This business case was used to inform decision-making on sustainable diversion limit adjustment mechanism projects.

Detailed costings and personal information has been redacted from the original business case to protect privacy and future tenders that will be undertaken to deliver this project.

Riverine Recovery Project:

Yatco Lagoon and the Phase 1 and Phase 2 Wetlands Project Elements

Sustainable Diversion Limit Adjustment Supply Measure Phase 2 Submission

Government of South Australia
Department of Environment, Water and Natural Resources

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1 Executive Summary

The purpose of this document is to formally submit the Riverine Recovery Project business case to the Sustainable Diversion Limit Adjustment Assessment Committee for Phase 2 Assessment.

This document addresses the Phase 2 Assessment Guidelines, noting that this is an existing project and some areas of the Assessment Guidelines are not applicable as outlined in Table 1.

The Riverine Recovery Project aims to achieve measurable long-term improvements in the health of the riverine environment between Wellington and the South Australian border, by improving ecological outcomes for floodplains and wetlands, using environmental water more effectively, providing social benefits, and delivering water savings to help protect or restore environmental assets.

The Riverine Recovery Project's Yatco Lagoon and the Phase 1 and Phase 2 Wetlands Project elements are being put forward for consideration under the Basin Plan's sustainable diversion limit adjustment mechanism as an evaporative saving supply measure project. These project elements of the Riverine Recovery Project produce evaporative water savings and are therefore relevant to the sustainable diversion limit adjustment mechanism. These project elements involve investigations and installation of infrastructure to re-introduce more natural wetting and drying cycles for wetlands. The reduced evaporation associated with more natural cycles is the source of water savings.

The Riverine Recovery Project is a component project of the *Murray Futures Program* that is a jointly funded initiative of the Commonwealth and South Australian governments, through the Commonwealth Government's *Water for Future* program. As the Riverine Recovery Project is fully funded, no additional Commonwealth funding for project implementation is being sought through this process.

Both the Yatco Lagoon and Wetlands Phase 1 Project Elements are underway and due for completion by December 2014. These components have generated Agreed Water Savings in the form of class 9 entitlements totalling 5.2248 gigalitres, which have now been transferred to the Commonwealth Government.

Commonwealth funding is committed for the Phase 2 Wetlands Project Element. As required through the Riverine Recovery Project Funding Agreement, a Phase 2 Wetlands Project Element Project Plan has been developed and submitted to the Commonwealth Government for due diligence review. Following approval of the Project Plan, implementation and delivery of Phase 2 Wetlands is anticipated to be undertaken over two years from January 2015 to December 2016.

Additional water savings from finalising Phase 1 and completing Phase 2 Wetlands Project element are anticipated to be around 2.02 gigalitres.

Table 1: Relevant document sections that address the Phase 2 evaluation criteria.

Note that as an existing project not seeking Commonwealth funds through the SDL adjustment process, there are a number of evaluation criteria not addressed in this proposal as specified by the Phase 2 Assessment Guidelines.

Key evaluation criteria	Guidelines Reference	Relevant Document and section of Document
Eligibility	Section 3	Section 3
Project details	Section 4.1	• Site description and location maps – Section 2 • Proponent name and proposed implementing entity – Appendix 1 • Governance information – Not applicable • Summary of estimated costs and proposed schedule – Section 10, Appendix 1 • Definition of Measure - Section 3
Ecological values of the site	Section 4.2	Section 4, Appendix 2
Ecological objectives and targets	Section 4.3	Section 5, Appendix 2
Anticipated ecological benefits	Section 4.4.1	Section 6.1 – 6.2, Appendix 2 and 4
Potential adverse ecological impacts	Section 4.4.2	• Potential adverse ecological impacts- Section 6.3, Appendix 2 • Monitoring and evaluation - Section 6.4, Appendix 3
Current hydrology and proposed changes to the hydrology	Section 4.5.1	Section 7.1, Appendix 2
Environmental water requirements	Section 4.5.2	Section 7.2
Operating regime	Section 4.6	Section 8, Appendix 2
Assessment of risks and impacts of the operation of the measure	Section 4.7	Section 9
Technical feasibility and fitness for purpose	Section 4.8	• Design of project – Not applicable • Estimate of costs and benefits – Section 10.1, Appendix 1 • Reliance on other measures or other actions – Not applicable • Governance information – Not applicable • Funding arrangement for Ongoing Operations and Maintenance - Section 10.2 and 10.3

Key evaluation criteria	Guidelines Reference	Relevant Document and section of Document
Complementary actions and interdependencies	Section 4.9	• SDL resource unit - Section 3 • Complementary actions and interdependencies – Not applicable
Costs, Benefits and Funding Arrangements for new unfunded projects seeking Commonwealth Supply or Constraint Measure Funding	Section 4.10.1	Not applicable – existing project not seeking Commonwealth supply measure funding.
Costs, Benefits and Funding Arrangements for Projects not seeking Commonwealth Supply or Constraint Measure Funding	Section 4.10.2	• Reference to costing documentation – Section 10.1, Appendix 1 • Details of funding arrangements – Section 10.1, Appendix 1 • Details of ongoing operation and maintenance costs – Section 10.2 and 10.3
Complementary actions and interdependencies	Section 4.9	• SDL resource unit – Section 3 • Complementary actions and interdependencies – Not applicable
Legal and regulatory requirements	Section 4.11.2	Not applicable – existing project
Governance and project management	Section 4.11.3	Not applicable – existing project
Risk assessment of Project Development and Delivery	Section 4.11.4	Not applicable – existing project. However, Section 9 does provide information pertaining to project development and delivery risks for Phase 2 Wetlands Project Element.

2 Description of proposal

2.1 The Riverine Recovery Project

River regulation and water extraction have dramatically altered the ecology of the Murray-Darling Basin (MDB), transforming the South Australian River Murray from a dynamic river into a series of stable pools. The majority of the wetlands that fringe the river are now either too wet or too dry. The changes to river flow, together with a reduction in overbank flooding have reduced the river's resilience and increased its vulnerability to a range of stressors, evident in the death and dieback of riparian and floodplain forests during the Millennium drought (2006-10).

The Riverine Recovery Project (RRP) is a component project of the South Australian Government's priority project *Murray Futures* that aims to build resilience and achieve measurable long-term improvements in the health of the 600 km River Murray corridor between the South Australian/Victorian border to Wellington (Figure 1).

Through an investment of up to $98 million, provided through the Australian Government's *Water for Future* program, the Riverine Recovery Project seeks to:

- recover environmental water;
- maintain and/or improve water dependent ecosystem health, resilience and connectivity;
- optimise conditions for ecological community recovery, distribution and population viability; increase community knowledge understanding and involvement in RRP activities; and
- improve the scientific knowledge and understanding for the management of floodplains, wetlands and environmental river management between Wellington and the South Australian/Victorian border.

As identified in the South Australian and Commonwealth Water Management Partnership Agreement – Riverine Recovery Project Schedule SA-05, the RRP project comprises nine Project Elements, namely Pike Floodplain, Katfish Reach, Wetlands (Phases 1A, 1B and 1C), Wetlands Phase 2, Weir Pool Phase 1, Weir Pool Phase 2, Monitoring and Communications, Partnerships and Project Management and Yatco Lagoon (Appendix 1).

For the purposes of the sustainable diversion limit (SDL) adjustment mechanism, the Yatco Lagoon and Wetlands Phases 1 and 2 Project elements are the components of the RRP that produce water savings. Therefore, the information contained within this SDL adjustment Phase 2 business case submission specifically relates to only these project elements of the RRP.

