2014–15 Basin-scale evaluation of Commonwealth environmental water – Ecosystem Diversity

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Final Report

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2014–15 Basin–scale evaluation of Commonwealth environmental water — Ecosystem Diversity

Report prepared for the Commonwealth Environmental Water Office by The Murray–Darling Freshwater Research Centre

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This report was prepared by The Murray–Darling Freshwater Research Centre (MDFRC). The aim of the MDFRC is to provide the scientific knowledge necessary for the management and sustained utilisation of the Murray–Darling Basin water resources. The MDFRC is a joint venture between La Trobe University and CSIRO. Additional investment is provided through the University of Canberra.

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The Murray–Darling Freshwater Research Centre offices are located on the land of the Latje Latje and Wiradjuri peoples. We undertake work throughout the Murray–Darling Basin and acknowledge the traditional owners of this land and water. We pay respect to Elders past, present and future.

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Abbreviations

ANAE	Australian National Aquatic Ecosystem (classification)
CEWO	Commonwealth Environmental Water Office
GIS	geographical information system
ha	hectare
LTIM	Long Term Intervention Monitoring
M&E Providers	Monitoring and Evaluation Providers
MDBA	Murray–Darling Basin Authority
MDB	Murray–Darling Basin
MDFRC	Murray–Darling Basin Freshwater Research Centre

1 Introduction

Ecosystem diversity describes the range of different ecosystem types within a specified area and it is an important component of biodiversity as a whole (Figure 1). Principles of ecosystem management suggest that a focus on protecting or restoring ecosystems also preserves valued species, habitats and critical processes within them in addition to vital ecosystem services that they may provide. Evaluating the extent to which the range of water-dependent ecosystem types have been protected or restored contributes to assessing the contribution of Commonwealth environmental water to biodiversity in the Murray–Darling Basin (MDB) as outlined in the Commonwealth Environmental Water Outcomes Framework (CEWH 2013).

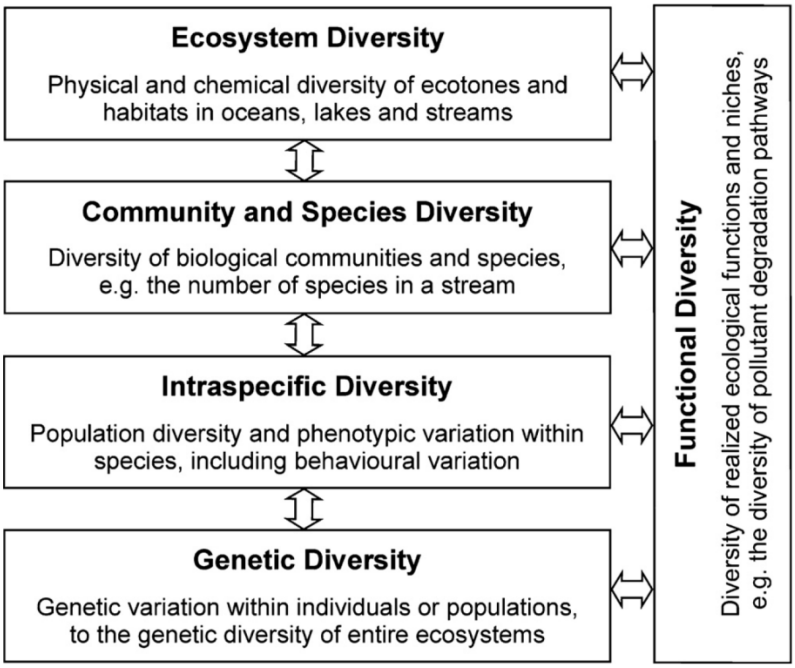

Figure 1. Hierarchical levels of biodiversity in aquatic ecosystems (from Geist 2011).

Simplistically, ecosystem diversity in the Basin is created by the interaction of hydrological and geomorphological heterogeneity creating a diverse mosaic of water-dependent habitats. In the absence of catastrophic disturbances, change in landscape-scale ecosystem diversity occurs relatively slowly over decadal time scales in response to changing climate, hydrological regimes and geo-physical processes (Figure 2). In the shorter term, water in the landscape influences ecosystem condition and connectivity within and among different ecosystem types, altering habitat values for flora and fauna and mediating biotic interactions and geo-physical processes.

Environmental watering primarily supports the maintenance of ecosystem diversity via the provision and maintenance of aquatic habitats, which in turn support a mosaic of water-dependent vegetation. Vegetation is an important biotic component of ecosystem diversity that both responds to landscape ecosystem diversity and also defines it by providing critical habitat structure and resources to support other flora and fauna. For the purposes of evaluating the contribution of Commonwealth environmental water to biodiversity in the Basin, Long Term Intervention Monitoring (LTIM) considers vegetation both as an integral component of Ecosystem Diversity (this report) and as a separate Basin matter, Vegetation Diversity, for evaluation at the Selected Area and Basin-scale (Gawne *et al.* 2014).

In theory, the delivery of environmental water has the potential to change physical landscape diversity through geomorphological processes (Figure 2), but in practice the frequency and volumes

of Commonwealth environmental water delivered are in concert with the natural hydrological regime rather than creating wholesale hydrological regime change that restructures the landscape. Large changes to the distribution and abundance of ecosystem types in the Basin are not expected within the duration of the LTIM project (5 years). This evaluation is therefore concerned with identifying the range and distribution of ecosystem types that receive Commonwealth environmental water rather than documenting change in landscape ecosystem diversity through time.

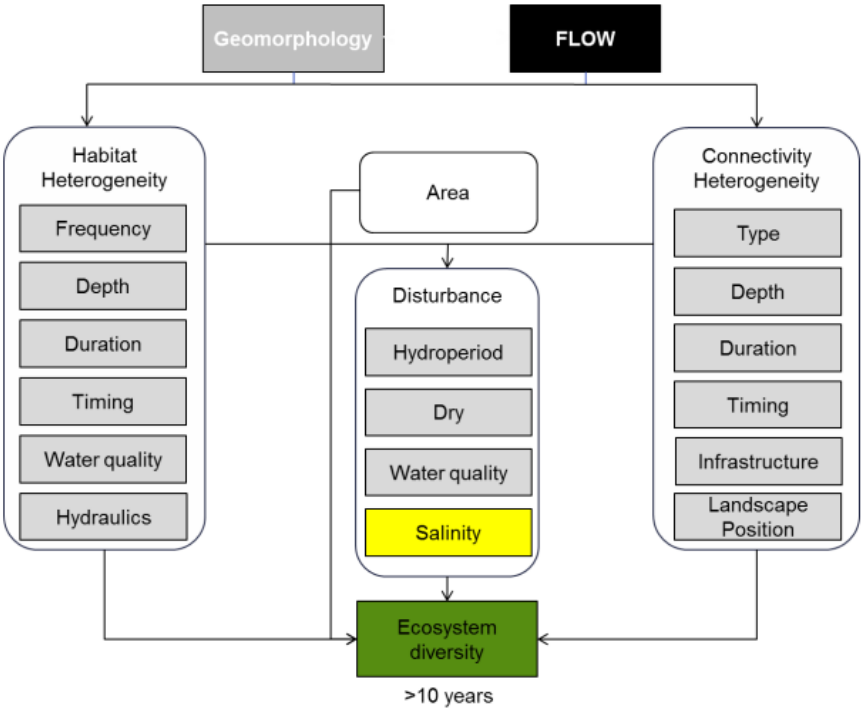

Figure 2. Cause-and-effect diagram depicting the influence of flow on landscape ecosystem diversity (from MDFRC 2013).

The Interim Australian National Aquatic Ecosystem (ANAE) Classification Framework was prepared by the Australian Government Aquatic Ecosystems Task Group (AETG) to provide a consistent ecosystem type classification that can inform cross-jurisdictional adaptive management of aquatic ecosystems (AETG 2012). The ANAE framework uses three levels of attribute data to classify ecosystem types (Figure 3). Level 1 attributes include national and regional data related to national climate, landform and hydrological patterns. Level 2 attributes are similar to Level 1 attributes but applied at subcatchment scales. Level 3 attributes are applied to individual aquatic ecosystems. The ANAE classification was applied to the best available jurisdictional mapping for Basin wetlands, floodplains and rivers by Brooks *et al.* (2014) to produce the interim ANAE classification of the MDB geographical information system (GIS) data set. This data set provides the LTIM project with a baseline map that quantifies the distribution and extent of different aquatic ecosystem types, providing a relevant and contemporary means for defining ecosystem diversity in the Basin. Overlaying a map of the Commonwealth environmental water that was delivered in the Basin can then identify which ecosystem types received Commonwealth environmental water to answer the following short-term (1-year) and long-term (5-year) Basin-scale evaluation question:

1. What did Commonwealth environmental water contribute to ecosystem diversity?

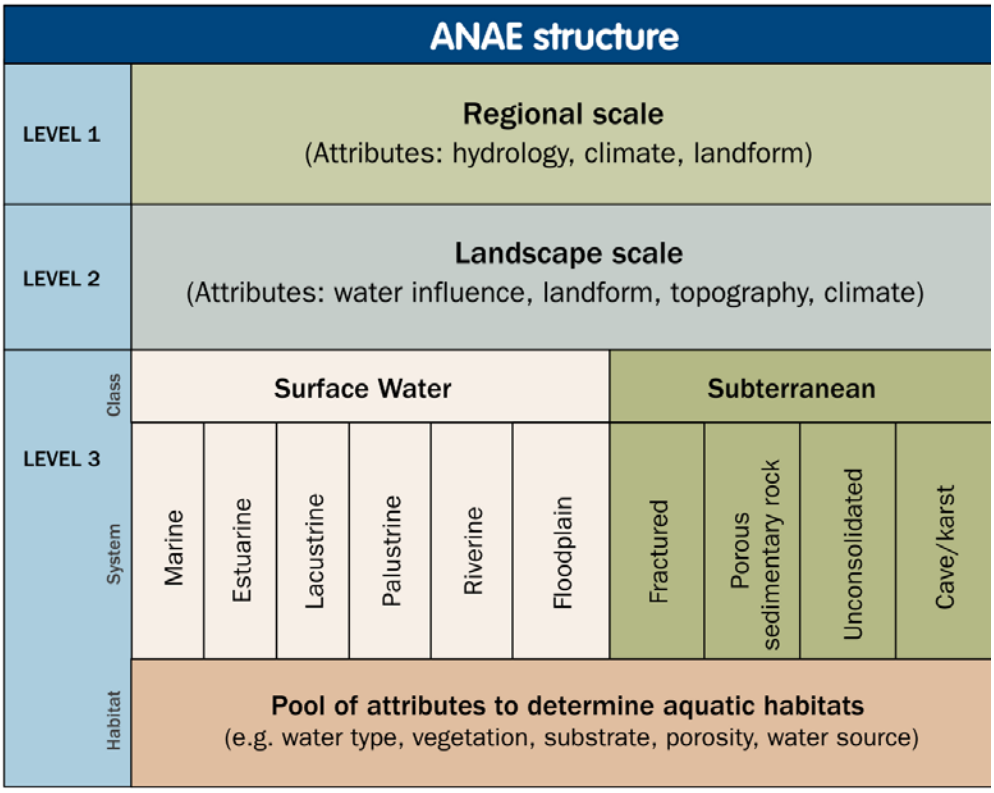

Figure 3. Structure and levels of the Interim Australian National Aquatic Ecosystem Classification Framework (AETG 2012).

Environmental watering outcomes that are quantified within a Selected Area may be dependent on the ecosystem types in which those outcomes are observed, and surrounding ecosystem types that define the context for those responses. Developing an understanding of how and why environmental watering outcomes differ among ecosystem types will inform adaptive management by: 1) fine-tuning expected outcomes from the delivery of Commonwealth environmental water in different ecosystems; 2) providing a template for extrapolating observed outcomes to similar landscapes in unmonitored areas; and 3) ultimately improving the efficiency, effectiveness and impact of the use of Commonwealth environmental water in the Basin.

2 Method

2.1 Data

Data inputs to the evaluation of ecosystem diversity include:

- Interim ANAE classification of the Murray–Darling Basin (Brooks *et al.* 2014) (Figure 4)
- inundation 2014–15 — a spatial representation of watering extent for Commonwealth environmental water delivered in the 2014–15 water year (Stewardson & Guarino 2016) (Figure 5)
- LTIM valleys — a spatial layer developed for the LTIM project evaluation that subdivides the Basin into the major river valleys (Figure 6). These boundaries were derived from the Sustainable Rivers Audit (SRA) catchment boundaries with a modification to separate the Edward-Wakool Catchment from the Central Murray.

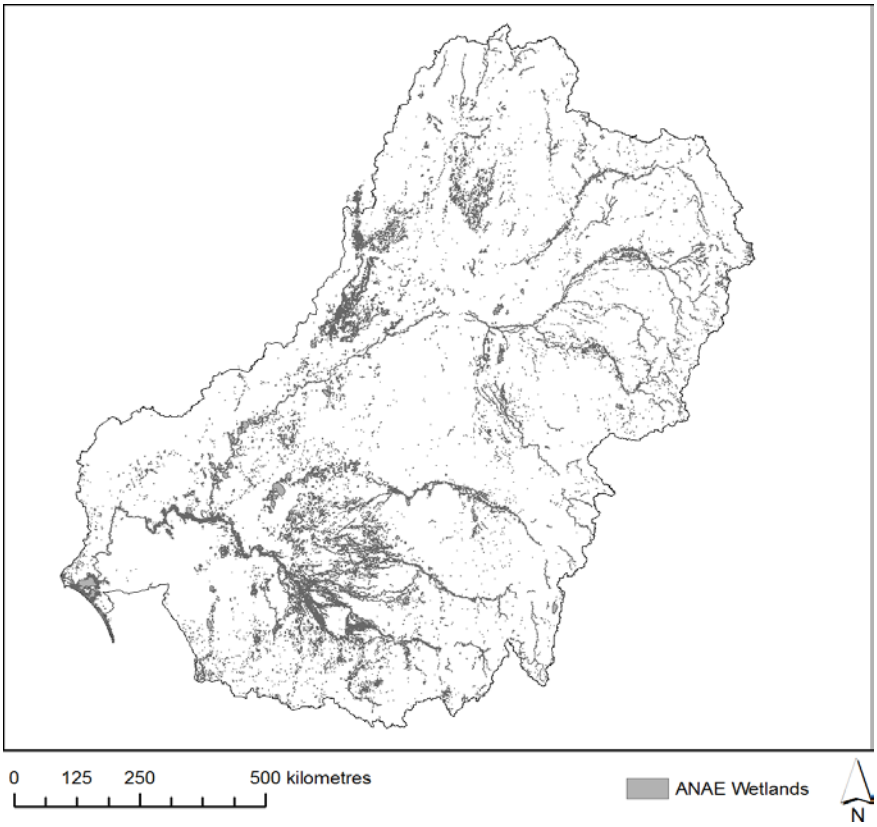

Figure 4. ANAE wetlands in the Murray–Darling Basin.

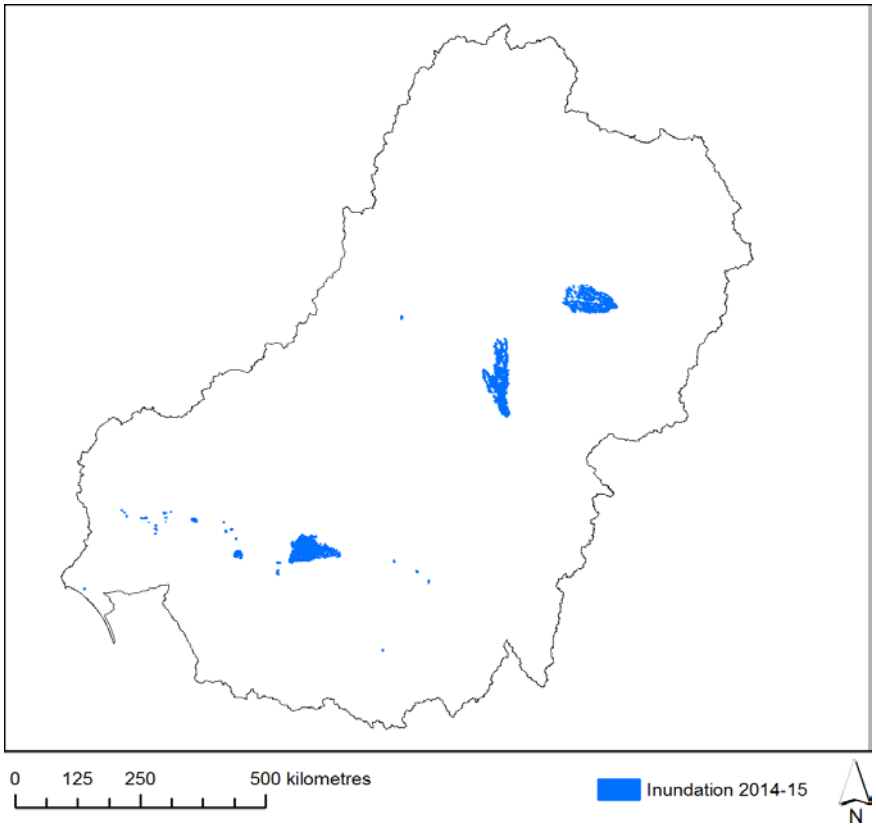

Figure 5. Out-of-channel inundation by Commonwealth environmental water 2014–15. (excludes in-channel flows, the Coorong, Lakes Alexandrina and Albert and the Murray Mouth)

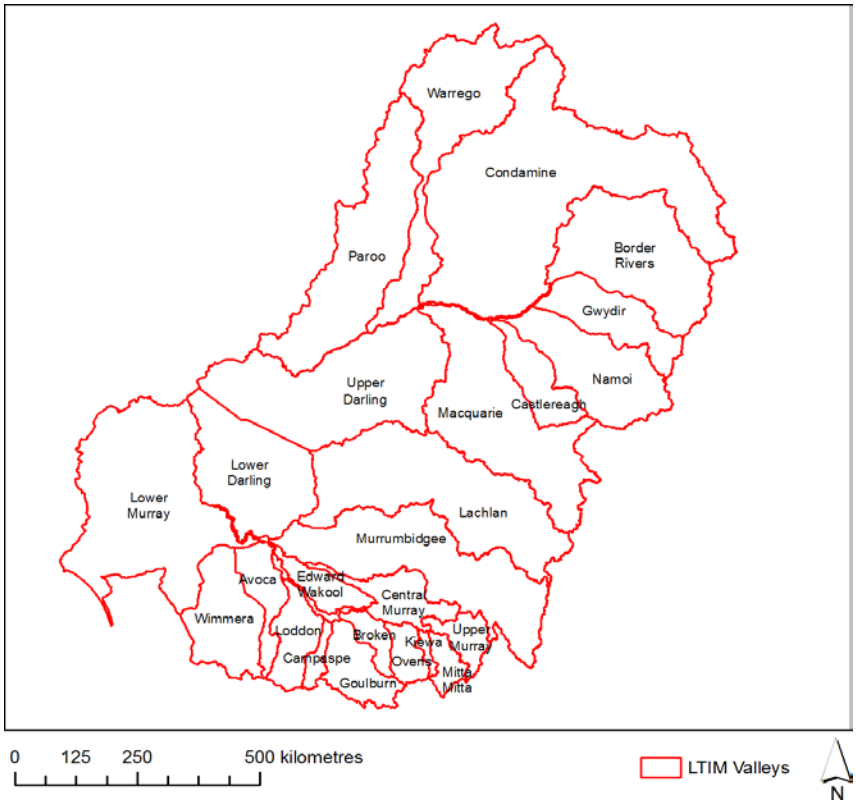

Figure 6. Catchment boundaries within the in the Murray–Darling Basin used in this evaluation.

