state, from east of the Tamar River to Georges Bay	*Anguilla australis, Galaxias truttaceus, Geotria & Mordacia, Prototroctes maraena, Gadopsis marmoratus, Anguilla reinhardtii*
F42	Fish assemblage with a limited distribution, in a few scattered rivers sections, inland east of the Tamar River	*Anguilla australis, Galaxias truttaceus, Gadopsis marmoratus, Anguilla reinhardtii*
F44	Fish assemblage with a limited distribution, in a few scattered rivers sections, inland east of the Tamar River	*Anguilla australis, Galaxias truttaceus, Gadopsis marmoratus, Anguilla reinhardtii, Galaxias maculatus*
C1	Crayfish assemblage. Areas below 400 m AHD and excluding first order streams (for rivers); *Astacopsis gouldi* present.	
T4	Coastal dry forests and wet scrub mosaics of eastern and north-eastern Tasmania	*Acacia dealbata, Acacia mearnsii, Acacia melanoxylon, Allocasuarina littoralis, Allocasuarina verticillata, Banksia marginata, Bursaria spinosa, Casuarina monilifera, Dodonaea viscosa, Eucalyptus amygdalina, Eucalyptus globulus subsp., Eucalyptus ovata, Eucalyptus viminalis, Exocarpos cupressiformis, Leptospermum glaucescens, Leptospermum laevigatum, Leptospermum scoparium var., Melaleuca ericifolia, Melaleuca squarrosa, Pomaderris elliptica, Pomaderris pilifera*
T8	Dry sclerophyll forests, tall wet eucalypt forests and scrubs. This assemblage has two disjunct occurrences, being found in the lowland hinterlands of north-eastern Tasmania and on the drier hill slopes in the Huon valley	*Acacia dealbata, Acacia mearnsii, Acacia melanoxylon, Allocasuarina littoralis, Allocasuarina verticillata, Banksia marginata, Bursaria spinosa, Eucalyptus amygdalina, Eucalyptus obliqua, Eucalyptus ovata, Eucalyptus regnans, Eucalyptus viminalis, Exocarpos cupressiformis, Leptospermum lanigerum, Leptospermum scoparium var., Melaleuca ericifolia, Melaleuca squarrosa, Monotoca glauca, Notelaea ligustrina, Olearia argophylla, Pittosporum bicolor, Pomaderris apetala, Pomaderris elliptica, Pomaderris pilifera, Zieria arborescens*
T9	Dry forests and damp sclerophyll forests around Port Sorell and in coastal north-eastern Tasmania.	*Acacia dealbata, Acacia mearnsii, Acacia melanoxylon, Allocasuarina littoralis, Allocasuarina verticillata, Banksia marginata, Bursaria spinosa, Casuarina monilifera, Eucalyptus amygdalina, Eucalyptus obliqua, Eucalyptus ovata, Eucalyptus viminalis, Exocarpos cupressiformis, Leptospermum scoparium var., Melaleuca ericifolia, Melaleuca squarrosa, Monotoca glauca, Pomaderris elliptica, Pomaderris pilifera*
T12	Grid cells containing mosaics of wet sclerophyll, damp sclerophyll and dry sclerophyll in northern and north-eastern Tasmania.	*Acacia dealbata, Acacia melanoxylon, Allocasuarina littoralis, Banksia marginata, Bursaria spinosa, Eucalyptus amygdalina, Eucalyptus obliqua, Eucalyptus ovata, Eucalyptus regnans, Eucalyptus viminalis, Exocarpos cupressiformis, Leptospermum scoparium var., Melaleuca squarrosa, Notelaea ligustrina, Olearia argophylla, Pittosporum bicolor, Pomaderris apetala, Pomaderris elliptica, Pomaderris pilifera, Zieria arborescens*
T13	Similar to tree assemblage 12, but in drier situations with *Allocasuarina verticillata* and *Acacia mearnsii* present. Found in East Tamar, Fingal valley and an outlying patch in the upper Derwent valley.	*Acacia dealbata, Acacia mearnsii, Acacia melanoxylon, Allocasuarina littoralis, Allocasuarina verticillata, Banksia marginata, Bursaria spinosa, Eucalyptus amygdalina, Eucalyptus obliqua, Eucalyptus ovata, Eucalyptus regnans, Eucalyptus viminalis, Exocarpos cupressiformis, Leptospermum scoparium var., Notelaea ligustrina, Olearia argophylla, Pittosporum bicolor, Pomaderris apetala, Pomaderris elliptica, Pomaderris pilifera, Zieria arborescens*
T14	Dry sclerophyll and damp sclerophyll with tea tree and paperbark scrub mosaics found around Port Sorell, the Tamar valley and extending through the north-east to Rushy Lagoon – Ansons Bay.	*Acacia dealbata, Acacia mearnsii, Acacia melanoxylon, Allocasuarina littoralis, Allocasuarina verticillata, Banksia marginata, Bursaria spinosa, Casuarina monilifera, Dodonaea viscosa, Eucalyptus amygdalina, Eucalyptus obliqua, Eucalyptus ovata, Eucalyptus viminalis, Exocarpos cupressiformis, Leptospermum lanigerum, Leptospermum scoparium var., Melaleuca ericifolia, Melaleuca squarrosa, Pomaderris elliptica, Pomaderris pilifera, Zieria arborescens*
WLP9	Wetland located east of Tyler corridor, in responsive geomorphology, 10-100 ha area, at 0-20 m elevation	
WLP 13	Wetland located east of Tyler corridor, in responsive geomorphology, 100-1000 ha area, at 0-20 m elevation	
DV-ME	*Melaleuca ericifolia* forest	