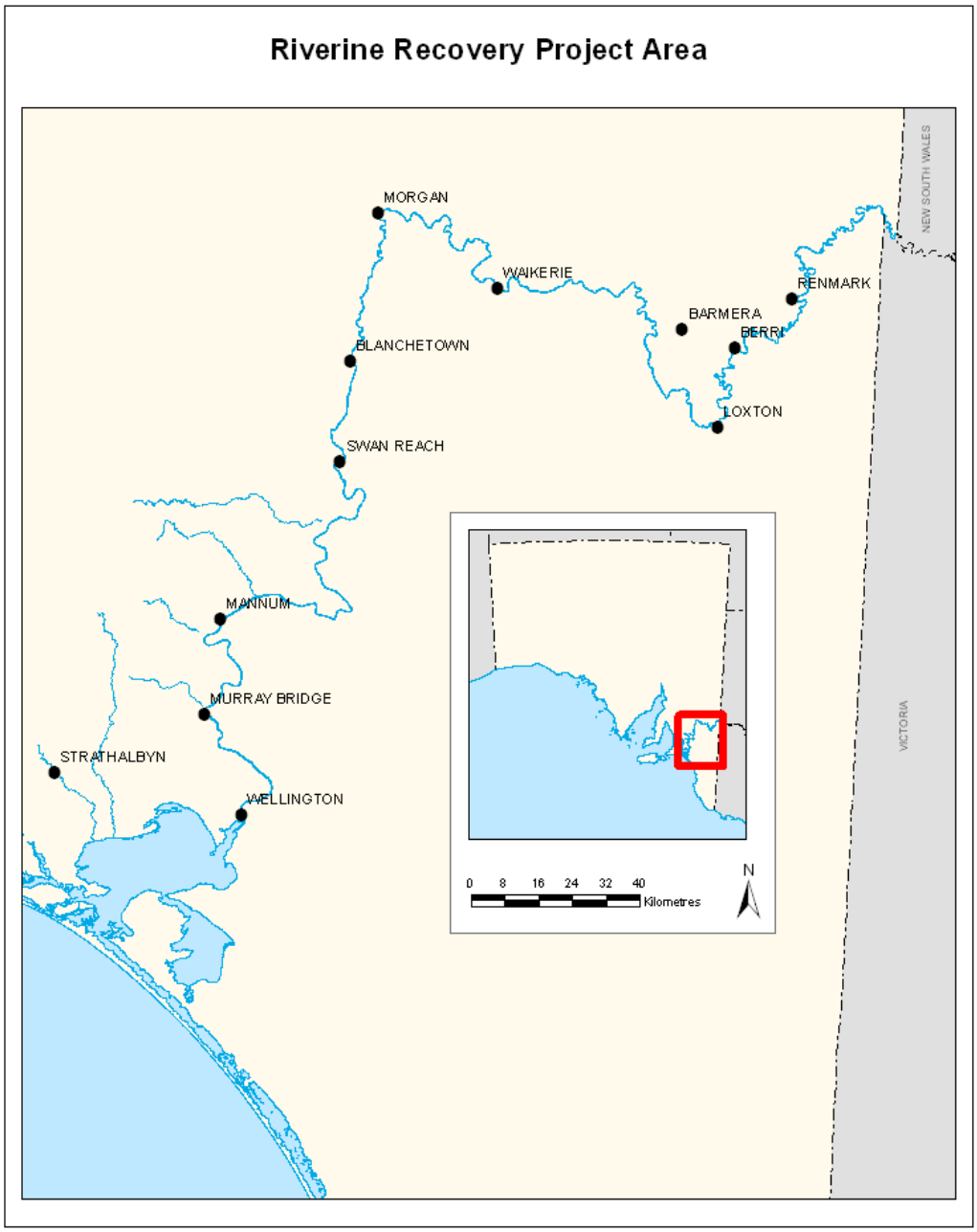

Figure 1: Map of Riverine Recovery Project location.

2.2 The Yatco Lagoon Project Element

The Yatco Lagoon Project Element of RRP, located between Loxton and Waikerie (Figure 2), involves the relocation of irrigation, and stock and domestic water off-takes from Yatco Lagoon to the main channel of the River Murray and the installation of infrastructure to facilitate wetting and drying cycles for the lagoon to improve environmental health and water use efficiency, as well as provide water savings in the form of Class 9 entitlements to the Commonwealth Government.

This element of RRP was executed on 3 March 2011 and is due for completion by 31 December 2014. Further details including project objectives, deliverables, milestones and completion dates are provided within the Project Schedule at Appendix 1.

2.3 The Wetlands Project Element

The Wetlands Project Element will undertake the necessary investigations and installation of infrastructure to re-introduce more natural wetting and drying cycles for targeted wetlands to improve ecosystem health and resilience, as well as provide water savings in the form of Class 9 entitlements to the Commonwealth Government.

The broad objectives for the RRP wetlands project element include to:

- improve the ecological health of selected wetlands of various types along the River Murray by improving hydrological management;
- deliver water savings to the Commonwealth; and
- support socio-economic conditions within regional communities.

The project element will also help improve these wetlands ability to adapt to changing climatic conditions.

The new wetland management regimes are to be facilitated by new or upgraded regulating structures and changed operating arrangements that allow periodic disconnection of otherwise permanent connections to weir pools at selected wetland sites.

Closing these regulators allows the wetland water level to drop through evaporation, and opening the regulators allows the wetland to be re-filled. Installation of regulators provides increased management flexibility at the wetland-scale and allows for immediate management of the wetland for ecological benefit. Additionally, regulators facilitate the ability to individualise wetland hydrographs to target attributes (e.g. birds, fish, vegetation) and/or manage processes (e.g. saline groundwater discharge, acid sulphate soils build-up) specific to that wetland, and to create variable watering regimes across wetlands in the region.

The Wetlands Project Element will be delivered across two Phases. A summary of each Phase and the associated activities is outlined below.

Phase 1 Wetlands

Within Phase 1, there are three separate components (1A, 1B and 1C) that reflect the level of project development.

A brief summary of the three components is outlined below:

Phase 1A – focused on existing managed wetland sites that could be supported and improved through RRP investment. Works include reviewing/modelling hydrology of sites against stated management objectives and undertaking implementation-ready projects identified through the South Australian Murray-Darling Basin Natural Resources Management (SA MDB NRM) Board's wetland program. Phase 1A is now complete.

Phase 1B – focused on wetland sites identified for investment during the RRP wetland selection process. Some sites were previously unmanaged but had baseline survey information, while others had wetland

management infrastructure that required upgrading. Construction under 1B was completed in September 2014.

Phase 1C – focused on unmanaged wetland sites identified for investment during the RRP wetland selection process that generally required a full suite of investigations (including landholder consultation, baseline surveys, development of management plans, detailed hydrological modelling and infrastructure design). This phase is complete subject to the finalisation of some detailed design investigations. The findings of this phase have formed the basis of an internal review within the Department of Environment, Water and Natural Resources (DEWNR) to determine which sites warranted proceeding to construction and operation in Phase 2 Wetlands Project Element.

Phase 1 Wetlands Project is due for completion by 31 December 2014. Project objectives, deliverables, milestones and anticipated completion dates are provided within the Project Schedule at Appendix 1.

Phase 2 Wetlands

As outlined above, relevant information from Phase 1C investigations and feasibility studies has been used to prepare a Project Plan to secure Commonwealth funding for Phase 2 Wetlands Project, as per the Project Schedule at Appendix 1.

The Project Plan describes how Phase 2 Wetlands will be implemented to provide substantive and demonstrable long-term environmental outcomes for the River Murray, its wetlands, floodplains and anabranches in South Australia and enable the Commonwealth Government to carry out its review against the assessment criteria outlined in the Project Schedule.

The Project Plan will be submitted to the Commonwealth Government in December 2014 for due diligence assessment. Subject to funding, this element is construction ready. It will involve the construction and implementation of wetland management projects that were identified in Phase 1C, including 11 priority wetland sites and three reserve sites.

Figure 2 provides the locations of each managed Phase 1A and 1B wetlands (identified as existing managed sites), as well as the Phase 2 priority and reserve wetland sites that were identified through the Phase 1C investigations.

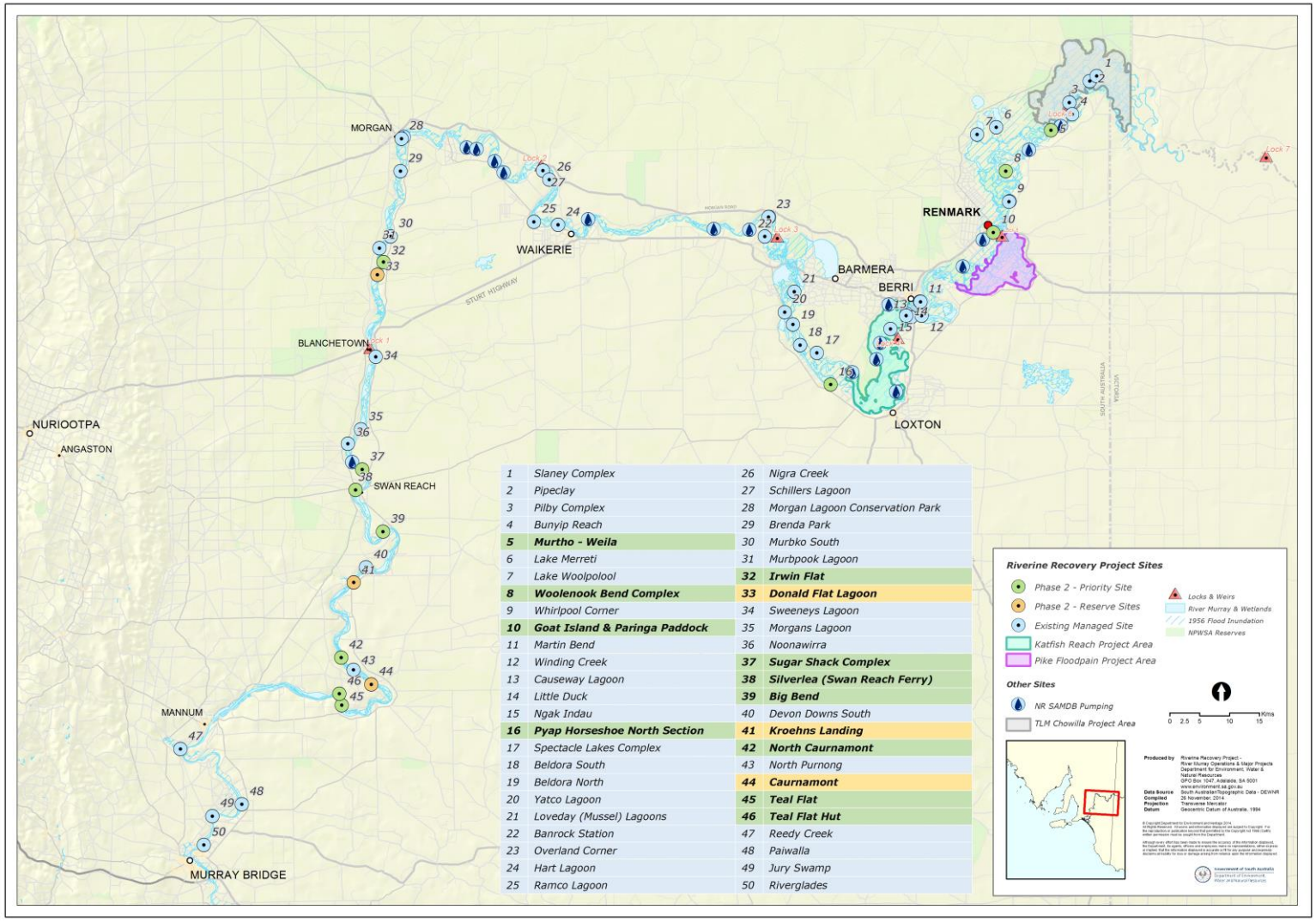

Figure 2: Project location for Yatco Lagoon and Phase 1A and 1B wetlands (identified as existing managed sites), as well as Phase 2 priority and reserve sites (also known as Phase 1C) wetland sites.