Two different approaches were used to quantify the area of different ecosystem types that received Commonwealth environmental water:

1. Area inundated by Commonwealth environmental water = the sum of only the inundated areas of each wetland type, excluding the areas of wetlands that were not inundated.
2. Area influenced by Commonwealth environmental water = the sum of the all wetland areas that received water even if the inundation mapping showed that only a portion of the wetland was inundated.

The area *inundated* by Commonwealth environmental water is a 'literal' definition that represents the minimum contribution of Commonwealth environmental water in the landscape. The area *influenced* by Commonwealth environmental water acknowledges that aquatic ecosystems are complex interconnected systems and delivering water to part of a wetland contributes benefits to the entire wetland system. For example, filling a wetland depression may raise local water tables and benefit fringing vegetation, or provide feeding habitat for waterbirds that roost elsewhere in the wetland vegetation that was not inundated.

For wetlands, the total area *influenced* by Commonwealth environmental water is the appropriate measure of the contribution of Commonwealth environmental water to ecosystem diversity.

For floodplains, the area *inundated* by Commonwealth environmental water is used to measure the contribution of Commonwealth environmental water to ecosystem diversity. This more conservative measure is used for floodplains because: 1) there is low confidence in the MDB Wetlands v2 data set used by the interim ANAE classification to map floodplain ecosystems in the Basin (see discussion in Brooks *et al.* 2014); and 2) the mapping includes some very large floodplain areas mapped as single ecosystems that span thousands of square kilometres that would unduly distort the apparent contribution of Commonwealth environmental water.

GIS methodologies for calculating these areas are provided in Section 2.2.

An assessment of the ability of the interim ANAE classification to correctly identify ecosystem types at Selected Area sample point locations is included as Appendix A. This assessment shows that the ecosystem type mapping varies in quality among system types (riverine versus palustrine and lacustrine) and among the Selected Areas. While the ANAE data set is currently the best tool for investigating ecosystem diversity in the Basin, there is room for improvement that will occur during the LTIM project (refer Section 3.3).

The spatial representation of watering extent for Commonwealth environmental water delivered in 2014–15 includes only those discrete watering actions that resulted in inundation beyond the river channel (Stewardson & Guarino 2016). In-channel pulses, freshes and passing flows are currently not mapped, but will be developed and applied retrospectively by the LTIM project. From the perspective of the interim ANAE classification, the diversity of river channel ecosystem types is small, with most channels that receive Commonwealth environmental water in 2014–15 classified as ANAE type 'Rp1.4: Permanent lowland streams' or 'Rt1.4: Temporary lowland streams'. Near-channel inundation extents predicted by the Murray–Darling Basin Authority (MDBA) RIMFIM flood inundation model for the Murray River were excluded from this evaluation due to low confidence in the predicted mapping of Commonwealth environmental water inundation. The model predicted substantial areas of inundation from Commonwealth environmental water in areas that on-the-ground jurisdiction staff confirmed did not receive Commonwealth environmental water. The model is expected to contribute to future evaluation once the model behaviour is better understood.

Observations of increased inundation in the Coorong, Lake Alexandrina, Lake Albert and the Murray Mouth from Commonwealth environmental water were not made during 2014-15. Initial work has begun to model inundation in these areas and it is expected that observations from 2015-16 will assist with validating model outputs. These areas will be included in future evaluation of Ecosystem Diversity outcomes from Commonwealth environmental water when observational information or modelling of inundation is sufficient to support the evaluation.

2.2 GIS Workflows

All spatial layers are based on the 1994 Geocentric Datum of Australia (GDA94). Stated areas in this report are all in hectares and have been calculated in the Australia Albers Equal Area Conic projection to report accurate area measurements across the Basin.

Area of ANAE wetlands inundated by Commonwealth environmental water (inundated area only within each ANAE wetland)

GIS Workflow:

1. Intersect:
    a. ANAE Wetlands;
    b. Inundation14/15; and
    c. LTIM_Valleys_GDA94.
2. Calculate polygon area in hectares using equal area GDA94 Australian Albers projection.
3. Calculate summary statistics to sum areas of each ANAE wetland type per valley.

Area of ANAE wetlands influenced by Commonwealth environmental water (Commonwealth environmental water overlaps any portion of the wetland polygon)

GIS Workflow:

1. Select by location ANAE wetlands that intersect with the Inundation14/15.
2. Intersect result with LTIM_Valleys_GDA94 to provide breakup by catchment.
3. Calculate polygon area in hectares using equal area GDA94 Australian Albers projection.
4. Calculate summary statistics to sum areas of each ANAE wetland type per valley.

Area of ANAE floodplains inundated by Commonwealth environmental water (inundated area only within the ANAE floodplain)

GIS Workflow:

1. Intersect:
    a. Floodplain_MDBAv2_ANAE
    b. Inundation14/15
    c. LTIM_Valleys_GDA94
2. Calculate polygon areas in hectares using equal area GDA94 Australian Albers projection.
3. Calculate summary statistics to sum areas of each ANAE floodplain type per valley.

3 Ecosystem Diversity Basin-scale outcomes

3.1 Highlights

- Commonwealth environmental watering actions contributed to approximately 79,000 hectares (ha) of wetland and floodplain inundation across 11 river basins (including 5 of the 7 LTIM Selected Areas). This is in addition to elevated flows within channels that were not included in the Ecosystem Diversity evaluation this year.
- Commonwealth environmental watering actions contributed to the inundation of a wide range of ecosystem types within the Basin that included approximately 48% of the wetland types and 79% of the different floodplain types as determined by the interim ANAE classification of wetlands and floodplains in the MDB.

3.2 Evaluation of outcomes

This evaluation does not consider the details of individual watering events, and is ignorant of the specific timing and duration of Commonwealth environmental water in different areas of the landscape. The inundation map (Figure 5) collapses the maximum wetted extent of all watering actions during 2014–15 that included Commonwealth environmental water. The area inundated in each valley is presented in Table 1.

Within the constraints of the data discussed above, the contribution of Commonwealth environmental water to maintaining ecosystem diversity at the Basin-scale is encapsulated in Table 2 (wetlands) and Table 3 (floodplains). Results are sorted by the area influenced by Commonwealth environmental water (wetlands) or inundated by Commonwealth environmental water (floodplains) from most to least.

Commonwealth environmental watering actions contributed to the inundation of a wide range of ecosystem types within the Basin that included approximately 48% of the different wetland types and 79% of the different floodplain types.

A more detailed breakdown by valley is provided in Appendix B (wetlands) and Appendix C (floodplains).

Table 1. Area of each LTIM valley inundated by Commonwealth environmental water (excluding in-channel flows) in 2014–15, including both floodplain and wetland ecosystem types.

Valley name	Selected Area	Area inundated (ha)
Avoca		158
Border Rivers		1
Broken		151
Campaspe		–
Castlereagh		–
Central Murray		114
Condamine		–
Edward–Wakool	Edward–Wakool river system	–
Goulburn	Goulburn River	–
Gwydir	Gwydir river system	12 659
Kiewa		–
Lachlan	Lachlan river system	1138
Loddon		–
Lower Darling		108
Lower Murray	Lower Murray River	5856
Macquarie		16 850
Mitta Mitta		–
Murrumbidgee	Murrumbidgee river system	42 046
Namoi		–
Ovens		–
Paroo		–
Upper Darling		–
Upper Murray		–
Warrego	Junction of the Warrego and Darling rivers	29
Wimmera		–
Total area inundated (excluding channels)		**79 110**

Table 2. Contribution of Commonwealth environmental water to ecosystem diversity of wetlands at the Basin-scale, sorted by the area influenced (excludes in-channel flows, the Coorong, Lakes Alexandrina and Albert and the Murray Mouth).

Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Inundated*		Influenced*	
		Area (ha)	% of total	Area (ha)	% of total
Pp4.1: Permanent floodplain wetland	41 993	4685	11.2	18 645	44.4
Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	51 081	70	0.1	18 200†	35.6†
Pt1.1.1: Intermittent River red gum floodplain swamp	63 394	4130	6.5	10 043	15.8
Rp1.4: Permanent lowland streams	74 529	2135	2.9	3906	5.2
Pp2.1.1: Permanent floodplain tall emergent marshes	7809	471	6.0	3557	45.6
Rt1.4: Temporary lowland streams	222 996	624	0.3	2100	0.9
Pt3.1.2: Clay pans	51 071	1047	2.1	2098	4.1
Lt1.1: Temporary lakes	302 882	171	0.1	1593	0.5
Pt3.1.1: Floodplain clay pans	49 329	1354	2.7	1578	3.2
Pt4.1: Temporary floodplain wetland	122 815	463	0.4	1557	1.3
Lst2.1: Temporary saline floodplain lakes	10 636	1334	12.5	1383	13.0
Pt1.2.1: Intermittent Black box floodplain swamp	33 916	322	0.9	1188	3.5
Lp2.1: Permanent floodplain lakes	137 406	627	0.5	634	0.5
Pst1.1: Temporary saline swamp	17 020	411	2.4	551	3.2
Lt2.1: Temporary floodplain lakes	198 419	148	0.1	517	0.3
Pt2.3.1: Floodplain freshwater meadow	11 138	229	2.1	327	2.9
Pt1.7.2: Intermittent Lignum swamps	17 565	141	0.8	321	1.8
Pt1: Temporary swamps	3766	264	7.0	280	7.4
Pp2.3.1: Permanent floodplain grass marshes	431	23	5.3	217	50.3
Pt1.7.1: Intermittent Lignum floodplain swamp	26 521	120	0.5	205	0.8
Psp4: Permanent saline wetland	3965	157	4.0	158	4.0
Lp1.1: Permanent lakes	44 110	9	<0.1	150	0.3
Pst4: Temporary saline wetlands	11 294	101	0.9	102	0.9
Pt1.4.2: Intermittent River Cooba swamp	104	17	16.3	101	97.1
Pt2.2.2: Temporary sedge/grass/forb marsh	30 524	2	<0.1	92	0.3
Pt1.1.2: Intermittent River red gum swamps	8480	28	0.3	91	1.1
Pt1.6.1: Temporary woodland floodplain swamp	179 791	5	<0.1	87	<0.1
Pp4.2: Permanent wetland	22 354	16	0.1	51	0.2
Pt2.1.1: Temporary tall emergent floodplain marsh	50 687	42	0.1	42	0.1
Pp2.1.2: Permanent tall emergent marshes	134	25	18.7	31	23.1
Rp1.3: Permanent low energy upland streams	286	23	8.0	24	8.4
Pt1.6.2: Temporary woodland swamp	44 280	1	<0.1	15	<0.1
Pt1.3.2: Intermittent Coolibah swamp	1019	3	0.3	9	0.9
Pp2.3.2: Permanent grass marshes	183	7	3.8	7	3.8
Rt1: Temporary streams	294	3	1.0	5	1.7
Pp2.2.2: Permanent sedge/grass/forb marshes	2564	<0.1	<0.1	4	0.2
Lst1.1: Temporary saline lakes	12 634	4	<0.1	4	<0.1
Pt1.3.1: Intermittent Coolibah floodplain swamp	5173	<0.1	<0.1	3	0.1

Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Inundated*		Influenced*	
		Area (ha)	% of total	Area (ha)	% of total
Pt1.2.2: Intermittent Black box swamp	16 470	<0.1	<0.1	1	<0.1
Etd1.1.1: Tide dominated rocky shoreline	7	0	–	0	–
Etd1.2.1: Tide dominated saltmarsh	350	0	–	0	–
Etd1.2.2: Tide dominated mudflats and sandbars	64	0	–	0	–
Etd1.2.3: Tide dominated forests	19	0	–	0	–
Etd1.3.3: Tide dominated estuary	2189	0	–	0	–
Ewd1.2.3: Intertidal saltmarsh	166	0	–	0	–
Ewd1.2.4: Intertidal mudflats and sand bars	131	0	–	0	–
Ewd1.3.2: Coastal lagoon	20 923	0	–	0	–
Lp1.2: Permanent lakes with aquatic beds	1197	0	–	0	–
Lp2.2: Permanent floodplain lakes with aquatic beds	1868	0	–	0	–
Lsp1.1: Permanent saline lakes	5917	0	–	0	–
Lsp1.2: Permanent saline lakes with aquatic beds	18	0	–	0	–
Lsp2.1: Permanent saline floodplain lakes	13 178	0	–	0	–
Lst1.2: Temporary saline lakes with aquatic beds	1905	0	–	0	–
Lst2.2: Temporary saline floodplain lakes with aquatic beds	391	0	–	0	–
Lt1.2: Temporary lakes with aquatic beds	804	0	–	0	–
Lt2.2: Temporary floodplain lakes with aquatic beds	2520	0	–	0	–
Pp1.1.2: Permanent paperbark swamps	1	0	–	0	–
Pp2.2.1: Permanent floodplain sedge/grass/forb marshes	2275	0	–	0	–
Pp2.4.1: Permanent floodplain forb marshes	157	0	–	0	–
Pp2.4.2: Permanent forb marshes	32	0	–	0	–
Pp3: Peat bogs and fen marshes	173	0	–	0	–
Pps5: Permanent springs	130	0	–	0	–
Psp1.1: Saline paperbark swamp	137	0	–	0	–
Psp2.1: Permanent salt marsh	3	0	–	0	–
Psp3.1: Permanent seagrass marshes	16 328	0	–	0	–
Pst2.2: Temporary salt marsh	3702	0	–	0	–
Pst3.2: Salt pans and salt flats	13 186	0	–	0	–
Pt1.4.1: Intermittent River Cooba floodplain swamp	3	0	–	0	–
Pt1.5.1: Temporary paperbark floodplain swamp	32	0	–	0	–
Pt1.5.2: Temporary paperbark swamp	89	0	–	0	–
Pt2.1.2: Temporary tall emergent marsh	16 296	0	–	0	–
Pt2.3.2: Freshwater meadow	14 772	0	–	0	–
Pt4.2: Temporary wetland	129 883	0	–	0	–
Pu1: Unspecified wetland	1 768	0	–	0	–

* Area inundated/influenced by Commonwealth environmental water: see Section 2.1 for definitions.

† The interim ANAE classification maps the broad extent of the western Warrego–Darling floodplain as a single polygon with an area of 18,200 ha; however, only 70 ha were inundated. In this case, it is unlikely that the entire area was influenced by Commonwealth environmental water.

Table 3. Contribution of Commonwealth environmental water to ecosystem diversity of floodplains at the Basin-scale, sorted by the area inundated (excludes in-channel flows, the Coorong, Lakes Alexandrina and Albert and the Murray Mouth).

Australian National Aquatic Ecosystem (ANAE) floodplain type	Total area (ha)	Inundated area (ha)	% of total
F2.4: Shrubland floodplain	347 053.6	17 968.7	5.18
F1.2: River red gum forest floodplain	271 383.5	10 072.2	3.71
F3.2: Sedge/forb/grassland floodplain	1 164 024.5	8784.3	0.75
F1.4: River red gum woodland floodplain	225 899.4	4605.7	2.04
F4: Floodplain with unspecified vegetation	439 998.5	4267.6	0.97
F.1.8: Black box woodland floodplain	244 910.8	1473.9	0.60
F1.10: Coolibah woodland and forest floodplain	1 804 888.8	1048.5	0.06
F1.9: Upland coolibah woodland and forest floodplain	2830.1	162.6	5.75
F2.2: Lignum shrubland floodplain	203 126.5	131.6	0.06
F1.12: Woodland floodplain	533 328.4	130.5	0.02
F1.3: Upland River red gum woodland floodplain	2513.1	20.3	0.81
F1.1: Upland river red gum forest floodplain	774.5	16.8	2.17
F2.1: Upland lignum shrubland floodplain	486.8	2.8	0.58
F3.1: Upland sedge/forb/grassland floodplain	2438.5	1.5	0.06
F1.11: River cooba woodland floodplain	153.1	0.9	0.60
F1.5: Upland black box forest floodplain	113.7	0	0
F1.6: Black box forest floodplain	195 192.7	0	0
F1.7: Upland black box woodland floodplain	1389.5	0	0
F2.3: Upland shrubland floodplain	1518.2	0	0

3.3 Adaptive management

Over time, a number of improvements are expected to occur that will increase capacity to evaluate the contribution of Commonwealth environmental water to ecosystem diversity. These include:

1) Improved mapping and classification of wetlands —LTIM is specifically contributing to this process through the validation of ecosystem types within each Selected Area to provide a level of ground-truthing not previously possible in the application of the interim ANAE classification and typology developed by Brooks *et al.* (2014). The MDBA is also currently investigating the potential for updating the interim classification with new mapping and attribute data sets to improve accuracy and confidence in the assignment of attributes and ecosystem type (S Brooks, in preparation). Future refinements to the ANAE data set can be re-evaluated against the hydrological data for any given period.
2) The LTIM Basin-scale hydrology evaluation will improve modelling of watering extent and duration for watering actions within Selected Areas and in unmonitored areas of the Basin. These data will augment observational data provided by Monitoring and Evaluation (M&E) Providers and water delivery partners and will increasingly be an important component of the ecosystem diversity evaluation as the models are refined and confidence in them improves. It is expected that the 2nd year evaluation will include mapping of in-channel watering by flow type (e.g. the longitudinal extent of freshes versus bank full flows within

the drainage network) and inundation of the Coorong, Lakes Alexandrina and Albert and the Murray Mouth. Improved hydrological modelling of watering extent can be applied retrospectively to previous years' environmental watering to keep evaluation consistent between years.