3. Maintaining Freshwater Ecosystem Values in the Great Forester River Catchment

Priority freshwater ecosystem values have been identified in this assessment of the Great Forester River catchment, and largely consist of native fish and riparian tree assemblages. Vulnerable, rare or endangered species and communities include the giant freshwater crayfish, the Scottsdale and Mt. Arthur burrowing crayfish, dwarf galaxias, the green and golden frog, two species of Hydrobiid snail, and a number of riparian floral species. Macroinvertebrate assemblages, including an isopod species, are also important in some areas. Trent Water also contains a number of threatened bird species and whitebait for which the flow regime in the Hurst Creek, Coxes Rivulet, Brewers Creek and the Brid River provide habitat, food supply and cues for migration.

A key consideration in the future management of the water resources of the catchment is the continued provision of a flow regime that meets the needs of these priority freshwater ecosystem values, and thereby contributes to their maintenance.

It is important that key characteristics of the natural flow regime are maintained to ensure the priority freshwater ecosystem values are maintained.

The key components of the natural flow regime that are relevant to the identified freshwater ecosystem values, and the ecosystem more broadly include:

1. base flows that sustain ecosystem health and populations of aquatic biota, and provide refuge during dry times;
2. moderate flows (freshes) and high flows that provide reproductive cues and dispersal mechanisms for some biota, and are important for transporting material downstream and maintaining geomorphic processes;
3. inundation patterns and distribution of floodwaters to support riparian zones, floodplains and wetlands, and to maintain connectivity and exchange of resources between rivers and floodplains;
4. natural flow variability, including seasonal patterns, frequency and duration of flows, and rates of rise and fall;
5. groundwater levels critical to surface water flows;
6. freshwater inputs to support estuarine processes and habitats.

These flow components support various ecological and geomorphological patterns and processes in a broad sense, and have varying degrees of influence on the various identified freshwater ecosystem values.

4. Further Information

The following references include detailed information on some of the topics discussed within the text of this document. They are available on the Department of Primary Industries and Water web site.

CFEV (2005). Conservation of Freshwater Ecosystem Values Project database. Water Resources Division, Department of Primary Industries and Water, Hobart, Tasmania.

DIPW (2007). Auditing Tasmania's Freshwater Ecosystem Values: Conservation of Freshwater Ecosystem Values Project: Technical Report. Department of Primary Industries and Water, Hobart, Tasmania.