3 Eligibility Criteria

Eligibility criteria applicable to the Riverine Recovery Project as an SDL adjustment supply measure proposal are outlined below:

- *Reflects the definition of "Supply measure" under Basin Plan (cl.7.03 and cl.7.15); and*
- *Measures not included in the benchmark conditions of development (cl.7.02 of the Basin Plan)*

The Riverine Recovery Project (Yatco Lagoon and Wetlands Project Phase 1 and Phase 2 elements) is a proposed supply measure under the Murray-Darling Basin Plan's SDL Adjustment Mechanism. This occurs by allowing the quantity of water available to be used for the environment to be increased compared to the benchmark conditions of development. This occurs through generation of evaporative savings in pool connected wetlands and provision of water entitlements associated with the water saved to the Commonwealth Government.

Under the terms of the Riverine Recovery Project funding agreement, the South Australian Government is required to provide the evaporative savings produced by the RRP managed wetlands to the Commonwealth Government as Class 9 (Wetland) high security environmental water entitlements under the Water Allocation Plan (WAP) for the River Murray Prescribed Watercourse.

For the purposes of this business case, only the wetland sites that produce evaporative savings via wetting/drying regimes are considered relevant to the SDL adjustment process and are the focus of this business case. These sites and the remaining wetland sites that do not generate water savings, but are managed for other purposes e.g. flow and habitat improvement, floodplain inundation are distinguished in Appendix 2.

To date, the Yatco Lagoon and Phase 1 Wetlands Project element have transferred the full Agreed Water Savings of 5.2778 gigalitres (GL) to the Commonwealth (677.8 megalitres (ML) and 4.6 GL respectively). There is potential for further evaporative savings to be generated through wetland sites identified for management and investment under Phase 2 Wetlands Project.

The River Murray Water Allocation Plan enables the Commonwealth Environmental Water Holder unrestricted transfer or use of Class 9 water. This means that the Commonwealth Environmental Water Office (CEWO) holds Class 9 water access entitlements that can be traded and used for environmental purposes either in South Australia or in other areas of the southern connected MDB (i.e. interstate trade). The entitlement held by the CEWO has the same characteristics as entitlements which could otherwise be acquired through the bridging the gap water recovery programs.

The SDL Adjustment Assessment Committee (SDLAAC) has agreed that for proposed evaporative savings projects where an entitlement is created for the environment associated with the evaporative savings which had the same characteristics as entitlements which could otherwise be acquired through the bridging the gap water recovery programs, then environmental equivalence, as required through the SDL adjustment mechanism, can be directly inferred as the entitlements can be used interchangeably.

- *Operational by 30 June 2024 (cl.7.12 of the Basin Plan)*

Both the Yatco Lagoon and Wetlands Phase 1 Project Elements are underway and due for completion by 31 December 2014. Entitlements have already been transferred.

Following approval of the Phase 2 Project Plan, implementation and delivery of Phase 2 Wetlands is anticipated to be undertaken over two years from January 2015 to December 2016. This timeframe will allow for further stakeholder consultation and efficient delivery of on-ground works.

4 Ecological values of the site

4.1 Overview

Prior to European settlement the lower River Murray was notable for its highly variable hydrology, driven by climatic cycles and significant weather events. The River has sustained Aboriginal people for many thousands of years and provided a highly productive and diverse range of habitats that supported a variety of aquatic and terrestrial species, which were well adapted to both flooding and drought. Aboriginal people actively managed their lands and waters by manipulating wetland and floodplain hydrology to manage resources such as fish (Humphries 2007; Eyre 2010).

Today, river flow is significantly constrained by infrastructure including weirs and locks, levee banks and flow diversion infrastructure; developed progressively over a long history of river regulation. The construction of the weirs and barrages for navigation and irrigation has led to relatively stable water levels in the main river channel and dramatic changes in floodplain connectivity. This, in addition to the general decline in flow, has disrupted ecological processes associated with the rising and falling phases of the flood 'pulse'.

As a result of the river regulation, the water regime to South Australia's River Murray wetlands and floodplains sits at two extremes. For about 30% of wetland area, the operation of the river at a fixed operational pool level and reduction in flow has isolated these wetlands and they now only receive water very irregularly. Conversely, the other 70% of wetland area is now effectively permanently connected to the river at, or below, its operational pool level and are now permanently inundated (Walker 2006). This increased permanence has likely lead to decreased environmental condition in terms of wetland productivity and species diversity (Walker and Thomas 1993) resulting in a need to reinstate a variable water regime (Jensen 2002).

The RRP Yatco Lagoon and Wetlands Phase 1 and 2 Project elements aim to restore the variability in wetland hydrological regimes that existed prior to river regulation by managing individual wetlands and investigating riverscape management at a weir pool-reach scale.

4.2 Yatco Lagoon and Phases 1 and 2 Wetlands

Wetland sites were chosen based on a variety of factors, including current level of management; wetland geomorphology; ecological value, significance, condition and opportunity; known risk or concerns; high-level infrastructure feasibility; and ability to achieve RRP outcomes. Sites were not included for management when the potential for ecological benefit was considered low, when an ecological risks was considered high or when hydrological management was thought to require impractical infrastructure.

A critical requirement preceding the management of any wetland within the RRP Yatco Lagoon and Phases 1 and 2 Wetlands Project Elements is the preparation of a wetland management plan. Wetland Management Plans document and summarise the wetland ecological character, identify management opportunities, assess management risk, and describe management objectives and monitoring targets to determine the effectiveness of any management actions. The Plans also specify the desired watering regime for each site based on the ecological objectives and targets to be achieved. They also seek to integrate Aboriginal cultural values and where possible, establish management regimes that complement, restore and maintain these values.

Further site-specific information on the ecological value of the individual wetlands managed through Yatco Lagoon and Phases 1 and 2 Wetlands that produce evaporative savings are found within the individual Wetland Management Plans provided at Appendix 2.

Generally, information provided for each managed wetland, where known or relevant, includes:

- A description of key water-dependent and floodplain vegetation and habitat types;
- Water dependent flora and fauna species present at the site;
- Identification of important plan, bird, fish, and frog species, including any significant, threatened or listed species/communities;
- Whether the site is formally recognised in any international agreements e.g. Ramsar Wetland of International Importance or as an area of conservation significance (e.g. by a state government);
- Vital ecological functions of the site;
- Site providing vital habitat;
- Current ecological condition of the site
- Threats to ecological character of sites; and
- Overview of past management activities and actions.

5 Ecological Objectives and Targets

5.1 Overarching Ecological Objectives

The broad objectives of the RRP's Wetlands Project Elements are:

- restore hydrological and ecological functions at targeted wetlands and associated water courses (e.g. through re-introduced wetting and drying regimes);
- integrate wetland restoration efforts to ensure a representative mosaic of wetland types at an appropriate landscape-scale;
- provide environmental water through the development and application of ecologically appropriate hydrological management regimes; and
- improve hydrological connectivity of targeted wetlands and water courses with the River Murray and surrounding habitats, especially where existing infrastructure does not meet current best practice.

5.2 Site-specific Ecological Objectives and Targets

Management objectives and targets have been developed for wetlands within the Yatco Lagoon and Phases 1 and 2 of the Wetlands Project Elements and are provided in Wetland Management Plans at Appendix 2.

Each Wetland Management Plan describes site-specific ecological objectives, typically including improvements to water quality, the quality and extent of aquatic vegetation, the abundance and diversity of fauna, and the control of pest and invasive species. Objectives are supported by a series of quantitative or semi-quantitative SMART targets, based on biological and physico-chemical data and the conceptual understanding of wetlands processes, to assess the progress towards achievement of each objective. The targets are typically structured so as to be assessable using the monitoring techniques described in the RRP Monitoring and Evaluation Program (DEWNR 2012a) provided at Appendix 3. The objectives and subsidiary targets set for each site then determine, on a case-by-case basis, the site-specific hydrologic management regime.