The ecosystem typology of the ANAE classification provides a framework for extrapolating outcomes to unmonitored sites. Understanding how biotic and functional responses vary among ecosystem types that are monitored within Selected Areas will permit extrapolation of Selected Area outcomes to watering events that might occur in the same ecosystem types located in other areas of the Basin that are not being monitored. The intersection of ecosystem type and watering extent mapping will be provided as an input to evaluation of other Basin Matters as capacity and confidence in predicting outcomes in unmonitored valleys increases.

4 Contribution to achievement of Basin Plan objectives

The Ecosystem Diversity component of the Basin evaluation contributes to the Basin Plan objective for Biodiversity under Section 8.05 of the Basin plan.

The Commonwealth currently does not have 1-year or 5-year expected outcomes for ecosystem diversity (Table 4) and water is not currently delivered with direct understanding of the contribution of Commonwealth environmental watering to ecosystem diversity at the Basin-scale. However, this evaluation provides a foundation from which Expected Outcomes for ecosystem diversity may be developed in the future. It is premature to do so in this initial year primarily because a single year cannot be considered representative or typical of years to come, and secondly, improvements to the interim ANAE classification that are currently in planning will alter the view of the contribution of Commonwealth environmental water to ecosystem diversity. The pragmatic approach is to wait and accumulate 3–4 years of inundation data and, at that later time, use the improved ANAE classification to analyse a number of watering years across the LTIM project in a consistent manner to facilitate the development of appropriate 1–5-year Expected Outcomes for ecosystem diversity.

This evaluation also contributes indirectly to additional Basin Plan objectives by informing the evaluation of the Vegetation and Generic Diversity matters within the LTIM project.

Table 4. Commonwealth Environmental Outcomes framework for ecosystem diversity.

Basin Plan objectives	Basin outcomes	5–year Expected Outcomes	1–year Expected Outcomes
Biodiversity (Basin Plan S. 8.05)	Ecosystem diversity	None identified	None identified

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Appendix A. Assessing the interim ANAE classification of the MDB

Confidence in the accuracy of mapping and the Australian National Aquatic Ecosystem (ANAE) classification of ecosystem types in the interim classification of the Murray–Darling Basin (MDB) varies throughout the Basin with the highest confidence in Queensland, Victoria and South Australia, and the lowest confidence in New South Wales (NSW) (Brooks et al. 2014) (Figure A1). Within NSW, the confidence in wetland mapping varies greatly, with the Edward–Wakool, Murrumbidgee and Namoi valleys having extremely detailed wetland mapping from past initiatives by the Murray Wetlands Working Group and Murrumbidgee and Namoi Catchment Management Authorities to map wetlands in their region. The Edward–Wakool catchment was mapped with high accuracy by the Murray Wetlands Working Group but not assigned to riverine, lacustrine or palustrine system types, which lowered the confidence in their ANAE classification (Figure A1). In contrast, for the Lachlan river system, Gwydir river system and Junction of the Warrego and Darling rivers Selected Areas, the ANAE wetland mapping was derived from state hydro-areas mapping that used remote sensing of surface water (Brooks *et al.* 2014). This captured open water but greatly underestimated the extent of vegetated wetlands. The inclusion of the interim ANAE floodplain (MDBv2) classification provides a surrogate measure (floodplain ecosystem diversity) for these poorly mapped vegetated wetland areas (see Figure A2). The interim ANAE floodplain (MDBv2) classification is also not without its own problems, but these are more related to the mapped floodplain extent, rather than the application of the ANAE classification to those extents (discussed in detail in Brooks *et al.* 2014). This Long Term Intervention Monitoring (LTIM) evaluation includes only the areas that were inundated by Commonwealth environmental water which itself provides additional validation that these mapped inundated areas are indeed floodplains.

To assess the rate and type of errors in the interim ANAE classification, Monitoring and Evaluation (M&E) Providers manually reclassified the ANAE ecosystem type at each sample point within the Selected Area through application of the LTIM Ecosystem Type Category 1 Standard Method. The alignment between the existing interim ANAE classification, and the classification applied by the Selected Areas is presented in Table A1. For riverine sites, the ANAE classifications was correct and this includes all LTIM sample points in the Lower Murray River, Goulburn River and Edward–Wakool river system Selected Areas and riverine sites in the Gwydir river system and Junction of the Warrego and Darling rivers Selected Areas (Table A1). There was 100% agreement in the ANAE classification of wetlands in the Murrumbidgee river system Selected Area, reinforcing the higher confidence in the mapping and the ANAE classification of wetlands in this catchment (Table A1). Several wetlands in the Lowbidgee area were mapped by circular placeholders in the interim ANAE classification mapping (correct classification but inaccurate boundary mapping) and these extents have now been mapped to a high resolution by the Murrumbidgee team. In contrast, there was poor alignment of the Selected Area and interim ANAE classifications in the Lachlan river system, Gwydir river system and Junction of the Warrego and Darling rivers Selected Areas. In these Selected Areas, limitations of the mapping discussed earlier mean that sample points on the fringes of vegetated wetlands often map to the 'white-space' between the open water bodies (classified ANAE type = 'none'). In the Gwydir river system Selected Area, limited vegetation mapping in the region constrains much of the interim ANAE floodplain classification to the ecosystem type 'F4: Floodplain with unspecified vegetation'; however the LTIM M&E Providers are able to correct the classification with their local knowledge (Table A1).

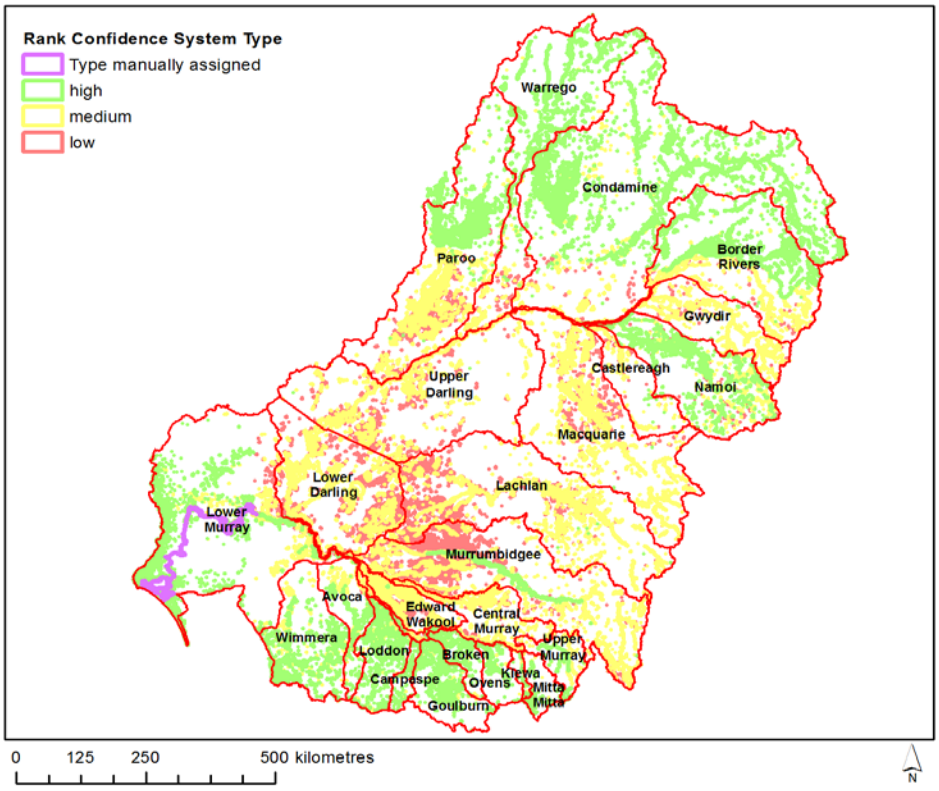

Figure A1. Interim ANAE classification of the MDB confidence in the System Type attribute for wetland feature mapping (Brooks *et al.* 2014).

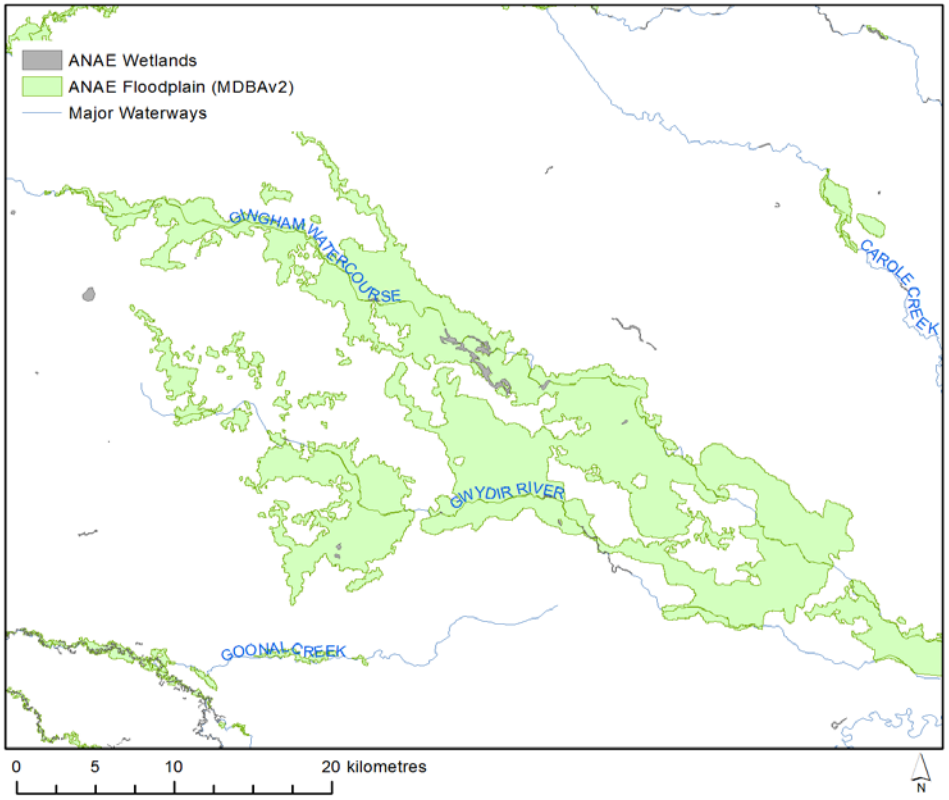

Figure A2. Simplified representation of mapped wetland extent and floodplain extent for the Gwydir wetlands from the interim ANAE classification of the MDB (Brooks *et al.* 2014).

Table A1. Comparison of the ANAE type from the interim classification of the MDB (Brooks et al. 2014) at LTIM sample point locations with corrected types assigned by M&E Providers within the LTIM Selected Areas.

Selected Area	Sample point code	Sample point description	Classified ANAE type	Selected Area assigned ANAE type
Edward–Wakool river system	Four posts youth camp	Four posts youth camp	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Koondrook State Forest	Koondrook State Forest	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Wakool River Greenhills Road	Wakool River Greenhills Road	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Llanos Park2	Llanos Park2	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Llanos Park1	Llanos Park1	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Ramley2	Ramley2	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Ramley1	Ramley1	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Widgee, Wakool River1	Widgee, Wakool River1	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Cummins	Cummins	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Rail Bridge DS	Rail Bridge DS	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Barham Bridge	Barham Bridge	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Carmathon Reserve	Carmathon Reserve	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Widgee, Yallakool Ck	Widgee, Yallakool Ck	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Possum Reserve	Possum Reserve	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Tralee1	Tralee1	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Mascott	Mascott	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Whymoul NP	Whymoul NP	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Yarranvale	Yarranvale	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Yallakool/Back Ck Junction	Yallakool/Back Ck Junction	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Weir1	Weir1	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Merran Downs	Merran Downs	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Noorong1	Noorong1	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	La Rosa	La Rosa	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Werrai Station	Werrai Station	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Gee Gee Bridge	Gee Gee Bridge	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams

Selected Area	Sample point code	Sample point description	Classified ANAE type	Selected Area assigned ANAE type
Edward–Wakool river system	Erinundra	Erinundra	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Burswood Park	Burswood Park	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Balpool	Balpool	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Merran Creek Bridge	Merran Creek Bridge	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Glenbar	Glenbar	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Niemur Valley	Niemur Valley	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Moulamien US Billabong Creek	Moulamien US Billabong Creek	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Edward–Wakool river system	Kyalite State Forest	Kyalite State Forest	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Murrumbidgee River	Buckingbong Station	Buckingbong Station	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Murrumbidgee River	Willow Isles	Willow Isles	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Murrumbidgee River	Gooragool	Gooragool	Pp4.1: Permanent floodplain wetland	Pp4.1: Permanent floodplain wetland
Murrumbidgee River	Eulimbah Swamp	Eulimbah Swamp	Pt4.1: Temporary floodplain wetland	Pt4.1: Temporary floodplain wetland
Murrumbidgee River	Birdcage	Birdcage	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Murrumbidgee River	Toganmain US	Toganmain US	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Murrumbidgee River	Rudds Point	Rudds Point	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Murrumbidgee River	Toganmain DS	Toganmain DS	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Murrumbidgee River	Gundaline Claybar	Gundaline Claybar	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Murrumbidgee River	Nap Nap	Nap Nap	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Murrumbidgee River	McKennas Lagoon	McKennas Lagoon	Pt1.1.1: Intermittent River red gum floodplain swamp	Pt1.1.1: Intermittent River red gum floodplain swamp
Murrumbidgee River	Two Bridges Swamp	Two Bridges Swamp	Pt1.1.1: Intermittent River red gum floodplain swamp	Pt1.1.1: Intermittent River red gum floodplain swamp
Murrumbidgee River	Mercedes Swamp	Mercedes Swamp	Pt1.1.1: Intermittent River red gum floodplain swamp	Pt1.1.1: Intermittent River red gum floodplain swamp
Lachlan river system	CL-P	Clear Lake – Plot	none	Pt1.1.1: Intermittent River red gum floodplain swamp
Lachlan river system	LM-P	Lake Marool – Plot	none	Lt2.1: Temporary floodplain lakes
Lachlan river system	LII-P	Lake Ita Inlet – Plot	none	Pt1.2.1 Intermittent Black box floodplain swamp

Selected Area	Sample point code	Sample point description	Classified ANAE type	Selected Area assigned ANAE type
Lachlan river system	TV-P	The Ville – Plot	none	Pt1.1.1: Intermittent River red gum floodplain swamp
Lachlan river system	LBU-T	Lake Bullogal – Transect	none	Pt1.1.1: Intermittent River red gum floodplain swamp
Lachlan river system	LBU-P	Lake Bullogal – Plot	none	Pt1.1.1: Intermittent River red gum floodplain swamp
Lachlan river system	BO-T	Booligal – Transect	none	Pt1.2.1 Intermittent Black box floodplain swamp
Lachlan river system	BO-P	Booligal – Plot	none	Pt1.2.1 Intermittent Black box floodplain swamp
Lachlan river system	TL-P	Tom's Lake – Plot	none	Pt1.2.1 Intermittent Black box floodplain swamp
Lachlan river system	WB-T	Whealbah – Transect	none	Pt1.1.1: Intermittent River red gum floodplain swamp
Lachlan river system	WB-P	Whealbah – Plot	Rp1.4: Permanent lowland streams	Pt1.1.1: Intermittent River red gum floodplain swamp
Lachlan river system	WB	Whealbah	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Lachlan river system	CC	Cowl Cowl	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Lachlan river system	HW-P	Hazelwood – Plot	none	Pt1.1.1: Intermittent River red gum floodplain swamp
Lachlan river system	HW-T	Hazelwood – Transect	none	Pt1.1.1: Intermittent River red gum floodplain swamp
Lachlan river system	uHIL	U/S Hillston	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Lachlan river system	NR	Nature Reserve	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Lachlan river system	MER	Merrowie Inlet	none	Rp1.4: Permanent lowland streams
Lachlan river system	WOO	Woolshed	none	Rp1.4: Permanent lowland streams
Lachlan river system	dWIL	D/S Willandra Weir	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Lachlan river system	WAL	Wallanthery	none	Rp1.4: Permanent lowland streams
Lachlan river system	WALb	Wallanthery Bridge	none	Rp1.4: Permanent lowland streams
Lachlan river system	S9	Site 9	none	Rp1.4: Permanent lowland streams
Lachlan river system	HUN	Hunthawang	none	Rp1.4: Permanent lowland streams
Lower Murray River	CHOW_DSMON		Rp1: Permanent Streams	*
Lower Murray River	LK1DS_8km		Etd1.3.3: Tide dominated estuary	*

Selected Area	Sample point code	Sample point description	Classified ANAE type	Selected Area assigned ANAE type
Lower Murray River	LK1DS_50km		Lp2.1: Permanent floodplain lakes	*
Lower Murray River	LK1DS_73km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK1DS_112km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK1DS_150km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK1DS_207km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK1DS_254km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK1DS_262km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK1DS_265km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK1DS_267km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK2DS_274km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK2DS_286km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK2DS_302km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK2DS_323km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK2DS_326km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK2DS_336km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK2DS_361km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK3DS_361km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK3DS_376km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK3DS_392km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK3DS_400km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK3DS_417km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK3DS_419km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK3DS_426km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK3DS_431km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK4DS_431km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK4DS_494km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK4DS_516km		Rp1.4: Permanent lowland streams	*

Selected Area	Sample point code	Sample point description	Classified ANAE type	Selected Area assigned ANAE type
Lower Murray River	LK5DS_516km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK5DS_537km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK5DS_563km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK6DS_563km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK6DS_608km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK6DS_611km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK6DS_616km		Rp1.4: Permanent lowland streams	*
Lower Murray River	LK6DS_620km		Rp1.4: Permanent lowland streams	*
Junction of the Warrego and Darling rivers	WD_NSW425004	Darling at Louth	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Junction of the Warrego and Darling rivers	WD_WEIR20A	Weir 20A	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Junction of the Warrego and Darling rivers	WD_NSW421012	Macquarie River @ Carinda (Bells Bridge)	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Junction of the Warrego and Darling rivers	WD_DARPUMP	Darling Pumps (Dar1)	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Junction of the Warrego and Darling rivers	WD_ROSS	Ross Billabong	None	Lt2.1: Temporary floodplain lakes
Junction of the Warrego and Darling rivers	WD_HYD_WF5	Site 5 WF	None	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh
Junction of the Warrego and Darling rivers	WD_HELLSG	Hells Gate	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Junction of the Warrego and Darling rivers	WD_WEIR19A	Weir 19A	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Junction of the Warrego and Darling rivers	WD_NSW425037	Darling @ D/S Weir 19A	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Junction of the Warrego and Darling rivers	WD_VEG_5	Coolibah woodland wetland SITE 1	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	F1.10: Coolibah woodland and forest floodplain
Junction of the Warrego and Darling rivers	WD_VEG_6	Coolibah woodland wetland SITE 2	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	F1.8: Black box woodland floodplain
Junction of the Warrego and Darling rivers	WD_WF1	Western Floodplain 1	None	Lt2.2: Temporary floodplain lakes with aquatic beds
Junction of the Warrego and Darling rivers	WD_HYD_WF1	Site 1 WF	F1.12: Woodland floodplain	F1.10: Coolibah woodland and forest floodplain