The proposed hydrological regimes will support the achievement of site-specific ecological objectives and targets, and the broader objectives of the RRP as a whole. Site-specific objectives and proposed hydrological regimes have been developed to align with Ramsar principles and the objectives of regional management plans, whilst having consideration for biodiversity at a landscape scale.

An example of the ecological objectives and targets and supporting rationale for a selected Phase 2 Priority Wetland site is provided in the box below.

Teal Flat Wetland

At Teal Flat (Phase 2 priority Wetland), the following nine management objectives have been developed with the overall aim to maintain or improve the biodiversity without drying out the site in spring when the risk of wind erosion is highest, including:

- Support establishment of diverse and abundant assemblages of Emergent and Amphibious plants in the zone between +0.75 m and +0.40 mAHD
- Support establishment of diverse and abundant assemblages of Submerged and Amphibious plants in the zone between +0.40 m and +0.10 mAHD.
- Provide conditions for the establishment of a diverse and abundant frog community after refilling.
- Maintain diversity and abundance of fish community.
- Maintain guild composition and abundance of bird community.
- Prevent long-term salinisation of the water and soils from groundwater discharge and flushing of soils.
- Reduce the abundance and biomass of Common carp.
- Control pest plants in the direct impact zone.
- Improve the condition of Amphibious low-growing, Amphibious woody, Floodplain, Terrestrial dry and Terrestrial damp vegetation in the indirect impact zone (above +0.75 mAHD).

Objective 1: *Support establishment of diverse and abundant assemblages of Emergent and Amphibious plants in the zone between +0.75 m and +0.40 mAHD.*

Target 1: Emergent plants present in 100% of quadrats at +0.75 mAHD and at least 70% of quadrats at +0.45 mAHD by the end of the first five-year cycle.

Target 2: At least three species of Emergent plants at +0.45 mAHD and at least five species of Emergent plants at +0.75 mAHD by the end of the first five-year cycle.

Target 3: Amphibious plants detected in 100% of quadrats at +0.75 mAHD and at least 30% of quadrats at +0.45 mAHD by the end of the first five-year cycle.

Target 4: At least ten species of Amphibious plants detected at +0.75 mAHD and at least four species of Amphibious plants detected at +0.45 mAHD by the end of the first five-year cycle.

Target 5: Hornwort detected in at least 10% of quadrats at +0.45 mAHD by the end of the first five-year cycle.

Five of the six Emergent species recorded at Teal Flat were recorded at pool level, but the distribution was patchy. Bullrush was the most widely distributed (found in six of nine transects) while two species – River clubrush and Marsh clubrush – were found only in a single transect. However, all transects had at least one species present and the intent of the targets is to at least retain this characteristic (Targets 1 and 2). Three Emergent species were recorded at elevations of +0.40 mAHD (see elevation of -30 cm in Appendix B), found in five transects. Bullrush was found in all five transects, but Common reed and Marsh clubrush were found in only two and one transect respectively. The intent of the targets is to increase the distribution of species at this elevation (Target 1) and retain or increase the diversity (Target 2).

Ten Amphibious taxa were found across eight transects at pool level and the intent of the target is to increase the distribution to all transects (Target 3) while at least retaining or improving the diversity (Target 4). At +0.40 mAHD only one of the 16 Amphibious plant species were recorded –River red gum – and that in only two transects. The intent of the targets is to

increase the distribution (Target 3) and diversity (Target 4) at this elevation.

A drawdown to +0.40 mAHD will expose a narrow band of riparian plants and sediment around the wetland (Figure). The saturated soil zone moves down the elevation gradient, leaving a variable soil moisture profile when the water level reaches +0.40 mAHD. A range of Floodplain, Terrestrial dry and damp, and Amphibious plants will germinate on the exposed sediments. Clonal expansion of emergent plants may occur if soil moisture is favorable (e.g. Common reed, Bullrush, clubrushes).

Drawdowns lower than +0.40 mAHD will create the same situation, although the soil moisture profile in the fringing zone will be drier (due to longer exposure time). Some of the same species may germinate as for a shallow drawdown, but other taxa more suited to germinating in drier soils may also germinate. Exposure may result in the death of some Amphibious plants not tolerant of desiccation in the upper region of the zone, but these may germinate and survive lower in the profile.

On refilling, Floodplain and Terrestrial plants that established on the exposed sediments will be inundated and most likely die, as they do not tolerate inundation (Figure 1). If they are inundated before they set seed, they will most likely decline in relative proportion within the seed bank. However, Amphibious plants that germinate, including any of those currently not present, will remain and are likely to survive.

Refilling may also bring in whole plants, vegetative propagules and seeds, increasing the likelihood that additional Amphibious taxa may establish in subsequent drawdowns.

The only Submerged species observed by Kloeden (2013) – Hornwort – was found in a single transect at -30 cm elevation and the intent is to at least retain this distribution (Target 5). Re-filling following the drawdown should lead to further germination of this species if it is present in the seed bank.

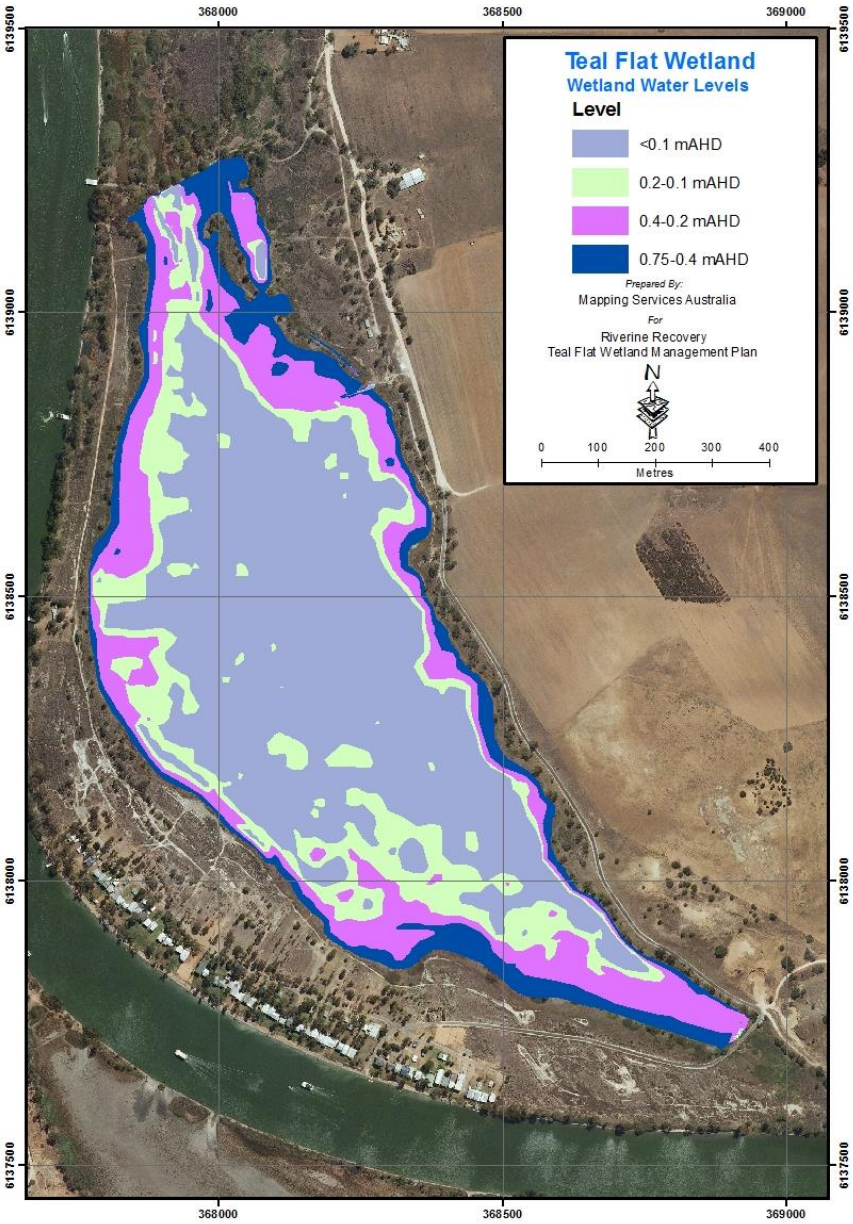

Figure 1: Areas exposed in various water level bands at the Teal Flat wetland.

6 Anticipated Environmental Outcomes

6.1 Overview of Ecological Benefits

Permanent wetlands have dominated the wetland landscape along the River Murray in South Australia since regulation (Pressey 1987; Walker 2006). It is understood that a lack of variability in water regime leads to simplified wetland ecosystems that display little difference in character to the ecosystems of the regulated, main river channel. That is, the ecological characters of the river and the permanently connected wetlands are relatively similar compared to what it is thought these wetlands were like prior to regulation (DEWNR 2012a). It follows then that increasing water level variability, through installation and operation of regulators, will lead to more diverse and complex ecosystem components and processes across time and space (see DEWNR 2012b for details). This will increase the resilience and adaptive capacity of these wetlands to variable river flow regimes (regulated and unregulated) and climate change.

Figures 4 and 5 illustrate the expected benefits of wetland water level manipulation, which are further described in DEWNR (2012b) at Appendix 4.

In permanent wetlands, habitats available to fish, frogs and waterbirds is limited by the water regime and the distinct and often narrow bands of vegetation (see Figure 5). Opportunities for colonising new habitats is limited. Competition may be high, productivity low and food chains well-defined and stable.

Water level variation will create areas that are inundated at varying frequencies and durations, and result in an improvement in aquatic, littoral and riparian vegetation assemblages (Figure 5), which support a range of native fauna during different life stages. In intermittently flooded wetlands, resource availability is expected to be much greater, and they may favour animals with short life cycles or short aquatic life stages and high mobility.

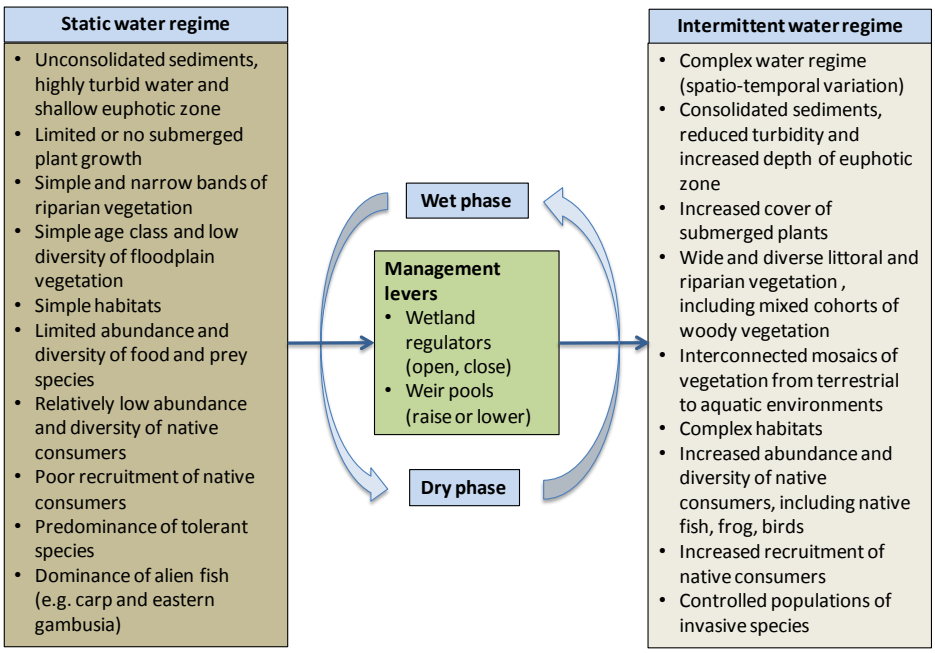

Figure 4: The broad goals of water level manipulation under the RRP (DEWNR 2012b).

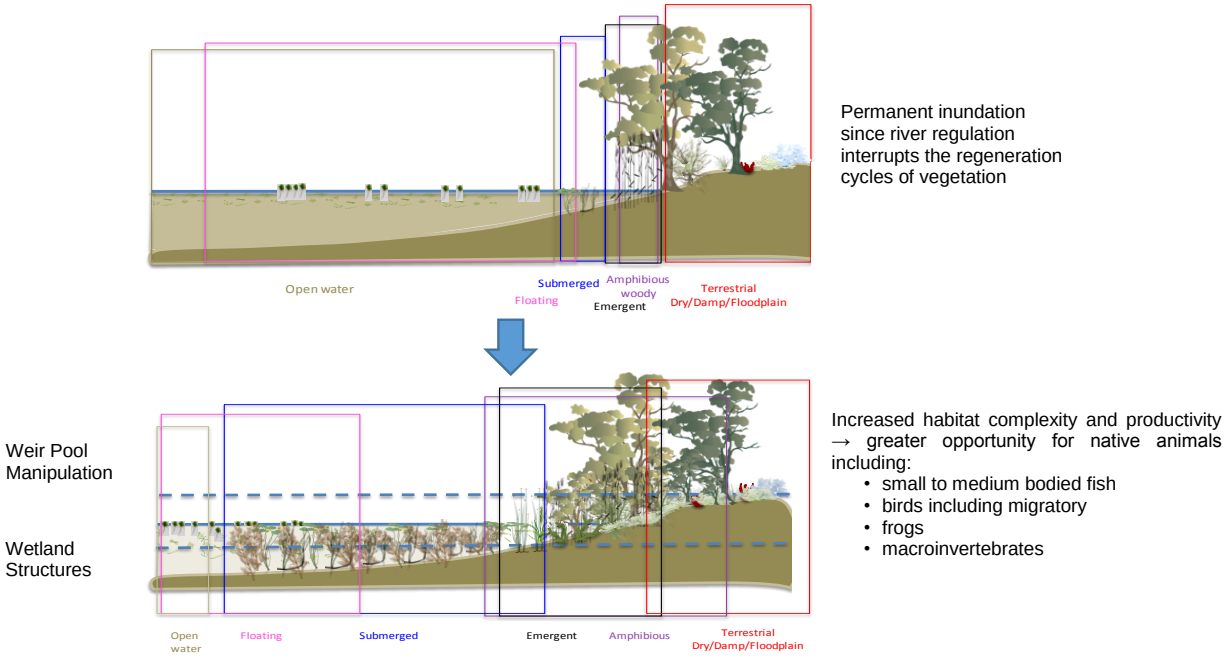

Figure 5: Conceptual model of the benefits of water level manipulation.

A more natural hydrological regime will stimulate ecological processes and functions. For example, a pulse in wetland productivity can occur following a rewetting event, or an increase in vegetation diversity and patchiness following a drying event. Consolidating wetland bed sediments through wetting and drying cycles can also reduce wetland turbidity, improve light penetration through the water column, and promote aquatic vegetation growth.

6.2 Yatco Lagoon and Phases 1 and 2 Wetlands Outcomes

The Yatco Lagoon and Phases 1 and 2 Wetlands Project elements aim to optimise environmental water use to provide opportunities to restore the health of water dependent ecosystems in targeted areas and contribute to landscape scale improvements to the South Australian River Murray riverine environment, linked to the other actions proposed within the Riverine Recovery Project e.g. Weir Pool Manipulation Project Elements.

Activities are targeted at sites containing high value environmental assets with the prospect of responding to improved management of watering regimes e.g. wetting and drying regimes that would more closely mimic pre-river regulation and provide improved habitat, including for endangered and threatened species. Planning and infrastructure works aim to achieve more efficient and effective use of water for the environment that would improve hydrological connectivity, fish passage and ecosystem health more generally.

The expected ecological outcomes from implementing the management regimes at each site are based upon evaluation of the baseline data collected for sites and detailed in Wetland Management Plans and the conceptual understanding of the likely ecological responses (DEWNR 2012b).

The Yatco Lagoon and Phase 1 and 2 Wetlands Project elements will provide benefits at both the landscape-scale and site-specific-scale, with landscape-scale benefits summarised below:

- contribute to building resilience and addressing riverine health across the whole of the River Murray system in South Australia
- provide the hydrological regimes required to increase condition, recruitment and diversity of floodplain and wetland flora and fauna
- recognise and protect the river's vulnerable species and their critical habitats, including in consideration of climate change
- maintain or improve water dependent ecosystem health and connectivity from the local to landscape-scales under variable water availability scenarios
- provide a representative mosaic of wetland types at an appropriate spatial configuration
- ensure a diversity of functioning wetland types in order to conserve the broadest spectrum of biodiversity
- improvements in the hydrological connectivity of targeted wetlands and watercourses
- the opportunity for carbon and nutrient exchange between parts of the floodplain and the river
- identify and improve refugia of current and potentially threatened species (e.g. Southern Bell Frog, Regent Parrot, and Southern Purple-Spotted Gudgeon)
- improve community aesthetic and recreation values that align with wetland ecological requirements.

At the site specific scale, ecological functional-based responses include:

- improved food web processes (e.g. vegetation recruitment, biofilm, amphibian and fish habitat, bird foraging)
- enhanced health and diversity of wetland vegetation, fish, birds and frogs
- improved water quality within wetlands
- fewer pest animal and plant species as a result of wetland drying
- improved recruitment, diversity, structural integrity and extent of water dependent native flora;
- provision of habitat for water bird breeding and foraging
- greater opportunity for native fish movement and functional habitat at targeted sites
- improved soil condition
- water quality parameters (i.e. Dissolved Oxygen, pH, nutrients, salinity, turbidity) maintained within guideline limits.

6.3 Potential adverse ecological impacts

Assessment of potential adverse ecological impact and development of management actions has been undertaken for each wetland and is demonstrated in the attached wetland management plans (Appendix 2). Each plan includes reference to the investigations undertaken at each site which include: cultural heritage surveys, landholder engagement, and ecological baseline surveys (including native fish,

frogs, vegetation, birds, groundwater and surface water) undertaken during the feasibility phase of the Yatco Lagoon and Phases 1 and 2 Wetlands Project Elements. This work, and subsequent hydrological modelling, have informed the prioritisation of wetland sites for management and have assisted the avoidance of negative ecological impacts through project design. This work has also informed the development of wetland management plans for each wetland, which guides implementation. An example of how this information has been integrated to inform management actions in provided in Table 2 (section 7 of this document).