Selected Area	Sample point code	Sample point description	Classified ANAE type	Selected Area assigned ANAE type
Junction of the Warrego and Darling rivers	WD_VEG_8	Lignum shrubland wetland SITE 2	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	F2.2: Lignum shrubland floodplain
Junction of the Warrego and Darling rivers	WD_NSW422006	Culgoa River @ DS Collerina	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Junction of the Warrego and Darling rivers	WD_NSW423002	Warrego @ Fords Bywash	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Junction of the Warrego and Darling rivers	WD_NSW423001	Warrego @ Fords Bridge	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams
Junction of the Warrego and Darling rivers	WD_NSW416027	Gil Gil Creek @ Weemelah	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Junction of the Warrego and Darling rivers	WD_NSW416001	Barwon River @ Mungindi	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams
Junction of the Warrego and Darling rivers	WD_NSW418055	Mehi River @ Collarenebri	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Goulburn River	Goulburn Weir	Goulburn Weir	Rp1.4: Permanent lowland streams	*
Goulburn River	Murchison	Murchison	Rp1.4: Permanent lowland streams	*
Goulburn River	Moss Road	Moss Road	Rp1.4: Permanent lowland streams	*
Goulburn River	Cable Hole	Cable Hole	Rp1.4: Permanent lowland streams	*
Goulburn River	Toolamba/Cemetary Bend	Toolamba/Cemetary Bend	Rp1.4: Permanent lowland streams	*
Goulburn River	Darcy's Track (Pyke Road us Shepparton)	Darcy's Track (Pyke Road us Shepparton)	Rp1.4: Permanent lowland streams	*
Goulburn River	Shepparton Weir	Shepparton Weir	Rp1.4: Permanent lowland streams	*
Goulburn River	Shepparton Causeway	Shepparton Causeway	Rp1.4: Permanent lowland streams	*
Goulburn River	Zeerust	Zeerust	Rp1.4: Permanent lowland streams	*
Goulburn River	Loch Garry Gauge	Loch Garry Gauge	Rp1.4: Permanent lowland streams	*
Goulburn River	Pogue Road	Pogue Road	Rp1.4: Permanent lowland streams	*
Goulburn River	Kotpuna	Kotpuna	Rp1.4: Permanent lowland streams	*
Goulburn River	McCoys Bridge	McCoys Bridge	Rp1.4: Permanent lowland streams	*
Goulburn River	Murrumbidgee Road	Murrumbidgee Road	Rp1.4: Permanent lowland streams	*
Goulburn River	Yambuna	Yambuna	Rp1.4: Permanent lowland streams	*
Goulburn River	Sun Valley Road	Sun Valley Road	Rp1.4: Permanent lowland streams	*
Goulburn River	Stewarts Bridge	Stewarts Bridge	Rp1.4: Permanent lowland streams	*

Selected Area	Sample point code	Sample point description	Classified ANAE type	Selected Area assigned ANAE type
Goulburn River	Murray Junction	Murray Junction	Rp1.4: Permanent lowland streams	*
Goulburn River	Broken River at Central Avenue	Broken River at Central Avenue	Rp1.4: Permanent lowland streams	*
Gwydir river system	GWYD03_003	Krui	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Gwydir river system	GWYD03_005	Wirallah	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Gwydir river system	GWYD03_001	Courallie	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Gwydir river system	GWYD02_005	Mehi 49	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Gwydir river system	GWY_418048	Moonim @ Combadello	None	Rp1.4: Permanent lowland streams
Gwydir river system	GWYD02_004	Mehi 82	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Gwydir river system	GWYD02_001	Chinook	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Gwydir river system	GWYD01_004	Norwood	Rp1.3: Permanent low energy upland streams	Rp1.3: Permanent low energy upland streams
Gwydir river system	GWY_GW2	Gwydir River downstream Tyreelaroi	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Gwydir river system	GWYD04_001	Gingham 4	Rt1.3: Temporary low energy upland streams	Rt1.3: Temporary low energy upland streams
Gwydir river system	GWY_418074	Gingham @ Teralba	Rt1.3: Temporary low energy upland streams	Rt1.3: Temporary low energy upland streams
Gwydir river system	GWY_418053	Gwydir RIver @ Brageen Crossing	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams
Gwydir river system	GWY_418066	Gwydir @ Millewa	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams
Gwydir river system	GWYD01_010	Boronderra	Rp1.4: Permanent lowland streams	Rp1.4: Permanent lowland streams
Gwydir river system	GWY_ODF	Old Dromana Floodplain Transect	F3.2: Sedge/forb/grassland floodplain	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_ODR	Old Dromana Ramsar	F3.2: Sedge/forb/grassland floodplain	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_ODR1	Old Dromana Ramsar 1	F3.2: Sedge/forb/grassland floodplain	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_WANDW	Wandoona Waterhole	None	LT2.2 Temporary floodplain lakes with aquatic beds
Gwydir river system	GWY_ODN1	Old Dromana Nursery 1	F3.2: Sedge/forb/grassland floodplain	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_OLDB	Old Dromana Rushes	F3.2: Sedge/forb/grassland floodplain	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_ODR3	Old Dromana Ramsar 3	F3.2: Sedge/forb/grassland floodplain	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_418078	Gwydir @ Allambie Bridge	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams

Selected Area	Sample point code	Sample point description	Classified ANAE type	Selected Area assigned ANAE type
Gwydir river system	GWY_ODR2	Old Dromana Ramsar 2	F3.2: Sedge/forb/grassland floodplain	F1.10: Coolibah woodland and forest floodplain
Gwydir river system	GWY_ODN2	Old Dromana Nursery 2	F3.2: Sedge/forb/grassland floodplain	F1.10: Coolibah woodland and forest floodplain
Gwydir river system	GWY_ODB1	Old Dromana Bolboshc	F3.2: Sedge/forb/grassland floodplain	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_ODD	Old Dromana Dam	None	LT2.2: Temporary floodplain lakes with aquatic beds
Gwydir river system	GWY_ODE1	Old Dromana Elders 1	F3.2: Sedge/forb/grassland floodplain	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWYD04_003	Woodbine 1	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams
Gwydir river system	GWY_JACF	Jackson	F4: Floodplain with unspecified vegetation	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWYD04_005	Gingham 49	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams
Gwydir river system	GWY_WEST1	Westholme 1	F4: Floodplain with unspecified vegetation	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_BUN1	Bunnor 1	F4: Floodplain with unspecified vegetation	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_GLR1	Goddards Lease Ramsar Site 1	F4: Floodplain with unspecified vegetation	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_WESTCOOL	Westholme Coolibah	F4: Floodplain with unspecified vegetation	F1.10: Coolibah woodland and forest floodplain
Gwydir river system	GWY_WESTNW	Westholme NW	F4: Floodplain with unspecified vegetation	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_GL	Goddard's Lease	F4: Floodplain with unspecified vegetation	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_LYN3	Lynworth 3	F4: Floodplain with unspecified vegetation	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_LL	Little Lagoon	F4: Floodplain with unspecified vegetation	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_LYNF	Lynworth Floodplain Transect	F4: Floodplain with unspecified vegetation	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_418077	Gingham @ Gingham Waterhole	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams
Gwydir river system	GWY_LYND	Lynworth Dam	None	Lt2.2: Temporary floodplain lakes with aquatic beds
Gwydir river system	GWY_LYN1	Lynworth 1	F4: Floodplain with unspecified vegetation	F1.11: River Cooba Woodland Floodplain

Selected Area	Sample point code	Sample point description	Classified ANAE type	Selected Area assigned ANAE type
Gwydir river system	GWY_MUNW	Mungwonga Wetland	F4: Floodplain with unspecified vegetation	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_RCL	Racecourse Lagoon	None	Lt2.2: Temporary floodplain lakes with aquatic beds
Gwydir river system	GWY_MUNG1	Mungwonga 1	F4: Floodplain with unspecified vegetation	F3.2: Sedge/forb/grassland floodplain
Gwydir river system	GWY_418079	Gingham @ Gingham Bridge	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams
Gwydir river system	GWY_BOYW_W	Boyanga Waterhole (Western)	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams
Gwydir river system	GWY_BOYW_E	Boyanga Waterhole (Eastern)	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams
Gwydir river system	GWY_OLDBW	Old Boyanga West	Rt1.4: Temporary lowland streams	Rt1.4: Temporary lowland streams

*Lower Murray and Goulburn Selected Areas adopted the riverine ecosystem type classification and did not provide alterative data. Note: green = the two assignment agree; red = a different type was assigned by the Selected Area.

Appendix B. ANAE wetland types influenced by Commonwealth environmental water by valley

Wetland types influenced by Commonwealth environmental water are represented by the entire wetland when any portion of the wetland was recorded as having been inundated. The contribution of Commonwealth environmental water to supporting wetland ecosystem diversity within each valley is presented below in Table B1.

Table B1. Area of each wetland ecosystem type and the contribution of Commonwealth environmental water to supporting wetland ecosystem diversity within each valley, sorted by the area influenced with inundation highlighted in blue (excludes in-channel flows, the Coorong, Lakes Alexandrina and Albert and the Murray Mouth).

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Avoca	Rp1.4: Permanent lowland streams	111	61	55.0
Avoca	Rt1.4: Temporary lowland streams	40	19	47.5
Avoca	Pt2.3.1: Floodplain freshwater meadow	90	6	6.7
Avoca	Pp4.1: Permanent floodplain wetland	9	0	–
Avoca	Psp3.1: Permanent seagrass marshes	15 547	0	–
Avoca	Pst3.2: Salt pans and salt flats	7073	0	–
Avoca	Pt3.1.1: Floodplain clay pans	6956	0	–
Avoca	Pst1.1: Temporary saline swamp	6155	0	–
Avoca	Lst1.1: Temporary saline lakes	5126	0	–
Avoca	Lt1.1: Temporary lakes	4517	0	–
Avoca	Pp2.2.2: Permanent sedge/grass/forb marshes	1704	0	–
Avoca	Lst1.2: Temporary saline lakes with aquatic beds	1646	0	–
Avoca	Pt3.1.2: Clay pans	1069	0	–
Avoca	Pt1.6.1: Temporary woodland floodplain swamp	793	0	–
Avoca	Lst2.1: Temporary saline floodplain lakes	573	0	–
Avoca	Lt2.1: Temporary floodplain lakes	362	0	–
Avoca	Pst2.2: Temporary salt marsh	330	0	–
Avoca	Pst4: Temporary saline wetlands	264	0	–
Avoca	Lp1.1: Permanent lakes	227	0	–
Avoca	Psp4: Permanent saline wetland	225	0	–
Avoca	Pt4.2: Temporary wetland	223	0	–
Avoca	Pt1.6.2: Temporary woodland swamp	156	0	–
Avoca	Pt1.1.2: Intermittent River red gum swamps	93	0	–
Avoca	Pt1.1.1: Intermittent River red gum floodplain swamp	54	0	–
Avoca	Pt4.1: Temporary floodplain wetland	50	0	–
Avoca	Pp4.2: Permanent wetland	30	0	–
Avoca	Pt1.2.1: Intermittent Black box floodplain swamp	26	0	–
Avoca	Lp2.1: Permanent floodplain lakes	11	0	–
Avoca	Pt1.2.2: Intermittent Black box swamp	10	0	–
Avoca	Pt2.3.2: Freshwater meadow	9	0	–
Avoca	Pt1.7.1: Intermittent Lignum floodplain swamp	4	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Avoca	Pt1.7.2: Intermittent Lignum swamps	2	0	–
Border Rivers	Rt1.4: Temporary lowland streams	26 917	0	–
Border Rivers	Rt1.1: Temporary high energy upland streams	7949	0	–
Border Rivers	Rp1.4: Permanent lowland streams	6370	0	–
Border Rivers	Pt4.1: Temporary floodplain wetland	3178	0	–
Border Rivers	Rt1.2: Temporary transitional zone streams	2335	0	–
Border Rivers	Pt1.6.2: Temporary woodland swamp	1073	0	–
Border Rivers	Pt1.6.1: Temporary woodland floodplain swamp	1026	0	–
Border Rivers	Rp1.1: Permanent high energy upland streams	1000	0	–
Border Rivers	Lp1.1: Permanent lakes	773	0	–
Border Rivers	Lp2.1: Permanent floodplain lakes	626	0	–
Border Rivers	Pt1.1.1: Intermittent River red gum floodplain swamp	607	0	–
Border Rivers	Rp1.2: Permanent transitional zone streams	575	0	–
Border Rivers	Pp4.1: Permanent floodplain wetland	551	0	–
Border Rivers	Lt2.1: Temporary floodplain lakes	518	0	–
Border Rivers	Pt2.3.1: Floodplain freshwater meadow	361	0	–
Border Rivers	Pt2.3.2: Freshwater meadow	326	0	–
Border Rivers	Pt1.3.1: Intermittent Coolibah floodplain swamp	323	0	–
Border Rivers	Pt4.2: Temporary wetland	317	0	–
Border Rivers	Lt1.1: Temporary lakes	303	0	–
Border Rivers	Lp2.2: Permanent floodplain lakes with aquatic beds	255	0	–
Border Rivers	Pt3.1.1: Floodplain clay pans	130	0	–
Border Rivers	Pp4.2: Permanent wetland	116	0	–
Border Rivers	Pt2.1.2: Temporary tall emergent marsh	96	0	–
Border Rivers	Rt1.3: Temporary low energy upland streams	78	0	–
Border Rivers	Pt3.1.2: Clay pans	77	0	–
Border Rivers	Lt2.2: Temporary floodplain lakes with aquatic beds	45	0	–
Border Rivers	Pp2.3.1: Permanent floodplain grass marshes	26	0	–
Border Rivers	Pt1.2.2: Intermittent Black box swamp	9	0	–
Border Rivers	Rp1.3: Permanent low energy upland streams	9	0	–
Border Rivers	Pt1.1.2: Intermittent River red gum swamps	9	0	–
Border Rivers	Pp2.2.2: Permanent sedge/grass/forb marshes	5	0	–
Border Rivers	Pt1.2.1: Intermittent Black box floodplain swamp	4	0	–
Border Rivers	Ru1: Unspecified river (landform unknown)	2	0	–
Border Rivers	Pt2.2.2: Temporary sedge/grass/forb marsh	1	0	–
Border Rivers	Pt1.3.2: Intermittent Coolibah swamp	1	0	–
Border Rivers	Pps5: Permanent springs	0	0	–
Broken	Pt2.3.1: Floodplain freshwater meadow	250	181	72.4
Broken	Pt1.1.1: Intermittent River red gum floodplain swamp	8680	0	–
Broken	Pt3.1.2: Clay pans	2102	0	–
Broken	Pt3.1.1: Floodplain clay pans	1549	0	–
Broken	Pt1.1.2: Intermittent River red gum swamps	1001	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Broken	Pt1.6.1: Temporary woodland floodplain swamp	306	0	–
Broken	Pt1.2.1: Intermittent Black box floodplain swamp	250	0	–
Broken	Pt2.3.2: Freshwater meadow	231	0	–
Broken	Lt1.1: Temporary lakes	203	0	–
Broken	Pst4: Temporary saline wetlands	189	0	–
Broken	Pt1.6.2: Temporary woodland swamp	175	0	–
Broken	Lt2.1: Temporary floodplain lakes	171	0	–
Broken	Pt1.2.2: Intermittent Black box swamp	145	0	–
Broken	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	132	0	–
Broken	Pt2.1.1: Temporary tall emergent floodplain marsh	110	0	–
Broken	Pt2.1.2: Temporary tall emergent marsh	92	0	–
Broken	Pst1.1: Temporary saline swamp	88	0	–
Broken	Rp1.4: Permanent lowland streams	72	0	–
Broken	Pst3.2: Salt pans and salt flats	60	0	–
Broken	Lst2.1: Temporary saline floodplain lakes	56	0	–
Broken	Lp1.1: Permanent lakes	46	0	–
Broken	Rt1.4: Temporary lowland streams	27	0	–
Broken	Pp2.1.1: Permanent floodplain tall emergent marshes	26	0	–
Broken	Pp4.2: Permanent wetland	21	0	–
Broken	Lp2.1: Permanent floodplain lakes	16	0	–
Broken	Pt4.2: Temporary wetland	14	0	–
Broken	Pt2.2.2: Temporary sedge/grass/forb marsh	11	0	–
Broken	Pp4.1: Permanent floodplain wetland	7	0	–
Broken	Pt4.1: Temporary floodplain wetland	1	0	–
Broken	Pps5: Permanent springs	0	0	–
Broken	Pp2.4.1: Permanent floodplain forb marshes	0	0	–
Campaspe	Pt3.1.2: Clay pans	1879	0	–
Campaspe	Pt1.1.2: Intermittent River red gum swamps	388	0	–
Campaspe	Pt1.6.2: Temporary woodland swamp	143	0	–
Campaspe	Lt1.1: Temporary lakes	123	0	–
Campaspe	Pt2.1.2: Temporary tall emergent marsh	39	0	–
Campaspe	Pt2.3.2: Freshwater meadow	33	0	–
Campaspe	Pst3.2: Salt pans and salt flats	23	0	–
Campaspe	Lp1.1: Permanent lakes	22	0	–
Campaspe	Rp1.4: Permanent lowland streams	19	0	–
Campaspe	Pst1.1: Temporary saline swamp	9	0	–
Campaspe	Lst2.1: Temporary saline floodplain lakes	9	0	–
Campaspe	Rt1.4: Temporary lowland streams	9	0	–
Campaspe	Pp4.1: Permanent floodplain wetland	9	0	–
Campaspe	Pt2.2.2: Temporary sedge/grass/forb marsh	8	0	–
Campaspe	Psp4: Permanent saline wetland	6	0	–
Campaspe	Pp2.4.2: Permanent forb marshes	3	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Campaspe	Pt1.2.2: Intermittent Black box swamp	1	0	–
Campaspe	Pps5: Permanent springs	1	0	–
Castlereagh	Rt1.4: Temporary lowland streams	593	0	–
Castlereagh	Rp1.4: Permanent lowland streams	492	0	–
Castlereagh	Lt1.1: Temporary lakes	283	0	–
Castlereagh	Lt2.1: Temporary floodplain lakes	177	0	–
Castlereagh	Pt4.2: Temporary wetland	50	0	–
Castlereagh	Pt1.6.2: Temporary woodland swamp	35	0	–
Castlereagh	Rp1.2: Permanent transitional zone streams	32	0	–
Castlereagh	Pt3.1.2: Clay pans	30	0	–
Castlereagh	Pt1.2.2: Intermittent Black box swamp	25	0	–
Castlereagh	Rp1.3: Permanent low energy upland streams	17	0	–
Castlereagh	Pp4.2: Permanent wetland	16	0	–
Castlereagh	Pt2.1.1: Temporary tall emergent floodplain marsh	13	0	–
Castlereagh	Rt1.2: Temporary transitional zone streams	12	0	–
Castlereagh	Rp1.1: Permanent high energy upland streams	11	0	–
Castlereagh	Lp1.1: Permanent lakes	5	0	–
Castlereagh	Pt1.1.2: Intermittent River red gum swamps	1	0	–
Castlereagh	Rt1.1: Temporary high energy upland streams	1	0	–
Castlereagh	Pt2.2.2: Temporary sedge/grass/forb marsh	1	0	–
Castlereagh	Pt1.2.1: Intermittent Black box floodplain swamp	1	0	–
Castlereagh	Pps5: Permanent springs	1	0	–
Central Murray	Pp4.1: Permanent floodplain wetland	6344	19	0.3
Central Murray	Rp1.4: Permanent lowland streams	14 393	19	0.1
Central Murray	Rt1.4: Temporary lowland streams	8587	19	0.2
Central Murray	Pt2.3.1: Floodplain freshwater meadow	256	8	3.1
Central Murray	Psp4: Permanent saline wetland	950	7	0.7
Central Murray	Pt1.2.1: Intermittent Black box floodplain swamp	1064	5	0.5
Central Murray	Pt1.7.1: Intermittent Lignum floodplain swamp	1361	3	0.2
Central Murray	Pt1.1.1: Intermittent River red gum floodplain swamp	26 211	0	–
Central Murray	Lt1.1: Temporary lakes	8928	0	–
Central Murray	Pt3.1.1: Floodplain clay pans	4781	0	–
Central Murray	Pt3.1.2: Clay pans	2444	0	–
Central Murray	Pt2.2.2: Temporary sedge/grass/forb marsh	1754	0	–
Central Murray	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	1720	0	–
Central Murray	Lp2.1: Permanent floodplain lakes	1528	0	–
Central Murray	Lt2.1: Temporary floodplain lakes	1420	0	–
Central Murray	Pt1.6.1: Temporary woodland floodplain swamp	653	0	–
Central Murray	Lp1.1: Permanent lakes	631	0	–
Central Murray	Pp4.2: Permanent wetland	542	0	–
Central Murray	Pt2.1.1: Temporary tall emergent floodplain marsh	449	0	–
Central Murray	Pt4.1: Temporary floodplain wetland	387	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Central Murray	Pst4: Temporary saline wetlands	246	0	–
Central Murray	Pt2.3.2: Freshwater meadow	212	0	–
Central Murray	Pt1.7.2: Intermittent Lignum swamps	210	0	–
Central Murray	Pp2.1.1: Permanent floodplain tall emergent marshes	210	0	–
Central Murray	Pst1.1: Temporary saline swamp	206	0	–
Central Murray	Rt1.3: Temporary low energy upland streams	198	0	–
Central Murray	Pt4.2: Temporary wetland	158	0	–
Central Murray	Pt1.2.2: Intermittent Black box swamp	150	0	–
Central Murray	Pt1.1.2: Intermittent River red gum swamps	133	0	–
Central Murray	Lsp2.1: Permanent saline floodplain lakes	128	0	–
Central Murray	Lst2.1: Temporary saline floodplain lakes	121	0	–
Central Murray	Pp2.4.1: Permanent floodplain forb marshes	113	0	–
Central Murray	Rp1.1: Permanent high energy upland streams	93	0	–
Central Murray	Rp1.2: Permanent transitional zone streams	75	0	–
Central Murray	Pt1.6.2: Temporary woodland swamp	72	0	–
Central Murray	Pp2.2.1: Permanent floodplain sedge/grass/forb marshes	66	0	–
Central Murray	Pp2.3.1: Permanent floodplain grass marshes	63	0	–
Central Murray	Rt1.2: Temporary transitional zone streams	51	0	–
Central Murray	Pp2.2.2: Permanent sedge/grass/forb marshes	34	0	–
Central Murray	Rt1.1: Temporary high energy upland streams	30	0	–
Central Murray	Lst1.1: Temporary saline lakes	29	0	–
Central Murray	Pp2.1.2: Permanent tall emergent marshes	19	0	–
Central Murray	Pt2.1.2: Temporary tall emergent marsh	15	0	–
Central Murray	Lt2.2: Temporary floodplain lakes with aquatic beds	10	0	–
Central Murray	Rp1.3: Permanent low energy upland streams	6	0	–
Central Murray	Pp2.3.2: Permanent grass marshes	1	0	–
Condamine	Rt1.4: Temporary lowland streams	83 841	0	–
Condamine	Pt2.1.1: Temporary tall emergent floodplain marsh	35 562	0	–
Condamine	Pt4.1: Temporary floodplain wetland	30 776	0	–
Condamine	Pt1.7.1: Intermittent Lignum floodplain swamp	11 797	0	–
Condamine	Lt1.1: Temporary lakes	10 712	0	–
Condamine	Lt2.1: Temporary floodplain lakes	8636	0	–
Condamine	Pt1.6.1: Temporary woodland floodplain swamp	6476	0	–
Condamine	Pt1.2.1: Intermittent Black box floodplain swamp	4683	0	–
Condamine	Pt4.2: Temporary wetland	4444	0	–
Condamine	Rt1.1: Temporary high energy upland streams	4128	0	–
Condamine	Pt2.1.2: Temporary tall emergent marsh	4109	0	–
Condamine	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	2923	0	–
Condamine	Pt1.6.2: Temporary woodland swamp	2550	0	–
Condamine	Pp2.1.1: Permanent floodplain tall emergent marshes	2550	0	–
Condamine	Pp4.1: Permanent floodplain wetland	2391	0	–
Condamine	Pt3.1.1: Floodplain clay pans	2321	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Condamine	Rt1.2: Temporary transitional zone streams	1996	0	–
Condamine	Rp1.4: Permanent lowland streams	1986	0	–
Condamine	Lt2.2: Temporary floodplain lakes with aquatic beds	1726	0	–
Condamine	Lp2.2: Permanent floodplain lakes with aquatic beds	1452	0	–
Condamine	Lst2.1: Temporary saline floodplain lakes	1322	0	–
Condamine	Pp4.2: Permanent wetland	1291	0	–
Condamine	Lp1.1: Permanent lakes	1234	0	–
Condamine	Lp2.1: Permanent floodplain lakes	962	0	–
Condamine	Pt2.2.2: Temporary sedge/grass/forb marsh	592	0	–
Condamine	Pt1.1.2: Intermittent River red gum swamps	528	0	–
Condamine	Pt1.1.1: Intermittent River red gum floodplain swamp	503	0	–
Condamine	Pt1.3.1: Intermittent Coolibah floodplain swamp	364	0	–
Condamine	Lp1.2: Permanent lakes with aquatic beds	363	0	–
Condamine	Lst1.1: Temporary saline lakes	303	0	–
Condamine	Pt1.3.2: Intermittent Coolibah swamp	268	0	–
Condamine	Pt2.3.1: Floodplain freshwater meadow	192	0	–
Condamine	Rt1.3: Temporary low energy upland streams	145	0	–
Condamine	Pt1.2.2: Intermittent Black box swamp	132	0	–
Condamine	Pt2.3.2: Freshwater meadow	100	0	–
Condamine	Pp2.2.1: Permanent floodplain sedge/grass/forb marshes	77	0	–
Condamine	Rp1.2: Permanent transitional zone streams	65	0	–
Condamine	Rp1.1: Permanent high energy upland streams	54	0	–
Condamine	Pt3.1.2: Clay pans	45	0	–
Condamine	Pp2.1.2: Permanent tall emergent marshes	41	0	–
Condamine	Pp2.3.1: Permanent floodplain grass marshes	25	0	–
Condamine	Rp1.3: Permanent low energy upland streams	21	0	–
Condamine	Pt1.7.2: Intermittent Lignum swamps	7	0	–
Condamine	Pt1.5.2: Temporary paperbark swamp	6	0	–
Condamine	Pps5: Permanent springs	6	0	–
Condamine	Lsp1.1: Permanent saline lakes	3	0	–
Condamine	Pp2.2.2: Permanent sedge/grass/forb marshes	1	0	–
Condamine	Ru1: Unspecified river (landform unknown)	0	0	–
Edward–Wakool	Rt1.4: Temporary lowland streams	8113	0	–
Edward–Wakool	Rp1.4: Permanent lowland streams	4011	0	–
Edward–Wakool	Pt3.1.1: Floodplain clay pans	2660	0	–
Edward–Wakool	Pt1.1.1: Intermittent River red gum floodplain swamp	2157	0	–
Edward–Wakool	Pt1.2.1: Intermittent Black box floodplain swamp	1773	0	–
Edward–Wakool	Pt3.1.2: Clay pans	1504	0	–
Edward–Wakool	Pp4.1: Permanent floodplain wetland	1178	0	–
Edward–Wakool	Lt1.1: Temporary lakes	1105	0	–
Edward–Wakool	Pp2.1.1: Permanent floodplain tall emergent marshes	705	0	–
Edward–Wakool	Pt1.2.2: Intermittent Black box swamp	569	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Edward–Wakool	Pt1.6.1: Temporary woodland floodplain swamp	374	0	–
Edward–Wakool	Lt2.1: Temporary floodplain lakes	358	0	–
Edward–Wakool	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	232	0	–
Edward–Wakool	Pt1.6.2: Temporary woodland swamp	228	0	–
Edward–Wakool	Pt1.1.2: Intermittent River red gum swamps	208	0	–
Edward–Wakool	Pt2.2.2: Temporary sedge/grass/forb marsh	207	0	–
Edward–Wakool	Pt4.2: Temporary wetland	171	0	–
Edward–Wakool	Pt1.7.1: Intermittent Lignum floodplain swamp	155	0	–
Edward–Wakool	Pt4.1: Temporary floodplain wetland	144	0	–
Edward–Wakool	Pt2.3.2: Freshwater meadow	116	0	–
Edward–Wakool	Pp4.2: Permanent wetland	111	0	–
Edward–Wakool	Pt2.3.1: Floodplain freshwater meadow	83	0	–
Edward–Wakool	Pt1.7.2: Intermittent Lignum swamps	78	0	–
Edward–Wakool	Pt2.1.1: Temporary tall emergent floodplain marsh	55	0	–
Edward–Wakool	Rt1.3: Temporary low energy upland streams	53	0	–
Edward–Wakool	Lp1.1: Permanent lakes	39	0	–
Edward–Wakool	Pp2.3.1: Permanent floodplain grass marshes	20	0	–
Edward–Wakool	Rp1.3: Permanent low energy upland streams	13	0	–
Edward–Wakool	Pp2.3.2: Permanent grass marshes	6	0	–
Edward–Wakool	Psp4: Permanent saline wetland	6	0	–
Edward–Wakool	Pst1.1: Temporary saline swamp	5	0	–
Edward–Wakool	Lp2.1: Permanent floodplain lakes	4	0	–
Edward–Wakool	Pp2.2.1: Permanent floodplain sedge/grass/forb marshes	4	0	–
Edward–Wakool	Rp1.1: Permanent high energy upland streams	3	0	–
Edward–Wakool	Pp2.2.2: Permanent sedge/grass/forb marshes	3	0	–
Edward–Wakool	Rt1.1: Temporary high energy upland streams	2	0	–
Goulburn	Pt3.1.2: Clay pans	4351	0	–
Goulburn	Pt3.1.1: Floodplain clay pans	3901	0	–
Goulburn	Pt1.1.1: Intermittent River red gum floodplain swamp	3846	0	–
Goulburn	Pt1.1.2: Intermittent River red gum swamps	1375	0	–
Goulburn	Lsp2.1: Permanent saline floodplain lakes	1272	0	–
Goulburn	Lt1.1: Temporary lakes	1044	0	–
Goulburn	Pst4: Temporary saline wetlands	968	0	–
Goulburn	Lp1.1: Permanent lakes	954	0	–
Goulburn	Lt2.1: Temporary floodplain lakes	799	0	–
Goulburn	Pt1.6.2: Temporary woodland swamp	709	0	–
Goulburn	Pt2.1.1: Temporary tall emergent floodplain marsh	591	0	–
Goulburn	Lt1.2: Temporary lakes with aquatic beds	579	0	–
Goulburn	Pt4.1: Temporary floodplain wetland	399	0	–
Goulburn	Pt2.3.1: Floodplain freshwater meadow	366	0	–
Goulburn	Lp2.1: Permanent floodplain lakes	263	0	–
Goulburn	Pt2.1.2: Temporary tall emergent marsh	216	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Goulburn	Pt2.3.2: Freshwater meadow	182	0	–
Goulburn	Rp1.4: Permanent lowland streams	176	0	–
Goulburn	Lt2.2: Temporary floodplain lakes with aquatic beds	165	0	–
Goulburn	Pt1.6.1: Temporary woodland floodplain swamp	156	0	–
Goulburn	Pt2.2.2: Temporary sedge/grass/forb marsh	153	0	–
Goulburn	Pt1.2.2: Intermittent Black box swamp	125	0	–
Goulburn	Pt4.2: Temporary wetland	104	0	–
Goulburn	Pp4.2: Permanent wetland	91	0	–
Goulburn	Lst2.1: Temporary saline floodplain lakes	67	0	–
Goulburn	Rt1.4: Temporary lowland streams	58	0	–
Goulburn	Pp4.1: Permanent floodplain wetland	52	0	–
Goulburn	Pp2.1.1: Permanent floodplain tall emergent marshes	48	0	–
Goulburn	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	37	0	–
Goulburn	Pst3.2: Salt pans and salt flats	16	0	–
Goulburn	Pt1.2.1: Intermittent Black box floodplain swamp	8	0	–
Goulburn	Pp2.1.2: Permanent tall emergent marshes	8	0	–
Goulburn	Rt1.2: Temporary transitional zone streams	6	0	–
Goulburn	Rt1.1: Temporary high energy upland streams	2	0	–
Goulburn	Pps5: Permanent springs	0	0	–
Gwydir	Rp1.4: Permanent lowland streams	1557	674	43.3
Gwydir	Rt1.4: Temporary lowland streams	745	318	42.7
Gwydir	Lt1.1: Temporary lakes	609	51	8.4
Gwydir	Pt2.1.1: Temporary tall emergent floodplain marsh	42	42	100
Gwydir	Lt2.1: Temporary floodplain lakes	108	26	24.1
Gwydir	Rp1.3: Permanent low energy upland streams	19	19	100
Gwydir	Pp4.2: Permanent wetland	227	11	4.8
Gwydir	Pt1.3.2: Intermittent Coolibah swamp	29	9	31.0
Gwydir	Pp4.1: Permanent floodplain wetland	10	5	50
Gwydir	Pp2.2.2: Permanent sedge/grass/forb marshes	8	4	50
Gwydir	Pt3.1.2: Clay pans	183	3	1.6
Gwydir	Pt1.3.1: Intermittent Coolibah floodplain swamp	12	3	25.0
Gwydir	Pt1.1.1: Intermittent River red gum floodplain swamp	7	1	14.3
Gwydir	Pt1.6.2: Temporary woodland swamp	171	1	0.6
Gwydir	Rp1.2: Permanent transitional zone streams	853	0	–
Gwydir	Rp1.1: Permanent high energy upland streams	636	0	–
Gwydir	Pt4.2: Temporary wetland	469	0	–
Gwydir	Lp1.1: Permanent lakes	51	0	–
Gwydir	Pt2.2.2: Temporary sedge/grass/forb marsh	13	0	–
Gwydir	Pt3.1.1: Floodplain clay pans	10	0	–
Gwydir	Pt1.6.1: Temporary woodland floodplain swamp	10	0	–
Gwydir	Pt1.1.2: Intermittent River red gum swamps	5	0	–
Gwydir	Pt1.4.2: Intermittent River Cooba swamp	4	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
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Gwydir	Pp1.1.2: Permanent paperbark swamps	1	0	–
Gwydir	Rt1.3: Temporary low energy upland streams	1	0	–
Gwydir	Pt4.1: Temporary floodplain wetland	1	0	–
Gwydir	Rt1.2: Temporary transitional zone streams	1	0	–
Gwydir	Pps5: Permanent springs	0	0	–
Kiewa	Pt4.2: Temporary wetland	598	0	–
Kiewa	Pt3.1.2: Clay pans	298	0	–
Kiewa	Pt2.2.2: Temporary sedge/grass/forb marsh	194	0	–
Kiewa	Pt1.1.2: Intermittent River red gum swamps	60	0	–
Kiewa	Rt1.4: Temporary lowland streams	54	0	–
Kiewa	Pt1.6.2: Temporary woodland swamp	52	0	–
Kiewa	Lp1.1: Permanent lakes	47	0	–
Kiewa	Pt3.1.1: Floodplain clay pans	20	0	–
Kiewa	Pp2.1.1: Permanent floodplain tall emergent marshes	18	0	–
Kiewa	Pp2.1.2: Permanent tall emergent marshes	13	0	–
Kiewa	Rp1.4: Permanent lowland streams	11	0	–
Kiewa	Lt1.1: Temporary lakes	8	0	–
Kiewa	Pt2.1.2: Temporary tall emergent marsh	4	0	–
Kiewa	Pp4.2: Permanent wetland	3	0	–
Kiewa	Rt1.2: Temporary transitional zone streams	2	0	–
Kiewa	Pp2.2.1: Permanent floodplain sedge/grass/forb marshes	2	0	–
Kiewa	Lp2.1: Permanent floodplain lakes	1	0	–
Kiewa	Rt1.1: Temporary high energy upland streams	1	0	–
Kiewa	Pp4.1: Permanent floodplain wetland	0	0	–
Kiewa	Rt1.3: Temporary low energy upland streams	0	0	–
Kiewa	Pps5: Permanent springs	0	0	–
Lachlan	Pp2.1.1: Permanent floodplain tall emergent marshes	3440	3440	100
Lachlan	Lt2.1: Temporary floodplain lakes	21 059	345	1.6
Lachlan	Pp2.1.2: Permanent tall emergent marshes	9	9	100
Lachlan	Pt1.7.2: Intermittent Lignum swamps	15 781	0	–
Lachlan	Pt3.1.1: Floodplain clay pans	12 818	0	–
Lachlan	Lt1.1: Temporary lakes	9871	0	–
Lachlan	Pt4.2: Temporary wetland	9699	0	–
Lachlan	Rt1.4: Temporary lowland streams	9157	0	–
Lachlan	Pt4.1: Temporary floodplain wetland	7952	0	–
Lachlan	Pt1.2.1: Intermittent Black box floodplain swamp	7303	0	–
Lachlan	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	7093	0	–
Lachlan	Pt1.7.1: Intermittent Lignum floodplain swamp	6061	0	–
Lachlan	Rp1.4: Permanent lowland streams	6016	0	–
Lachlan	Pt1.2.2: Intermittent Black box swamp	5910	0	–
Lachlan	Lp1.1: Permanent lakes	5339	0	–
Lachlan	Pt2.3.1: Floodplain freshwater meadow	2959	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
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Lachlan	Pt1.6.2: Temporary woodland swamp	2222	0	–
Lachlan	Pt3.1.2: Clay pans	2106	0	–
Lachlan	Pp2.2.1: Permanent floodplain sedge/grass/forb marshes	1719	0	–
Lachlan	Pt1.1.1: Intermittent River red gum floodplain swamp	1615	0	–
Lachlan	Pt2.3.2: Freshwater meadow	1312	0	–
Lachlan	Pt2.2.2: Temporary sedge/grass/forb marsh	1100	0	–
Lachlan	Pt1.6.1: Temporary woodland floodplain swamp	1089	0	–
Lachlan	Rp1.1: Permanent high energy upland streams	1021	0	–
Lachlan	Lp2.1: Permanent floodplain lakes	699	0	–
Lachlan	Pp4.1: Permanent floodplain wetland	652	0	–
Lachlan	Pt1.1.2: Intermittent River red gum swamps	583	0	–
Lachlan	Pp4.2: Permanent wetland	338	0	–
Lachlan	Rt1.3: Temporary low energy upland streams	196	0	–
Lachlan	Rp1.2: Permanent transitional zone streams	191	0	–
Lachlan	Pt2.1.1: Temporary tall emergent floodplain marsh	115	0	–
Lachlan	Pp2.2.2: Permanent sedge/grass/forb marshes	100	0	–
Lachlan	Rt1.2: Temporary transitional zone streams	70	0	–
Lachlan	Rp1.3: Permanent low energy upland streams	62	0	–
Lachlan	Pp2.3.2: Permanent grass marshes	21	0	–
Lachlan	Pt2.1.2: Temporary tall emergent marsh	14	0	–
Lachlan	Pps5: Permanent springs	7	0	–
Loddon	Pst1.1: Temporary saline swamp	5986	0	–
Loddon	Pst3.2: Salt pans and salt flats	4703	0	–
Loddon	Pt3.1.2: Clay pans	4432	0	–
Loddon	Lp1.1: Permanent lakes	4309	0	–
Loddon	Pst4: Temporary saline wetlands	3819	0	–
Loddon	Lsp1.1: Permanent saline lakes	3206	0	–
Loddon	Lst1.1: Temporary saline lakes	2142	0	–
Loddon	Lt1.1: Temporary lakes	2075	0	–
Loddon	Pt2.3.1: Floodplain freshwater meadow	1632	0	–
Loddon	Pt1.1.1: Intermittent River red gum floodplain swamp	1269	0	–
Loddon	Pt2.3.2: Freshwater meadow	1164	0	–
Loddon	Pt3.1.1: Floodplain clay pans	1006	0	–
Loddon	Pt1.6.2: Temporary woodland swamp	999	0	–
Loddon	Lt2.1: Temporary floodplain lakes	911	0	–
Loddon	Pt2.2.2: Temporary sedge/grass/forb marsh	770	0	–
Loddon	Rp1.4: Permanent lowland streams	383	0	–
Loddon	Lst2.1: Temporary saline floodplain lakes	330	0	–
Loddon	Pt1.1.2: Intermittent River red gum swamps	301	0	–
Loddon	Pt1.6.1: Temporary woodland floodplain swamp	285	0	–
Loddon	Pt1.2.2: Intermittent Black box swamp	198	0	–
Loddon	Rt1.4: Temporary lowland streams	194	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
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Loddon	Lst1.2: Temporary saline lakes with aquatic beds	181	0	–
Loddon	Pt4.2: Temporary wetland	149	0	–
Loddon	Pt1.7.2: Intermittent Lignum swamps	75	0	–
Loddon	Pt2.1.1: Temporary tall emergent floodplain marsh	58	0	–
Loddon	Lp2.1: Permanent floodplain lakes	54	0	–
Loddon	Lsp2.1: Permanent saline floodplain lakes	53	0	–
Loddon	Lt2.2: Temporary floodplain lakes with aquatic beds	52	0	–
Loddon	Pt4.1: Temporary floodplain wetland	40	0	–
Loddon	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	35	0	–
Loddon	Pp4.1: Permanent floodplain wetland	25	0	–
Loddon	Pt1.2.1: Intermittent Black box floodplain swamp	23	0	–
Loddon	Lp1.2: Permanent lakes with aquatic beds	17	0	–
Loddon	Psp4: Permanent saline wetland	11	0	–
Loddon	Lt1.2: Temporary lakes with aquatic beds	9	0	–
Loddon	Pp2.4.2: Permanent forb marshes	9	0	–
Loddon	Pp4.2: Permanent wetland	8	0	–
Loddon	Pp2.2.2: Permanent sedge/grass/forb marshes	7	0	–
Loddon	Pps5: Permanent springs	4	0	–
Lower Darling	Lt1.1: Temporary lakes	127 700	20	<0.01
Lower Darling	Pt4.2: Temporary wetland	72 760	0	–
Lower Darling	Lt2.1: Temporary floodplain lakes	67 636	0	–
Lower Darling	Pt4.1: Temporary floodplain wetland	35 122	0	–
Lower Darling	Lp2.1: Permanent floodplain lakes	9402	0	–
Lower Darling	Pt2.3.2: Freshwater meadow	8077	0	–
Lower Darling	Pt1.6.2: Temporary woodland swamp	4442	0	–
Lower Darling	Pt3.1.2: Clay pans	4090	0	–
Lower Darling	Pp4.2: Permanent wetland	3687	0	–
Lower Darling	Rp1.4: Permanent lowland streams	3111	0	–
Lower Darling	Pt1.2.2: Intermittent Black box swamp	2896	0	–
Lower Darling	Rt1.4: Temporary lowland streams	2836	0	–
Lower Darling	Pp4.1: Permanent floodplain wetland	1350	0	–
Lower Darling	Pt1.2.1: Intermittent Black box floodplain swamp	1265	0	–
Lower Darling	Pt1.1.1: Intermittent River red gum floodplain swamp	1143	0	–
Lower Darling	Pt3.1.1: Floodplain clay pans	784	0	–
Lower Darling	Pt1.7.1: Intermittent Lignum floodplain swamp	767	0	–
Lower Darling	Pt2.2.2: Temporary sedge/grass/forb marsh	598	0	–
Lower Darling	Lp1.1: Permanent lakes	518	0	–
Lower Darling	Lst1.1: Temporary saline lakes	509	0	–
Lower Darling	Pt2.3.1: Floodplain freshwater meadow	314	0	–
Lower Darling	Pt1.6.1: Temporary woodland floodplain swamp	117	0	–
Lower Darling	Pt1.1.2: Intermittent River red gum swamps	85	0	–
Lower Darling	Pp2.3.2: Permanent grass marshes	26	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
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Lower Darling	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	15	0	–
Lower Darling	Rt1.1: Temporary high energy upland streams	11	0	–
Lower Darling	Pt1.7.2: Intermittent Lignum swamps	11	0	–
Lower Darling	Rp1.1: Permanent high energy upland streams	10	0	–
Lower Darling	Rt1.2: Temporary transitional zone streams	7	0	–
Lower Darling	Rp1.2: Permanent transitional zone streams	2	0	–
Lower Murray	Lst2.1: Temporary saline floodplain lakes	2263	1383	61.1
Lower Murray	Rp1.4: Permanent lowland streams	13 630	582	4.3
Lower Murray	Pst1.1: Temporary saline swamp	3011	551	18.3
Lower Murray	Pt1.7.2: Intermittent Lignum swamps	1373	321	23.4
Lower Murray	Pt1: Temporary swamps	3766	280	7.4
Lower Murray	Pt1.2.1: Intermittent Black box floodplain swamp	1143	254	22.2
Lower Murray	Pt1.1.1: Intermittent River red gum floodplain swamp	712	252	35.4
Lower Murray	Pt3.1.1: Floodplain clay pans	2322	221	9.5
Lower Murray	Psp4: Permanent saline wetland	2035	150	7.4
Lower Murray	Rt1.4: Temporary lowland streams	1372	139	10.1
Lower Murray	Lt1.1: Temporary lakes	30 689	133	0.4
Lower Murray	Pst4: Temporary saline wetlands	2203	102	4.6
Lower Murray	Pt2.3.1: Floodplain freshwater meadow	1078	80	7.4
Lower Murray	Pp4.1: Permanent floodplain wetland	4216	75	1.8
Lower Murray	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	6558	46	0.7
Lower Murray	Pt1.6.1: Temporary woodland floodplain swamp	157	31	19.7
Lower Murray	Pt1.7.1: Intermittent Lignum floodplain swamp	2691	21	0.8
Lower Murray	Pp2.3.1: Permanent floodplain grass marshes	89	9	10.1
Lower Murray	Rt1: Temporary streams	294	5	1.7
Lower Murray	Lst1.1: Temporary saline lakes	2665	4	0.2
Lower Murray	Pt1.1.2: Intermittent River red gum swamps	128	3	2.3
Lower Murray	Pt1.2.2: Intermittent Black box swamp	83	1	1.2
Lower Murray	Lp2.1: Permanent floodplain lakes	93104	0	–
Lower Murray	Ewd1.3.2: Coastal lagoon	20923	0	–
Lower Murray	Lp1.1: Permanent lakes	11313	0	–
Lower Murray	Lt2.1: Temporary floodplain lakes	9428	0	–
Lower Murray	Pt2.1.2: Temporary tall emergent marsh	7463	0	–
Lower Murray	Pt4.1: Temporary floodplain wetland	5779	0	–
Lower Murray	Pt3.1.2: Clay pans	5016	0	–
Lower Murray	Lsp1.1: Permanent saline lakes	2673	0	–
Lower Murray	Pt4.2: Temporary wetland	2313	0	–
Lower Murray	Etd1.3.3: Tide dominated estuary	2189	0	–
Lower Murray	Pu1: Unspecified wetland	1768	0	–
Lower Murray	Rp1: Permanent Streams	1428	0	–
Lower Murray	Pt2.2.2: Temporary sedge/grass/forb marsh	1240	0	–
Lower Murray	Pt1.6.2: Temporary woodland swamp	1017	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
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Lower Murray	Pst3.2: Salt pans and salt flats	887	0	–
Lower Murray	Pst2.2: Temporary salt marsh	427	0	–
Lower Murray	Etd1.2.1: Tide dominated saltmarsh	350	0	–
Lower Murray	Pp4.2: Permanent wetland	175	0	–
Lower Murray	Ewd1.2.3: Intertidal saltmarsh	166	0	–
Lower Murray	Psp1.1: Saline paperbark swamp	132	0	–
Lower Murray	Ewd1.2.4: Intertidal mudflats and sand bars	131	0	–
Lower Murray	Pp2.2.2: Permanent sedge/grass/forb marshes	100	0	–
Lower Murray	Rp1.2: Permanent transitional zone streams	99	0	–
Lower Murray	Pt1.5.2: Temporary paperbark swamp	83	0	–
Lower Murray	Etd1.2.2: Tide dominated mudflats and sandbars	64	0	–
Lower Murray	Pt2.1.1: Temporary tall emergent floodplain marsh	49	0	–
Lower Murray	Pp2.4.1: Permanent floodplain forb marshes	41	0	–
Lower Murray	Rp1.1: Permanent high energy upland streams	40	0	–
Lower Murray	Pt1.5.1: Temporary paperbark floodplain swamp	32	0	–
Lower Murray	Etd1.2.3: Tide dominated forests	19	0	–
Lower Murray	Rp1.3: Permanent low energy upland streams	15	0	–
Lower Murray	Rt1.2: Temporary transitional zone streams	14	0	–
Lower Murray	Rt1.1: Temporary high energy upland streams	11	0	–
Lower Murray	Pp2.1.1: Permanent floodplain tall emergent marshes	9	0	–
Lower Murray	Pt2.3.2: Freshwater meadow	9	0	–
Lower Murray	Etd1.1.1: Tide dominated rocky shoreline	7	0	–
Lower Murray	Lsp2.1: Permanent saline floodplain lakes	7	0	–
Lower Murray	Psp2.1: Permanent salt marsh	3	0	–
Lower Murray	Rt1.3: Temporary low energy upland streams	3	0	–
Lower Murray	Pps5: Permanent springs	2	0	–
Macquarie	Pp4.1: Permanent floodplain wetland	18176	17723	97.5
Macquarie	Pt1.1.1: Intermittent River red gum floodplain swamp	5316	5005	94.1
Macquarie	Rp1.4: Permanent lowland streams	7215	1915	26.5
Macquarie	Rt1.4: Temporary lowland streams	3076	1042	33.9
Macquarie	Pp2.3.1: Permanent floodplain grass marshes	208	208	100
Macquarie	Lt1.1: Temporary lakes	8290	186	2.2
Macquarie	Pt1.4.2: Intermittent River Cooba swamp	101	101	100
Macquarie	Pt2.2.2: Temporary sedge/grass/forb marsh	1711	92	5.4
Macquarie	Lt2.1: Temporary floodplain lakes	968	66	6.8
Macquarie	Pt3.1.2: Clay pans	1528	57	3.7
Macquarie	Pt1.6.1: Temporary woodland floodplain swamp	437	56	12.8
Macquarie	Pt2.3.1: Floodplain freshwater meadow	52	52	100
Macquarie	Pt1.1.2: Intermittent River red gum swamps	349	50	14.3
Macquarie	Pp4.2: Permanent wetland	595	40	6.7
Macquarie	Lp1.1: Permanent lakes	718	33	4.6
Macquarie	Pp2.1.2: Permanent tall emergent marshes	22	22	100