Manipulation of water regime will be managed to reduce the risk of negative impacts upon water and sediment quality, vegetation and fauna species, for example by:

- Managing water quality within the tolerance levels of vegetation; for example by managing the influence of evaporation, saline groundwater seepage, exposure of acid sulfate soils and high nutrient events on water quality
- Avoiding proliferation of pest flora and fauna species, for example using screens in inlet structures to prevent movement of Common carp, *Cyprinus carpio*
- Manage timing to allow for germination and growth of juvenile plants (where possible)
- Avoid the terrestrialisation of exposed water bodies (DEWNR 2012b).

All proposed management objectives and actions represent trade-offs between different ecological and physico-chemical management priorities. Trade-offs are made to mitigate potential adverse impacts but also to balance both ecological and social factors influencing a site. Importantly, adaptive management principles are integral to all RRP Wetland Management Plans, so that site management regimes can be modified to address any emerging adverse impacts.

Impacts to significant, threatened or listed species and communities and where any matter of environmental significance are affected.

It is unlikely that the management of wetlands through the RRP will have significant adverse impact upon matters of National Environmental Significance (NES) and the values of the proposed wetland sites.

An *Environment Protection and Biodiversity Conservation* (EPBC) referral was completed for Phase 1B of the Wetlands Projects, and it was determined that the proposed action of installation and/or upgrade of surface water management infrastructure within 1B wetlands was not a controlled action.

A range of Commonwealth and State legislative approvals are required prior to construction of the proposed Wetlands Phase 2 works. DEWNR will ensure that the project meets any obligations under the *EPBC Act 1999*. Matters of NES relevant to the Phase 2 works may include a range of threatened species, ecological communities, and migratory species protected under the *EPBC Act 1999*. Preparation of a referral for Wetlands Phase 2 will be progressed ahead of funding being secured. On-ground works will not commence until a referral has been submitted and assessed.

6.4 Monitoring and Evaluation Program

A Monitoring and Evaluation Program for the Riverine Recovery Project outlines the adaptive management approach that will guide ongoing management of the proposed Wetlands (DEWNR 2012a provided at Appendix 3). Water quality and ecological monitoring will enable analysis of the impact of water level manipulation on the proposed wetland sites. This knowledge will be fed back into management decisions to ensure actions and targets are appropriate and to minimise potential negative environmental impacts.

Wetland management plans, conceptual models and technical designs form the basis of the RRP monitoring, evaluation, reporting and improvement (MERI) framework. The techniques that will continue to be used to monitor progress meet basin-wide standards, allow consistent temporal and spatial comparisons, and have been reviewed by technical experts.

7 Hydrology of the area and environmental water requirements

7.1 Hydrology of the area

As a result of river regulation, the water regime to South Australia's River Murray wetlands and floodplains sits at two extremes. For about 30% of wetland area, the operation of the river at a fixed operational pool level and reduction in flow has isolated these wetlands and they now only receive water infrequently. Conversely, the other 70% of wetland area is now effectively permanently connected to the river at or below its operational pool level and are now permanently inundated (Walker 2006). This increased permanence has led to decreased environmental condition in terms of wetland productivity and species diversity (Walker and Thomas 1993) resulting in a need to reinstate a variable water regime (Jensen 2002).

Each wetland has a management plan (Appendix 2) that specifies a wetting and drying regime over a five year period to enable site specific ecological objectives to be met. As well as the proposed watering regime, the management plans also document the hydrological values, wetland volumes and flow thresholds for each site. The management plans also document the proposed changes to hydrological management regimes including the reduced evaporative losses compared to the current, permanently connected, case.

The change in flow regime due to the proposal is expected to be minimal. The reduced evaporative losses in pool connected wetlands in South Australia will reduce the volume required to be delivered to South Australia to meet this need, and as such is available for use elsewhere in the basin by the CEWO through the transfer of entitlements.

Further information on the hydrology and modelling is found at section 8 of this document.

7.2 Environmental Water Requirements

Achieving the specified ecological objectives and targets for each wetland is dependent on an appropriate water regime. This refers to the cycle of wetting and drying at particular frequencies and for particular durations and extents of inundation at appropriate times of the year. The period between successive floods, temporal variability of wetting and drying events, and proximity or other (managed or unmanaged) wetlands are also parameters critical to the determination of a suitable watering regime.

Water regimes proposed for managing individual wetlands have been developed taking into account known environmental water requirements for various biotic and abiotic factors to ensure the ecological objectives and targets at each managed wetland site are achieved. DEWNR (2012b) provides a conceptual understanding of the known environmental water requirements relevant to the RRP wetlands (provided at Appendix 4) and has formed the basis for preparation and revision of wetland management plans during RRP. An adaptive management philosophy underpins all wetland management plans RRP wetlands, allowing modification of the water regimes as conceptual understanding of the environmental water requirements evolve, or to respond to external factors such as climate change.

In general, a targeted approach to developing a preferred water regime has been employed for RRP wetland sites based around:

- The development of a broad vision of the site (e.g. waterbird breeding, fringing vegetation, submerged vegetation);
- Identification of key values (e.g. waterbirds, floodplain vegetation such as River Red Gum, aquatic, littoral and lakebed vegetation);
- Identification of objectives and targets around the identified values;
- Determine water requirements for the objectives; and
- Model water requirements and develop a water balance.

Table 2 provides an example at Lake Merreti (Phase 1B) where known water requirements have informed the objectives and targets and have been incorporated into a proposed water regime.

Table 2: Example of the proposed water regime for Lake Merreti and how it aligns with known Environmental Water Requirements and the ecological objectives and targets at the site level.

	Indicative Water Regimes			
Water Regimes	**Complete dry phase**	**Wetland full**	**Partial dry phase**	**Enhanced natural flooding**
Objectives	• Establish dry wetland bed vegetation and support species that persist during the wet phase to provide habitat on refilling; • Allow wetland bed plants to complete life cycles and contribute to seed bank; • Reduce carp (and potentially *Eastern Gambusia holbrooki*) numbers through drying lake bed; • Consolidate lake bed soils	• Create habitat for fish, invertebrates and birds by supporting an abundance of submerged and emergent vegetation; • Allow submerged and emergent vegetation to reach sexual maturity, flower and contribute to seedbank (e.g. ribbon weed requires water in wetland for up to 2 years) (Roberts and Marston 2000)	• Maintain River Red Gum and other fringing vegetation; • Support submerged vegetation; • Enhance vegetation in the littoral zone and encourage movement of vegetation down the elevation gradient; • Provide habitat for migratory wading bird species	• Increase the duration and extent of flooding into fringing vegetation to create breeding habitat for colonial nesting waterbirds (e.g. River Red Gum and Tangled Lignum) • Maintain sections with >1 m depth for foraging preferably in areas where indigenous vegetation would not be killed by prolonged inundation (Kingsford 1991 cited in Timewell 2006) • Egrets, herons and allies - Provide areas with water level <60 cm for feeding purposes (Kingsford 1991 cited in Timewell 2006)
Key Ecological Objectives for each phase	• Submerged aquatic vegetation; • Wetland fringe vegetation	• Feeding Water birds; • Wetland fringe vegetation; • Submerged aquatic vegetation; • Feeding and breeding for reptiles/amphibians; • Feeding for raptors and owls; • Small fish breeding and feeding; • Macroinvertebrate production	• Wetland fringe vegetation; • Drought refugia for birds and fish	• Breeding by colonial nesting birds; • Reed dependent waterbirds; • Dabbling ducks
Actions	Dry wetland	Fill wetland	Partially dry to below River Red Gum fringe including recently established cohort	Natural flood event or prolonged through infrastructure operation
Timing	Spring	Early Spring	Late Summer	August - allow lag time before colonial birds begin breeding (Briggs *et al.* 1993 cited in Timewell 2006)
Duration	3-6 months (Steggles and Tucker 2003)	4-6 months (Steggles and Tucker 2003)	4-6 months (Steggles and Tucker 2003)	5-8 months (Briggs *et al.* 1993 cited in Timewell 2006)

Frequency	Not more than every 2-3 years (to allow aquatic plants to flower and contribute to seed bank) (Roberts and Marston 2000)	Every year except years of complete drying	Annual	Opportunistically when conditions are present in the River Murray
Rate	Evaporative	Fill as slow as possible - less than 1 cm per day [(recommended < 3 cm/day (Boon 2011)] to allow submerged species to germinate and emergent species to survive	Evaporative	• Fill at rate determined by the flood; • Drawdown at a rate that will prevent bank slumping and the rate determined by the head difference between Lake Merreti and Ral Ral Creek (Steggles and Tucker 2003)
Extent and depth	Completely dry	Maximum (16.32 m AHD)	Drawn down to a level that allows fringing vegetation to dry and sufficiently to provide habitat for migratory wading birds (this may vary from year to year).	Will be governed by natural flood event
Monitoring	• Vegetation (riparian, littoral and aquatic) • Tree health • Soil moisture levels of the lake bed • Maintenance of fish screens	• Vegetation (riparian, littoral and aquatic) • Tree health • Bird surveys • Macroinvertebrate monitoring • Water depth • Water quality monitoring *in situ* parameters • Fish surveys	• Vegetation (riparian, littoral and aquatic) • Tree Health • Bird surveys • Macroinvertebrate taxa • Water depth • Water quality parameters • Fish surveys • Soil moisture levels of lake bed • Monitor the health of fringing River Red Gum; • Monitor waterbird populations (diversity, abundance and breeding success); • Monitor the number of species and their cover in the littoral zone	• Vegetation (riparian, littoral and aquatic) • Tree Health Monitor colonial waterbird populations (diversity, abundance and breeding success); • Monitor lake water salinity
Risks (Steggles and Tucker 2003)	• Increase in groundwater salinity; • If drying not long enough, sediment re-suspension may occur upon inundation and lifecycle of some aquatic macrophytes and wetland bed species will be incomplete; • When drying Lake Merreti, ensure that Lake Woolpolool is not at bankfull to minimise saline groundwater mobilisation issues; • Decline in fish populations due to inlet structure at Ral Ral Creek not allowing effective fish migration	Keeping water in root zone of River Red Gum for >18 months likely to stress/kill species (Roberts and Marston 2000) Breeding by alien fish species	• Increase in abundance of *Typha spp.* • Deepwater pools may provide refuge for carp	• Stress/death of River Red Gum and Tangled Lignum; • Fish screens can inhibit movement of large native fish during and after over-bank flows