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Macquarie	Pt1.6.2: Temporary woodland swamp	2031	14	0.7
Macquarie	Pt3.1.1: Floodplain clay pans	632	11	1.7
Macquarie	Pp2.3.2: Permanent grass marshes	7	7	100
Macquarie	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	816	6	0.7
Macquarie	Rp1.1: Permanent high energy upland streams	1817	0	–
Macquarie	Pt1.2.1: Intermittent Black box floodplain swamp	1653	0	–
Macquarie	Pt1.3.1: Intermittent Coolibah floodplain swamp	1435	0	–
Macquarie	Pt4.1: Temporary floodplain wetland	1114	0	–
Macquarie	Rp1.2: Permanent transitional zone streams	458	0	–
Macquarie	Pt4.2: Temporary wetland	370	0	–
Macquarie	Pt1.2.2: Intermittent Black box swamp	263	0	–
Macquarie	Lp2.1: Permanent floodplain lakes	51	0	–
Macquarie	Pp2.2.2: Permanent sedge/grass/forb marshes	18	0	–
Macquarie	Pps5: Permanent springs	15	0	–
Macquarie	Rp1.3: Permanent low energy upland streams	4	0	–
Macquarie	Pt1.4.1: Intermittent River Cooba floodplain swamp	3	0	–
Macquarie	Rt1.3: Temporary low energy upland streams	1	0	–
Macquarie	Pt1.3.2: Intermittent Coolibah swamp	1	0	–
Macquarie	Rt1.1: Temporary high energy upland streams	0	0	–
Macquarie	Ru1: Unspecified river (landform unknown)	0	0	–
Mitta Mitta	Rp1.1: Permanent high energy upland streams	1345	0	–
Mitta Mitta	Pt4.2: Temporary wetland	745	0	–
Mitta Mitta	Pt1.6.2: Temporary woodland swamp	656	0	–
Mitta Mitta	Pst4: Temporary saline wetlands	622	0	–
Mitta Mitta	Pt2.2.2: Temporary sedge/grass/forb marsh	354	0	–
Mitta Mitta	Pp4.2: Permanent wetland	282	0	–
Mitta Mitta	Pt3.1.2: Clay pans	253	0	–
Mitta Mitta	Lt1.1: Temporary lakes	198	0	–
Mitta Mitta	Lp1.1: Permanent lakes	33	0	–
Mitta Mitta	Rp1.4: Permanent lowland streams	7	0	–
Mitta Mitta	Pt1.1.2: Intermittent River red gum swamps	3	0	–
Mitta Mitta	Pp2.2.2: Permanent sedge/grass/forb marshes	1	0	–
Murrumbidgee	Pt1.1.1: Intermittent River red gum floodplain swamp	7494	4783	63.8
Murrumbidgee	Pt3.1.2: Clay pans	7405	2038	27.5
Murrumbidgee	Pt4.1: Temporary floodplain wetland	8405	1557	18.5
Murrumbidgee	Pt3.1.1: Floodplain clay pans	6935	1346	19.4
Murrumbidgee	Lt1.1: Temporary lakes	21 246	1204	5.7
Murrumbidgee	Pt1.2.1: Intermittent Black box floodplain swamp	3614	929	25.7
Murrumbidgee	Pp4.1: Permanent floodplain wetland	1603	823	51.3
Murrumbidgee	Rp1.4: Permanent lowland streams	5838	648	11.1
Murrumbidgee	Lp2.1: Permanent floodplain lakes	753	634	84.2
Murrumbidgee	Rt1.4: Temporary lowland streams	12 413	564	4.5

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Murrumbidgee	Pt1.7.1: Intermittent Lignum floodplain swamp	210	180	85.7
Murrumbidgee	Pp2.1.1: Permanent floodplain tall emergent marshes	117	117	100
Murrumbidgee	Lp1.1: Permanent lakes	480	117	24.4
Murrumbidgee	Lt2.1: Temporary floodplain lakes	1617	80	4.9
Murrumbidgee	Pt1.1.2: Intermittent River red gum swamps	110	39	35.5
Murrumbidgee	Rp1.3: Permanent low energy upland streams	108	5	4.6
Murrumbidgee	Pt2.2.2: Temporary sedge/grass/forb marsh	19 178	0	–
Murrumbidgee	Pt4.2: Temporary wetland	14 914	0	–
Murrumbidgee	Pp4.2: Permanent wetland	3865	0	–
Murrumbidgee	Pt1.2.2: Intermittent Black box swamp	3712	0	–
Murrumbidgee	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	3311	0	–
Murrumbidgee	Rp1.1: Permanent high energy upland streams	2480	0	–
Murrumbidgee	Pt2.3.2: Freshwater meadow	1772	0	–
Murrumbidgee	Pt2.3.1: Floodplain freshwater meadow	1256	0	–
Murrumbidgee	Pt1.6.2: Temporary woodland swamp	839	0	–
Murrumbidgee	Rp1.2: Permanent transitional zone streams	713	0	–
Murrumbidgee	Pp2.2.2: Permanent sedge/grass/forb marshes	303	0	–
Murrumbidgee	Pt1.6.1: Temporary woodland floodplain swamp	298	0	–
Murrumbidgee	Pp3: Peat bogs and fen marshes	173	0	–
Murrumbidgee	Pp2.3.2: Permanent grass marshes	122	0	–
Murrumbidgee	Pps5: Permanent springs	19	0	–
Murrumbidgee	Pt1.7.2: Intermittent Lignum swamps	12	0	–
Murrumbidgee	Pt2.1.2: Temporary tall emergent marsh	8	0	–
Murrumbidgee	Rt1.1: Temporary high energy upland streams	6	0	–
Murrumbidgee	Rt1.2: Temporary transitional zone streams	5	0	–
Murrumbidgee	Pp2.2.1: Permanent floodplain sedge/grass/forb marshes	1	0	–
Murrumbidgee	Ru1: Unspecified river (landform unknown)	0	0	–
Namoi	Pp4.2: Permanent wetland	9324	0	–
Namoi	Pt3.1.2: Clay pans	5212	0	–
Namoi	Lp1.1: Permanent lakes	4212	0	–
Namoi	Pt4.2: Temporary wetland	3463	0	–
Namoi	Lt1.1: Temporary lakes	3458	0	–
Namoi	Pt1.6.2: Temporary woodland swamp	3436	0	–
Namoi	Rp1.4: Permanent lowland streams	2178	0	–
Namoi	Pp4.1: Permanent floodplain wetland	1683	0	–
Namoi	Pt1.2.2: Intermittent Black box swamp	1165	0	–
Namoi	Rt1.4: Temporary lowland streams	990	0	–
Namoi	Pt1.1.1: Intermittent River red gum floodplain swamp	869	0	–
Namoi	Rp1.1: Permanent high energy upland streams	788	0	–
Namoi	Pt1.1.2: Intermittent River red gum swamps	773	0	–
Namoi	Pt2.2.2: Temporary sedge/grass/forb marsh	610	0	–
Namoi	Pt1.3.2: Intermittent Coolibah swamp	602	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Namoi	Pt1.2.1: Intermittent Black box floodplain swamp	560	0	–
Namoi	Rp1.2: Permanent transitional zone streams	478	0	–
Namoi	Pt1.6.1: Temporary woodland floodplain swamp	311	0	–
Namoi	Pp2.2.2: Permanent sedge/grass/forb marshes	273	0	–
Namoi	Pt3.1.1: Floodplain clay pans	258	0	–
Namoi	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	42	0	–
Namoi	Pt1.7.2: Intermittent Lignum swamps	16	0	–
Namoi	Pt4.1: Temporary floodplain wetland	14	0	–
Namoi	Rp1.3: Permanent low energy upland streams	11	0	–
Namoi	Rt1.2: Temporary transitional zone streams	7	0	–
Namoi	Rt1.3: Temporary low energy upland streams	3	0	–
Namoi	Rt1.1: Temporary high energy upland streams	2	0	–
Namoi	Pps5: Permanent springs	1	0	–
Namoi	Ru1: Unspecified river (landform unknown)	0	0	–
Ovens	Pt3.1.2: Clay pans	1322	0	–
Ovens	Pt3.1.1: Floodplain clay pans	738	0	–
Ovens	Pt2.3.1: Floodplain freshwater meadow	597	0	–
Ovens	Pt2.3.2: Freshwater meadow	584	0	–
Ovens	Pt1.6.2: Temporary woodland swamp	482	0	–
Ovens	Pt1.1.1: Intermittent River red gum floodplain swamp	456	0	–
Ovens	Pt1.6.1: Temporary woodland floodplain swamp	412	0	–
Ovens	Lt2.1: Temporary floodplain lakes	291	0	–
Ovens	Lp2.1: Permanent floodplain lakes	272	0	–
Ovens	Pp4.1: Permanent floodplain wetland	170	0	–
Ovens	Pt4.1: Temporary floodplain wetland	154	0	–
Ovens	Pt4.2: Temporary wetland	88	0	–
Ovens	Pt1.1.2: Intermittent River red gum swamps	86	0	–
Ovens	Lt1.1: Temporary lakes	69	0	–
Ovens	Pt2.2.2: Temporary sedge/grass/forb marsh	64	0	–
Ovens	Lp1.1: Permanent lakes	44	0	–
Ovens	Pp2.1.1: Permanent floodplain tall emergent marshes	31	0	–
Ovens	Rp1.4: Permanent lowland streams	27	0	–
Ovens	Lt2.2: Temporary floodplain lakes with aquatic beds	23	0	–
Ovens	Rt1.4: Temporary lowland streams	21	0	–
Ovens	Pp2.1.2: Permanent tall emergent marshes	11	0	–
Ovens	Rt1.1: Temporary high energy upland streams	7	0	–
Ovens	Pp4.2: Permanent wetland	6	0	–
Ovens	Pp2.2.2: Permanent sedge/grass/forb marshes	6	0	–
Ovens	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	6	0	–
Ovens	Pt2.1.1: Temporary tall emergent floodplain marsh	3	0	–
Ovens	Pt2.1.2: Temporary tall emergent marsh	2	0	–
Ovens	Pps5: Permanent springs	0	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Paroo	Pt1.6.1: Temporary woodland floodplain swamp	159 323	0	–
Paroo	Lt2.1: Temporary floodplain lakes	49 659	0	–
Paroo	Pt4.1: Temporary floodplain wetland	25 305	0	–
Paroo	Lt1.1: Temporary lakes	11 875	0	–
Paroo	Lsp2.1: Permanent saline floodplain lakes	11 718	0	–
Paroo	Pt2.1.1: Temporary tall emergent floodplain marsh	10 446	0	–
Paroo	Rt1.4: Temporary lowland streams	10 180	0	–
Paroo	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	8259	0	–
Paroo	Pt1.2.1: Intermittent Black box floodplain swamp	8117	0	–
Paroo	Lp1.1: Permanent lakes	8030	0	–
Paroo	Pt1.6.2: Temporary woodland swamp	6977	0	–
Paroo	Pt4.2: Temporary wetland	6540	0	–
Paroo	Pt1.7.1: Intermittent Lignum floodplain swamp	3428	0	–
Paroo	Pt2.1.2: Temporary tall emergent marsh	2608	0	–
Paroo	Pst2.2: Temporary salt marsh	2511	0	–
Paroo	Lp2.1: Permanent floodplain lakes	2469	0	–
Paroo	Pt1.3.1: Intermittent Coolibah floodplain swamp	2354	0	–
Paroo	Pt2.2.2: Temporary sedge/grass/forb marsh	1661	0	–
Paroo	Pp2.1.1: Permanent floodplain tall emergent marshes	654	0	–
Paroo	Pt1.2.2: Intermittent Black box swamp	466	0	–
Paroo	Pp4.2: Permanent wetland	461	0	–
Paroo	Pp2.2.1: Permanent floodplain sedge/grass/forb marshes	407	0	–
Paroo	Lst1.1: Temporary saline lakes	357	0	–
Paroo	Rt1.1: Temporary high energy upland streams	311	0	–
Paroo	Rt1.2: Temporary transitional zone streams	257	0	–
Paroo	Pp4.1: Permanent floodplain wetland	194	0	–
Paroo	Rp1.4: Permanent lowland streams	194	0	–
Paroo	Pt2.3.1: Floodplain freshwater meadow	81	0	–
Paroo	Pt1.1.2: Intermittent River red gum swamps	68	0	–
Paroo	Pst4: Temporary saline wetlands	62	0	–
Paroo	Pt1.1.1: Intermittent River red gum floodplain swamp	38	0	–
Paroo	Pt3.1.2: Clay pans	31	0	–
Paroo	Pt2.3.2: Freshwater meadow	25	0	–
Paroo	Lst2.1: Temporary saline floodplain lakes	18	0	–
Paroo	Lsp1.1: Permanent saline lakes	16	0	–
Paroo	Pp2.1.2: Permanent tall emergent marshes	11	0	–
Paroo	Pps5: Permanent springs	9	0	–
Paroo	Pt1.3.2: Intermittent Coolibah swamp	3	0	–
Upper Darling	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	642	280	43.6
Upper Darling	Rp1.4: Permanent lowland streams	6129	7	0.1
Upper Darling	Lt1.1: Temporary lakes	31 489	0	–
Upper Darling	Lt2.1: Temporary floodplain lakes	28 358	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Upper Darling	Lp2.1: Permanent floodplain lakes	26 619	0	–
Upper Darling	Pt1.6.2: Temporary woodland swamp	12 547	0	–
Upper Darling	Pt4.2: Temporary wetland	9619	0	–
Upper Darling	Pt1.6.1: Temporary woodland floodplain swamp	3311	0	–
Upper Darling	Pt1.2.1: Intermittent Black box floodplain swamp	2212	0	–
Upper Darling	Pt4.1: Temporary floodplain wetland	1973	0	–
Upper Darling	Lp1.1: Permanent lakes	1792	0	–
Upper Darling	Rt1.4: Temporary lowland streams	1014	0	–
Upper Darling	Pp4.1: Permanent floodplain wetland	843	0	–
Upper Darling	Pp4.2: Permanent wetland	777	0	–
Upper Darling	Pt1.2.2: Intermittent Black box swamp	578	0	–
Upper Darling	Pt1.1.1: Intermittent River red gum floodplain swamp	404	0	–
Upper Darling	Pt2.2.2: Temporary sedge/grass/forb marsh	100	0	–
Upper Darling	Pt1.3.1: Intermittent Coolibah floodplain swamp	66	0	–
Upper Darling	Pt3.1.1: Floodplain clay pans	47	0	–
Upper Darling	Pt3.1.2: Clay pans	13	0	–
Upper Darling	Pt1.1.2: Intermittent River red gum swamps	9	0	–
Upper Darling	Rt1.1: Temporary high energy upland streams	7	0	–
Upper Darling	Rp1.2: Permanent transitional zone streams	5	0	–
Upper Darling	Pt1.3.2: Intermittent Coolibah swamp	2	0	–
Upper Darling	Pps5: Permanent springs	0	0	–
Upper Murray	Pt3.1.2: Clay pans	847	0	–
Upper Murray	Rt1.4: Temporary lowland streams	495	0	–
Upper Murray	Rt1.1: Temporary high energy upland streams	366	0	–
Upper Murray	Rp1.1: Permanent high energy upland streams	364	0	–
Upper Murray	Lt1.1: Temporary lakes	289	0	–
Upper Murray	Pp4.2: Permanent wetland	273	0	–
Upper Murray	Pt1.1.2: Intermittent River red gum swamps	253	0	–
Upper Murray	Pt1.6.2: Temporary woodland swamp	253	0	–
Upper Murray	Rt1.2: Temporary transitional zone streams	208	0	–
Upper Murray	Pt3.1.1: Floodplain clay pans	177	0	–
Upper Murray	Pt2.2.2: Temporary sedge/grass/forb marsh	131	0	–
Upper Murray	Lp1.1: Permanent lakes	101	0	–
Upper Murray	Rp1.2: Permanent transitional zone streams	83	0	–
Upper Murray	Pt4.2: Temporary wetland	67	0	–
Upper Murray	Pps5: Permanent springs	63	0	–
Upper Murray	Rp1.4: Permanent lowland streams	51	0	–
Upper Murray	Rp1.3: Permanent low energy upland streams	2	0	–
Upper Murray	Pp3: Peat bogs and fen marshes	0	0	–
Upper Murray	Rt1.3: Temporary low energy upland streams	0	0	–
Warrego	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	19 253	17 868	92.8
Warrego	Rt1.4: Temporary lowland streams	52 263	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Warrego	Pt1.6.1: Temporary woodland floodplain swamp	3562	0	–
Warrego	Pt2.1.1: Temporary tall emergent floodplain marsh	3138	0	–
Warrego	Lp1.1: Permanent lakes	2916	0	–
Warrego	Pp4.1: Permanent floodplain wetland	2460	0	–
Warrego	Pt4.2: Temporary wetland	2109	0	–
Warrego	Pt4.1: Temporary floodplain wetland	2012	0	–
Warrego	Lt2.1: Temporary floodplain lakes	1993	0	–
Warrego	Pt2.1.2: Temporary tall emergent marsh	1566	0	–
Warrego	Rt1.1: Temporary high energy upland streams	1017	0	–
Warrego	Rt1.2: Temporary transitional zone streams	984	0	–
Warrego	Lt1.1: Temporary lakes	913	0	–
Warrego	Pt1.6.2: Temporary woodland swamp	820	0	–
Warrego	Pt3.1.1: Floodplain clay pans	708	0	–
Warrego	Pt1.3.1: Intermittent Coolibah floodplain swamp	618	0	–
Warrego	Rp1.4: Permanent lowland streams	553	0	–
Warrego	Lp2.1: Permanent floodplain lakes	414	0	–
Warrego	Pt1.3.2: Intermittent Coolibah swamp	114	0	–
Warrego	Rt1.3: Temporary low energy upland streams	34	0	–
Warrego	Rp1.2: Permanent transitional zone streams	23	0	–
Warrego	Pp4.2: Permanent wetland	18	0	–
Warrego	Pt1.1.1: Intermittent River red gum floodplain swamp	9	0	–
Warrego	Pt1.1.2: Intermittent River red gum swamps	2	0	–
Warrego	Pps5: Permanent springs	2	0	–
Warrego	Pst1.1: Temporary saline swamp	2	0	–
Warrego	Pt2.2.2: Temporary sedge/grass/forb marsh	1	0	–
Warrego	Ru1: Unspecified river (landform unknown)	1	0	–
Wimmera	Lt1.1: Temporary lakes	26 884	0	–
Wimmera	Lst2.1: Temporary saline floodplain lakes	5877	0	–
Wimmera	Pt3.1.2: Clay pans	4834	0	–
Wimmera	Lt2.1: Temporary floodplain lakes	3951	0	–
Wimmera	Pst4: Temporary saline wetlands	2922	0	–
Wimmera	Pt1.6.2: Temporary woodland swamp	2196	0	–
Wimmera	Pt1.1.1: Intermittent River red gum floodplain swamp	2002	0	–
Wimmera	Pt1.1.2: Intermittent River red gum swamps	1927	0	–
Wimmera	Pt2.3.1: Floodplain freshwater meadow	1571	0	–
Wimmera	Pst1.1: Temporary saline swamp	1557	0	–
Wimmera	Lst1.1: Temporary saline lakes	1505	0	–
Wimmera	Lp1.2: Permanent lakes with aquatic beds	817	0	–
Wimmera	Psp3.1: Permanent seagrass marshes	780	0	–
Wimmera	Psp4: Permanent saline wetland	732	0	–
Wimmera	Pt1.6.1: Temporary woodland floodplain swamp	694	0	–
Wimmera	Pt2.3.2: Freshwater meadow	620	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE) wetland type	Total area (ha)	Influenced by Commonwealth environmental water	
			Area (ha)	% of total
Wimmera	Pt3.1.1: Floodplain clay pans	577	0	–
Wimmera	Pt4.2: Temporary wetland	500	0	–
Wimmera	Lt2.2: Temporary floodplain lakes with aquatic beds	498	0	–
Wimmera	Pst2.2: Temporary salt marsh	435	0	–
Wimmera	Pst3.2: Salt pans and salt flats	423	0	–
Wimmera	Lst2.2: Temporary saline floodplain lakes with aquatic beds	391	0	–
Wimmera	Lp1.1: Permanent lakes	276	0	–
Wimmera	Pt1.2.1: Intermittent Black box floodplain swamp	218	0	–
Wimmera	Lt1.2: Temporary lakes with aquatic beds	216	0	–
Wimmera	Lp2.2: Permanent floodplain lakes with aquatic beds	161	0	–
Wimmera	Lp2.1: Permanent floodplain lakes	158	0	–
Wimmera	Pp4.2: Permanent wetland	97	0	–
Wimmera	Lst1.2: Temporary saline lakes with aquatic beds	77	0	–
Wimmera	Pt2.2.2: Temporary sedge/grass/forb marsh	70	0	–
Wimmera	Pp4.1: Permanent floodplain wetland	69	0	–
Wimmera	Pt2.1.2: Temporary tall emergent marsh	64	0	–
Wimmera	Pt2.1.1: Temporary tall emergent floodplain marsh	55	0	–
Wimmera	Pt1.7.1: Intermittent Lignum floodplain swamp	47	0	–
Wimmera	Pt1.2.2: Intermittent Black box swamp	31	0	–
Wimmera	Pp2.4.2: Permanent forb marshes	21	0	–
Wimmera	Lsp1.1: Permanent saline lakes	20	0	–
Wimmera	Lsp1.2: Permanent saline lakes with aquatic beds	18	0	–
Wimmera	Pt4.1: Temporary floodplain wetland	8	0	–
Wimmera	Pt2.2.1: Temporary sedge/grass/forb floodplain marsh	6	0	–
Wimmera	Psp1.1: Saline paperbark swamp	5	0	–
Wimmera	Pp2.4.1: Permanent floodplain forb marshes	3	0	–

Appendix C. ANAE floodplain types inundated by Commonwealth environmental water by valley

For floodplains, only the area inundated by out-of-channel delivery of Commonwealth environmental water is presented in Table C1.

Table C1. Area of each floodplain ecosystem type and the contribution of Commonwealth environmental water to supporting floodplain ecosystem diversity within each valley, sorted by the area inundated with inundation highlighted in blue (excludes in-channel flows, the Coorong, Lakes Alexandrina and Albert and the Murray Mouth).