8 Operating regime

8.1 Determining the wetlands' hydrological operating (management) regimes

The wetland management plans for each RRP managed wetland include a description of the ecological objectives for each wetland and present the desired wetting and drying cycle (the hydrological regime) to achieve these objectives, depicted as a hydrograph. The hydrological regimes specified are for a five-year period that is cyclical in nature and has one or multiple water level draw-downs. The regimes represent an interpretation by ecologists and stakeholders of water level variations most beneficial for the ecology of the wetland. The hydrographs describe the management targets, such as the dates to commence a drawdown or refill event, the water level to be achieved during the drawdown, and the duration of the drawdown.

An example hydrograph is presented in Figure 6 to illustrate the concept.

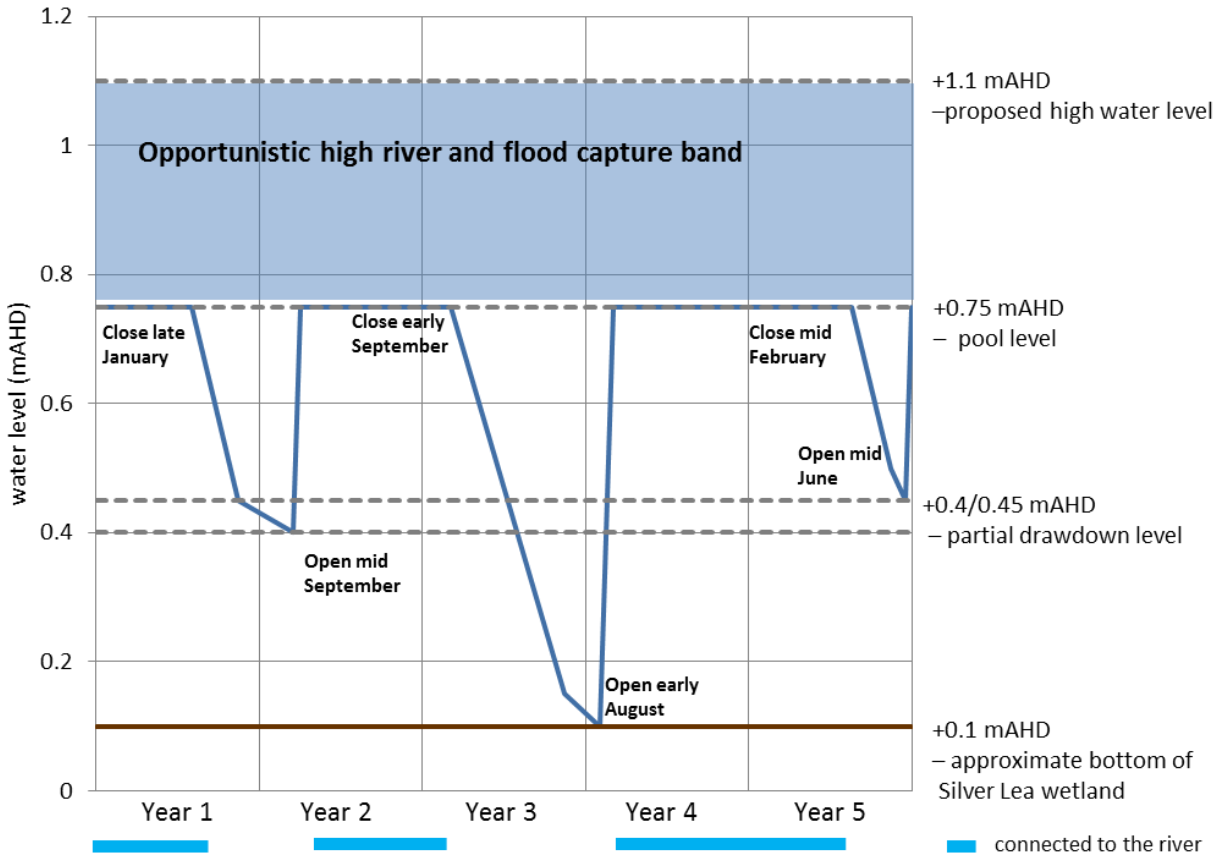

Figure 6: Target five-year hydrograph for the Silver Lea wetland.

Management plans for the wetlands that have a wetting/drying regime and produce evaporative savings and are therefore relevant to the SDL adjustment process are provided at Appendix 2.

8.2 Original SWET modelling

To calculate the evaporative savings resulting from the management plan for each managed wetland, the Savings at Wetlands from Evapotranspiration daily Time-series (SWET) daily time-step water balance model (Gippel, 2005a; 2005b; 2005c) has been used. Australian and South Australian governments have previously agreed that the SWET[1] is appropriate for calculating water savings. This water balance model has been endorsed as a procedure for listing evaporative savings on The Living Murray Developmental Register. The calculations support the development of a long-term water access entitlement for each wetland's requirements and a contribution towards the delivery of the water savings outcomes outlined in the South Australian and Commonwealth Water Management Partnership Agreement.

The SWET model provides the best available estimate of water savings based on the hydrological regimes at individual wetlands. It uses climate data, the wetland's hydrological regime and the wetland's physical characteristics (e.g. bathymetry, hydraulic structures and sediment bed parameters) to calculate flow into the wetland, water losses due to evaporation, and wetland water level at a daily time scale.

For the purposes of calculating the evaporative savings generated by the management plans, the SWET models assumed entitlement flow conditions (i.e. the river at constant pool level) to estimate future managed wetland water requirements and water savings at each site. In this approach, flood events were not considered, nor were exceptional drought years.

8.3 SWET Modelling for the SDL Adjustment Mechanism

For the calculation of the contributions of supply measures to the SDL adjustment, a default method is described in Schedule 6 of the Basin Plan. The assessment will be conducted within a hydrological modelling environment (MSM-Bigmod) using comparative analysis between two model scenarios. The first of these scenarios is referred to as the *benchmark scenario*. This scenario represents MDBA's best estimate of the potential changes to the flow regime in the river systems, if the settings outlined in the Basin Plan are implemented (MDBA 2014). The second type of scenario comprises the *SDL-adjustment scenario*. To include the RRP in the SDL-adjustment scenario, two changes to the Benchmark Model are required:

- Changes in MSM to transfer the entitlement from the consumptive pool to the environment
- Representation of the reduced evaporative losses resulting from the project in Bigmod

It is expected that the MDBA will make the necessary changes to MSM. The representation of the reduced losses from the project for input to Bigmod are based on the SWET model for each wetland.

A number of modifications to the original RRP SWET models were required to:

1. represent the full period of the benchmark model (1895 – 2009); and
2. include a dynamic river level, to ensure the planned management regime could still be undertaken with the Basin Plan frequency of overbank events expected.

[1] *Murray-Darling Basin Commission (MDBC) endorsed spreadsheet model 'Savings at Wetlands from Evapotranspiration daily Time-Series' (SWET), written by Dr Chris Gippel of Fluvial Systems Pty Ltd (Gippel 2005a).*

These included changes to:

- accept a transient river flow
- use backwater curves to estimate daily river levels at each wetland based on the daily flow
- allow overtopping of banks/regulators and filling of wetlands during floods
- adjust the management regime to reinstate drying events that were not successful.

Details on the modifications made are outlined in Appendix 5.

The impact of the ability to achieve the evaporative savings simulated using SWET over a range of flow regimes (the BP2400, BP2800 and BP3200 model runs were considered) has been assessed (Appendix 5). The results demonstrate that:

- the expected evaporative savings using the updated SWET models could still be achieved with a water recovery of 3200 GL
- there was very little variation in the evaporative savings simulated when changing the water recovery volume by a magnitude greater than that expected through the SDL Adjustment Mechanism (i.e. 800 GL).

This is likely to be due to the relatively small number of drying events involved in the wetland management plans, which means that there is sufficient opportunity to undertake these drawdowns, even with 3200 GL recovered compared to the baseline diversion limit. Given this result and through discussion with Murray-Darling Basin Authority (MDBA) modellers, the externally calculated evaporative savings are proposed to be adopted directly in the model for the purposes of the SDL Adjustment Mechanism, as opposed to coding in all wetlands explicitly.