Valley name	Australian National Aquatic Ecosystem (ANAE)floodplain type	Total area (ha)	Inundated by Commonwealth environmental water	
			Area (ha)	% of total
Avoca	F.1.8: Black box woodland floodplain	6539	147	2.3
Avoca	F4: Floodplain with unspecified vegetation	6922	0	–
Avoca	F1.12: Woodland floodplain	2571	0	–
Avoca	F1.6: Black box forest floodplain	1625	0	–
Avoca	F1.2: River red gum forest floodplain	251	0	–
Avoca	F2.4: Shrubland floodplain	130	0	–
Avoca	F3.1: Upland sedge/forb/grassland floodplain	38	0	–
Avoca	F2.2: Lignum shrubland floodplain	22	0	–
Avoca	F3.2: Sedge/forb/grassland floodplain	6	0	–
Avoca	F2.3: Upland shrubland floodplain	5	0	–
Border Rivers	F1.10: Coolibah woodland and forest floodplain	5 655	0	–
Border Rivers	F1.12: Woodland floodplain	55 702	0	–
Border Rivers	F1.2: River red gum forest floodplain	21 268	0	–
Border Rivers	F4: Floodplain with unspecified vegetation	14 979	0	–
Border Rivers	F3.2: Sedge/forb/grassland floodplain	3955	0	–
Border Rivers	F.1.8: Black box woodland floodplain	3318	0	–
Border Rivers	F2.4: Shrubland floodplain	250	0	–
Broken	F1.2: River red gum forest floodplain	9148	0	–
Broken	F1.12: Woodland floodplain	3795	0	–
Broken	F4: Floodplain with unspecified vegetation	3483	0	–
Broken	F1.4: River red gum woodland floodplain	1853	0	–
Broken	F.1.8: Black box woodland floodplain	1281	0	–
Broken	F3.2: Sedge/forb/grassland floodplain	160	0	–
Broken	F3.1: Upland sedge/forb/grassland floodplain	45	0	–
Broken	F2.2: Lignum shrubland floodplain	9	0	–
Broken	F1.3: Upland River red gum woodland floodplain	8	0	–
Campaspe	F4: Floodplain with unspecified vegetation	81	0	–
Campaspe	F.1.8: Black box woodland floodplain	44	0	–
Campaspe	F1.12: Woodland floodplain	3	0	–
Castlereagh	F.1.8: Black box woodland floodplain	15 331	0	–
Castlereagh	F1.10: Coolibah woodland and forest floodplain	489	0	–
Castlereagh	F1.12: Woodland floodplain	427	0	–
Castlereagh	F2.4: Shrubland floodplain	156	0	–
Castlereagh	F1.2: River red gum forest floodplain	66	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE)floodplain type	Total area (ha)	Inundated by Commonwealth environmental water	
			Area (ha)	% of total
Castlereagh	F4: Floodplain with unspecified vegetation	50	0	–
Central Murray	F.1.8: Black box woodland floodplain	24 835	70	0.3
Central Murray	F2.2: Lignum shrubland floodplain	2042	1	<0.1
Central Murray	F1.4: River red gum woodland floodplain	61 264	0	–
Central Murray	F1.2: River red gum forest floodplain	61 166	0	–
Central Murray	F4: Floodplain with unspecified vegetation	26 464	0	–
Central Murray	F3.2: Sedge/forb/grassland floodplain	10 787	0	–
Central Murray	F1.12: Woodland floodplain	7979	0	–
Central Murray	F2.4: Shrubland floodplain	2026	0	–
Central Murray	F1.6: Black box forest floodplain	1858	0	–
Central Murray	F1.1: Upland river red gum forest floodplain	63	0	–
Central Murray	F1.3: Upland River red gum woodland floodplain	12	0	–
Central Murray	F1.7: Upland black box woodland floodplain	2	0	–
Central Murray	F3.1: Upland sedge/forb/grassland floodplain	0	0	–
Condamine	F1.10: Coolibah woodland and forest floodplain	746 488	0	–
Condamine	F3.2: Sedge/forb/grassland floodplain	294 854	0	–
Condamine	F4: Floodplain with unspecified vegetation	197 372	0	–
Condamine	F1.12: Woodland floodplain	80 992	0	–
Condamine	F2.4: Shrubland floodplain	23 624	0	–
Condamine	F.1.8: Black box woodland floodplain	11 148	0	–
Condamine	F2.2: Lignum shrubland floodplain	2087	0	–
Condamine	F1.2: River red gum forest floodplain	1671	0	–
Condamine	F3.1: Upland sedge/forb/grassland floodplain	466	0	–
Condamine	F1.4: River red gum woodland floodplain	283	0	–
Condamine	F2.3: Upland shrubland floodplain	168	0	–
Condamine	F1.9: Upland coolibah woodland and forest floodplain	23	0	–
Condamine	F1.7: Upland black box woodland floodplain	3	0	–
Condamine	F1.1: Upland river red gum forest floodplain	1	0	–
Edward–Wakool	F1.4: River red gum woodland floodplain	87 312	0	–
Edward–Wakool	F.1.8: Black box woodland floodplain	59 373	0	–
Edward–Wakool	F3.2: Sedge/forb/grassland floodplain	17 515	0	–
Edward–Wakool	F4: Floodplain with unspecified vegetation	12 252	0	–
Edward–Wakool	F1.2: River red gum forest floodplain	11 130	0	–
Edward–Wakool	F1.12: Woodland floodplain	6020	0	–
Edward–Wakool	F1.6: Black box forest floodplain	506	0	–
Edward–Wakool	F2.2: Lignum shrubland floodplain	362	0	–
Edward–Wakool	F2.4: Shrubland floodplain	260	0	–
Edward–Wakool	F1.1: Upland river red gum forest floodplain	9	0	–
Edward–Wakool	F1.3: Upland River red gum woodland floodplain	4	0	–
Goulburn	F1.4: River red gum woodland floodplain	12 241	0	–
Goulburn	F4: Floodplain with unspecified vegetation	11 763	0	–
Goulburn	F1.2: River red gum forest floodplain	4743	0	–
Goulburn	F1.12: Woodland floodplain	2326	0	–
Goulburn	F1.3: Upland River red gum woodland floodplain	1249	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE)floodplain type	Total area (ha)	Inundated by Commonwealth environmental water	
			Area (ha)	% of total
Goulburn	F.1.8: Black box woodland floodplain	1137	0	–
Goulburn	F3.2: Sedge/forb/grassland floodplain	676	0	–
Goulburn	F2.2: Lignum shrubland floodplain	63	0	–
Goulburn	F3.1: Upland sedge/forb/grassland floodplain	11	0	–
Gwydir	F4: Floodplain with unspecified vegetation	31 967	4153	13.0
Gwydir	F3.2: Sedge/forb/grassland floodplain	5735	2528	44.1
Gwydir	F1.10: Coolibah woodland and forest floodplain	9354	1048	11.2
Gwydir	F1.9: Upland coolibah woodland and forest floodplain	2690	163	6.0
Gwydir	F1.12: Woodland floodplain	5073	85	1.7
Gwydir	F1.4: River red gum woodland floodplain	127	40	31.9
Gwydir	F1.2: River red gum forest floodplain	1063	31	2.9
Gwydir	F1.1: Upland river red gum forest floodplain	28	14	49.1
Gwydir	F.1.8: Black box woodland floodplain	60	2	3.8
Gwydir	F1.11: River cooba woodland floodplain	143	1	0.6
Gwydir	F2.4: Shrubland floodplain	221	0	–
Gwydir	F3.1: Upland sedge/forb/grassland floodplain	36	0	–
Kiewa	F4: Floodplain with unspecified vegetation	49	0	–
Kiewa	F1.4: River red gum woodland floodplain	18	0	–
Kiewa	F1.12: Woodland floodplain	10	0	–
Kiewa	F3.2: Sedge/forb/grassland floodplain	7	0	–
Lachlan	F1.2: River red gum forest floodplain	26 921	279	1.0
Lachlan	F2.4: Shrubland floodplain	19 181	108	0.6
Lachlan	F3.2: Sedge/forb/grassland floodplain	44 790	87	0.2
Lachlan	F2.2: Lignum shrubland floodplain	155 696	1	<0.1
Lachlan	F4: Floodplain with unspecified vegetation	56 850	0	–
Lachlan	F.1.8: Black box woodland floodplain	49 913	0	–
Lachlan	F1.6: Black box forest floodplain	21 952	0	–
Lachlan	F1.4: River red gum woodland floodplain	15 357	0	–
Lachlan	F1.12: Woodland floodplain	2398	0	–
Lachlan	F1.7: Upland black box woodland floodplain	797	0	–
Lachlan	F1.1: Upland river red gum forest floodplain	289	0	–
Lachlan	F3.1: Upland sedge/forb/grassland floodplain	141	0	–
Lachlan	F1.5: Upland black box forest floodplain	43	0	–
Lachlan	F1.3: Upland River red gum woodland floodplain	28	0	–
Lachlan	F2.1: Upland lignum shrubland floodplain	27	0	–
Lachlan	F2.3: Upland shrubland floodplain	18	0	–
Loddon	F4: Floodplain with unspecified vegetation	22 372	0	–
Loddon	F.1.8: Black box woodland floodplain	6404	0	–
Loddon	F3.2: Sedge/forb/grassland floodplain	3154	0	–
Loddon	F1.2: River red gum forest floodplain	1296	0	–
Loddon	F1.12: Woodland floodplain	1266	0	–
Loddon	F2.2: Lignum shrubland floodplain	860	0	–
Loddon	F1.4: River red gum woodland floodplain	505	0	–
Loddon	F2.4: Shrubland floodplain	18	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE)floodplain type	Total area (ha)	Inundated by Commonwealth environmental water	
			Area (ha)	% of total
Loddon	F3.1: Upland sedge/forb/grassland floodplain	15	0	–
Loddon	F1.6: Black box forest floodplain	14	0	–
Loddon	F1.7: Upland black box woodland floodplain	1	0	–
Loddon	F1.3: Upland River red gum woodland floodplain	0	0	–
Lower Darling	F1.2: River red gum forest floodplain	30 843	0	–
Lower Darling	F1.6: Black box forest floodplain	90 484	0	–
Lower Darling	F2.4: Shrubland floodplain	11 481	0	–
Lower Darling	F.1.8: Black box woodland floodplain	7592	0	–
Lower Darling	F1.12: Woodland floodplain	1574	0	–
Lower Darling	F4: Floodplain with unspecified vegetation	1331	0	–
Lower Darling	F2.2: Lignum shrubland floodplain	930	0	–
Lower Darling	F2.3: Upland shrubland floodplain	184	0	–
Lower Darling	F3.2: Sedge/forb/grassland floodplain	116	0	–
Lower Darling	F1.5: Upland black box forest floodplain	39	0	–
Lower Darling	F1.1: Upland river red gum forest floodplain	32	0	–
Lower Darling	F3.1: Upland sedge/forb/grassland floodplain	5	0	–
Lower Murray	F1.4: River red gum woodland floodplain	15 830	2275	14.4
Lower Murray	F.1.8: Black box woodland floodplain	20 969	791	3.8
Lower Murray	F2.2: Lignum shrubland floodplain	38 828	64	0.2
Lower Murray	F1.2: River red gum forest floodplain	10 182	63	0.6
Lower Murray	F1.3: Upland River red gum woodland floodplain	950	20	2.1
Lower Murray	F2.4: Shrubland floodplain	83 565	19	<0.1
Lower Murray	F4: Floodplain with unspecified vegetation	6570	14	0.2
Lower Murray	F3.2: Sedge/forb/grassland floodplain	2820	5	0.2
Lower Murray	F2.1: Upland lignum shrubland floodplain	460	3	0.6
Lower Murray	F3.1: Upland sedge/forb/grassland floodplain	1206	2	0.1
Lower Murray	F1.12: Woodland floodplain	7575	0	–
Lower Murray	F1.6: Black box forest floodplain	6215	0	–
Lower Murray	F2.3: Upland shrubland floodplain	799	0	–
Lower Murray	F1.7: Upland black box woodland floodplain	509	0	–
Lower Murray	F1.1: Upland river red gum forest floodplain	65	0	–
Macquarie	F3.2: Sedge/forb/grassland floodplain	169 437	6139	3.6
Macquarie	F1.2: River red gum forest floodplain	24 689	1713	6.9
Macquarie	F1.4: River red gum woodland floodplain	3086	327	10.6
Macquarie	F4: Floodplain with unspecified vegetation	6991	74	1.1
Macquarie	F.1.8: Black box woodland floodplain	5546	22	0.4
Macquarie	F1.12: Woodland floodplain	4913	21	0.4
Macquarie	F2.4: Shrubland floodplain	27 001	3	<0.1
Macquarie	F1.1: Upland river red gum forest floodplain	4	1	32.4
Macquarie	F1.10: Coolibah woodland and forest floodplain	134 942	0	–
Macquarie	F1.6: Black box forest floodplain	635	0	–
Macquarie	F1.11: River cooba woodland floodplain	10	0	–
Macquarie	F1.7: Upland black box woodland floodplain	0	0	–
Mitta Mitta	F4: Floodplain with unspecified vegetation	67	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE)floodplain type	Total area (ha)	Inundated by Commonwealth environmental water	
			Area (ha)	% of total
Mitta Mitta	F3.1: Upland sedge/forb/grassland floodplain	19	0	–
Murrumbidgee	F2.4: Shrubland floodplain	82 645	17 839	21.6
Murrumbidgee	F1.2: River red gum forest floodplain	57 136	7985	14.0
Murrumbidgee	F1.4: River red gum woodland floodplain	10 893	1964	18.0
Murrumbidgee	F.1.8: Black box woodland floodplain	11 855	441	3.7
Murrumbidgee	F2.2: Lignum shrubland floodplain	320	66	20.6
Murrumbidgee	F3.2: Sedge/forb/grassland floodplain	4410	26	0.6
Murrumbidgee	F4: Floodplain with unspecified vegetation	18 668	26	0.1
Murrumbidgee	F1.12: Woodland floodplain	1253	19	1.5
Murrumbidgee	F1.1: Upland river red gum forest floodplain	277	2	0.7
Murrumbidgee	F3.1: Upland sedge/forb/grassland floodplain	29	0	–
Murrumbidgee	F1.6: Black box forest floodplain	25	0	–
Murrumbidgee	F1.3: Upland River red gum woodland floodplain	5	0	–
Murrumbidgee	F2.3: Upland shrubland floodplain	3	0	–
Namoi	F1.12: Woodland floodplain	23 674	0	–
Namoi	F.1.8: Black box woodland floodplain	7027	0	–
Namoi	F4: Floodplain with unspecified vegetation	5017	0	–
Namoi	F1.2: River red gum forest floodplain	4167	0	–
Namoi	F2.4: Shrubland floodplain	162	0	–
Namoi	F1.7: Upland black box woodland floodplain	8	0	–
Namoi	F1.10: Coolibah woodland and forest floodplain	3	0	–
Ovens	F1.4: River red gum woodland floodplain	8620	0	–
Ovens	F1.2: River red gum forest floodplain	2691	0	–
Ovens	F1.12: Woodland floodplain	1061	0	–
Ovens	F4: Floodplain with unspecified vegetation	1053	0	–
Ovens	F3.2: Sedge/forb/grassland floodplain	513	0	–
Ovens	F3.1: Upland sedge/forb/grassland floodplain	68	0	–
Ovens	F1.1: Upland river red gum forest floodplain	5	0	–
Ovens	F1.3: Upland River red gum woodland floodplain	0	0	–
Paroo	F3.2: Sedge/forb/grassland floodplain	331 218	0	–
Paroo	F1.12: Woodland floodplain	290 792	0	–
Paroo	F1.10: Coolibah woodland and forest floodplain	109 584	0	–
Paroo	F2.4: Shrubland floodplain	55 885	0	–
Paroo	F1.6: Black box forest floodplain	16 982	0	–
Paroo	F.1.8: Black box woodland floodplain	1490	0	–
Paroo	F2.2: Lignum shrubland floodplain	435	0	–
Paroo	F1.4: River red gum woodland floodplain	203	0	–
Paroo	F4: Floodplain with unspecified vegetation	144	0	–
Paroo	F2.3: Upland shrubland floodplain	90	0	–
Paroo	F1.9: Upland coolibah woodland and forest floodplain	43	0	–
Paroo	F3.1: Upland sedge/forb/grassland floodplain	29	0	–
Paroo	F1.5: Upland black box forest floodplain	19	0	–
Paroo	F1.3: Upland River red gum woodland floodplain	0	0	–
Upper Darling	F3.2: Sedge/forb/grassland floodplain	234 046	0	–

Valley name	Australian National Aquatic Ecosystem (ANAE)floodplain type	Total area (ha)	Inundated by Commonwealth environmental water	
			Area (ha)	% of total
Upper Darling	F1.10: Coolibah woodland and forest floodplain	77 662	0	–
Upper Darling	F1.6: Black box forest floodplain	54 839	0	–
Upper Darling	F2.4: Shrubland floodplain	36 969	0	–
Upper Darling	F4: Floodplain with unspecified vegetation	11 845	0	–
Upper Darling	F.1.8: Black box woodland floodplain	9007	0	–
Upper Darling	F1.12: Woodland floodplain	5751	0	–
Upper Darling	F1.2: River red gum forest floodplain	2953	0	–
Upper Darling	F1.4: River red gum woodland floodplain	48	0	–
Upper Darling	F2.3: Upland shrubland floodplain	37	0	–
Upper Darling	F1.5: Upland black box forest floodplain	12	0	–
Upper Murray	F4: Floodplain with unspecified vegetation	128	0	–
Warrego	F1.12: Woodland floodplain	25 181	6	<0.1
Warrego	F1.10: Coolibah woodland and forest floodplain	720 712	0	–
Warrego	F3.2: Sedge/forb/grassland floodplain	39 024	0	–
Warrego	F1.4: River red gum woodland floodplain	5174	0	–
Warrego	F2.4: Shrubland floodplain	3371	0	–
Warrego	F2.2: Lignum shrubland floodplain	1404	0	–
Warrego	F4: Floodplain with unspecified vegetation	522	0	–
Warrego	F.1.8: Black box woodland floodplain	441	0	–
Warrego	F3.1: Upland sedge/forb/grassland floodplain	147	0	–
Warrego	F1.3: Upland River red gum woodland floodplain	93	0	–
Warrego	F1.9: Upland coolibah woodland and forest floodplain	75	0	–
Warrego	F2.3: Upland shrubland floodplain	49	0	–
Wimmera	F1.4: River red gum woodland floodplain	3085	0	–
Wimmera	F4: Floodplain with unspecified vegetation	3061	0	–
Wimmera	F1.12: Woodland floodplain	2992	0	–
Wimmera	F.1.8: Black box woodland floodplain	1600	0	–
Wimmera	F3.2: Sedge/forb/grassland floodplain	802	0	–
Wimmera	F3.1: Upland sedge/forb/grassland floodplain	184	0	–
Wimmera	F2.3: Upland shrubland floodplain	165	0	–
Wimmera	F1.3: Upland River red gum woodland floodplain	164	0	–
Wimmera	F2.4: Shrubland floodplain	109	0	–
Wimmera	F1.7: Upland black box woodland floodplain	69	0	–
Wimmera	F2.2: Lignum shrubland floodplain	68	0	–
Wimmera	F1.6: Black box forest floodplain	58	0	–