9 Potential risks to the environment and third parties

Risk assessments and development of appropriate mitigation strategies have been undertaken as part of the development of Project Implementation Plans for the Yatco Lagoon and Wetlands Phase 1 elements of RRP, including assigning responsibilities and timeframes for each mitigation strategy.

The risk management framework was reviewed during Phase 1 project implementation and it was determined that a similar framework be implemented for Phase 2 Wetlands Project element. As such, a risk assessment for Phase 2 has been undertaken. Identified risks have been assessed and appropriate mitigation measures established. Responsibility for each mitigation strategy is assigned to project staff for action by a set completion date.

A summary of the key risks and mitigation strategies for the Phase 1B and Phase 2 Wetlands Project elements are provided in Table 3. It is noted that a number of these risks are closed off as Phase 1B is complete, wetland management plans developed and detailed designs complete.

Yatco Lagoon has been completed and ongoing management of risks is addressed in the wetland management plans (Appendix 2).

Risks will continue to be managed in accordance with the DEWNR Risk Management Policy and Procedure which is based on AS/NZS ISO 31000:2009 Risk Management. A project risk register for internal DEWNR use has also been developed as a tool for identifying and managing all relevant project risks. It is important to note that the project risk register is a 'live' document that will be maintained and amended throughout the project life-cycle.

Table 3: Summary of risks, mitigation strategies and residual risks for Phase 1 and Phase 2 Wetlands Project elements.

Risks category	Risk Description	Likelihood (Almost certain; Likely; Possible; Unlikely; Rare)	Consequences (Extreme; Major; Moderate; Minor; Insignificant)	Risk Level (Extreme, High; Moderate; Low)	Mitigation Action (Prevention; Reduction; Transfer; Contingency; Accept)	Mitigation Strategies	Residual risk
Environmental	**Uncertainty of conceptual model inputs/outputs and/or parameters**	Possible	Minor	Low	Accept	Review and address through project governance; Adaptive management framework	Low
Environmental	**Results of the conceptual modelling are not in line with expectations result in environmental harm**	Unlikely	Major	Low	Accept	Review all activities where modelling has been used and reassess; Adaptive Management framework	Low
Environmental	**Unexpected ecological or environmental impacts are identified during construction**	Possible	Major	High	Reduction	Review all activities for unexpected impacts and develop process for dealing with them. Thorough baseline survey of vegetation, fish, frogs, birds, groundwater, surface water quality, geotechnical investigations have been undertaken.	Medium
Environmental	**Unexpected ecological or environmental impacts post construction**	Possible	Major	High	Reduction	Review all activities for unexpected impacts and develop process for dealing with them through detailed monitoring. Monitoring and adaptive management framework.	Medium
Environmental	**Mobilisation of saline groundwater during wetland management**	Unlikely	Major	Medium	Prevention	Baseline survey was undertaken to identify and avoid high risk sites; Monitoring and adaptive management	Medium
Environmental	**Increased salinity load to river**	Unlikely	Minor	Low	Accept	Baseline survey was undertaken to identify and avoid high risk sites; Monitoring and adaptive management	Low

Risks category	Risk Description	Likelihood (Almost certain; Likely; Possible; Unlikely; Rare)	Consequences (Extreme; Major; Moderate; Minor; Insignificant)	Risk Level (Extreme, High; Moderate; Low)	Mitigation Action (Prevention; Reduction; Transfer; Contingency; Accept)	Mitigation Strategies	Residual risk
Environmental	**Acid sulphate soils are exposed during the wetting/drying regime**	Possible	Moderate	Medium	Reduction	Monitor as required and have strategy in place should it occur, including identifying treatment areas for drying out prior to transport to disposal (during construction) and adaptive management (during operations)	Medium
Environmental	**Negative impacts on water quality as a result of operational change**	Unlikely	Minor	Low	Reduction	Monitor and develop plan to manage if it becomes an issue. Part of adaptive management. Planned events undertaken when sufficient natural flow to minimise risks.	Low
Environmental	**Contamination identified during site works causing release of contaminants into receiving waters**	Possible	Moderate	Medium	Reduction	Ensure use of appropriate retaining structures during excavation/dredging works in accordance with EPA dredging licence to prevent spread of contamination	Low
Environmental	**Ecological monitoring discontinued after project closure**	Possible	Moderate	Moderate	Reduction	Identify who should be responsible for monitoring post project closure and transfer responsibility. Identify monitoring resources and funding sources. Rationalise monitoring efforts and procedures across RRP wetlands and floodplains.	Medium
Project development & Delivery (Environmental)	**Contractors fail to comply with environmental management plans and statutory obligations**	Possible	Moderate	Medium	Transfer	Ensure contractor has contractual obligation to meet minimum environmental criteria. Contractor to develop Environmental Management Plan Site supervision and auditing of compliance with systems.	Medium

Risks category	Risk Description	Likelihood (Almost certain; Likely; Possible; Unlikely; Rare)	Consequences (Extreme; Major; Moderate; Minor; Insignificant)	Risk Level (Extreme, High; Moderate; Low)	Mitigation Action (Prevention; Reduction; Transfer; Contingency; Accept)	Mitigation Strategies	Residual risk
Project development & delivery	**Late delivery of works**	Likely	Moderate	High	Reduction	Careful consideration of liquidated damages; Payment milestones linked to completion milestones	Medium
Project development & delivery (cultural)	**Delay to project progress due to in-attendance of cultural heritage monitors during construction**	Possible	Moderate	Medium	Accept	Monitor attendance and ensure communication protocols are established	Medium
Project development & delivery	**Bushfire threatens work site/access leading to loss of equipment and late delivery of the works**	Possible	Moderate	Medium	Accept	Ensure contractor carries appropriate levels of insurance	Medium
Project development & delivery (Financial)	**Contingency funding has been fully expended**	Possible	Minor	Medium	Accept	Continually review financial situation and advise of likely problems well in advance so appropriate actions can be instigated; Revise and narrow scope as required to be within budget	Low
Project development & delivery (Financial)	**Weather causes delays in construction activities**	Likely	Minor	Medium	Accept	Review possible activities and wait for weather to improve or water levels to recede; Ensure EOT process is managed effectively	Medium
Project development & delivery (Financial)	**Weather/rise in river levels delay activities**	Possible	Major	High	Prevention	Monitor water delivery timeframes; Continue to monitor forecast river levels and managed schedule works accordingly	Medium
Project development & delivery (social)	**Excessive dust generation leads to community landholder issues and late delivery of works**	Possible	Moderate	Medium	Reduction	Ensure contractors EMP adequately addresses dust suppression requirements	Low

Risks category	Risk Description	Likelihood (Almost certain; Likely; Possible; Unlikely; Rare)	Consequences (Extreme; Major; Moderate; Minor; Insignificant)	Risk Level (Extreme, High; Moderate; Low)	Mitigation Action (Prevention; Reduction; Transfer; Contingency; Accept)	Mitigation Strategies	Residual risk
Project development & delivery (cultural heritage)	**Delay to project progress due to identification of cultural significant sites or artefacts**	Likely	Moderate	High	Reduction	Avoid sensitive areas and cap access tracks through sensitive areas	Medium
Project development & delivery (social)	**Excessive construction noise leads to community/landholder issues and late delivery of works**	Possible	Moderate	Medium	Accept	Site Project Manager and Site Surveillance contractor to monitor and assess construction noise levels. Contractor working times shall be as detailed in the contract	Low
Social	**Third party safety incident**	Possible	Severe	Extreme	Reduction	Ensure contractor Safety Management procedures addresses site bunting/signage/security requirements. Site surveillance contractor to monitor	High
Social	**Community expectations are far different from project objectives**	Possible	Moderate	Medium	Accept	Develop robust Communications plan and monitor as required. Communicate with the community regularly to keep them in the picture.	Medium
Social	**Bushfire threatens work site/access leading to safety incident**	Possible	Severe	Extreme	Reduction	Ensure contractor Safety Management Plan and emergency response procedures address bushfire risk. No work is to be undertaken in catastrophic conditions	High
Social	**Breach of site security leads to safety incident**	Possible	Severe	Extreme	Reduction	Ensure contractor Safety Management addresses site security requirements. Site surveillance contractor to monitor	High
Social	**Key stakeholders don't support RRP activities**	Possible	Major	High	Accept	Monitor communications and intervene where necessary to resolve and regain their confidence; Proactive communications with stakeholders	Low

Risks category	Risk Description	Likelihood (Almost certain; Likely; Possible; Unlikely; Rare)	Consequences (Extreme; Major; Moderate; Minor; Insignificant)	Risk Level (Extreme, High; Moderate; Low)	Mitigation Action (Prevention; Reduction; Transfer; Contingency; Accept)	Mitigation Strategies	Residual risk
Social	**Safety breach during construction**	Unlikely	Severe	High	Reduction	Ensure OH&S plans/processes are in place and operating effectively	High
O&M	**Ongoing operational funding**	Possible	Severe	Extreme	Reduction	Investigate funding alternatives; Quantify ongoing costs and resources needed (i.e. develop operations manuals and asset management plans)	High
O&M	**Inadequate O&M strategy**	Likely	Moderate	High	Reduction	Operational handover strategy plan to be developed	Medium
O&M	**Ongoing management of the site including operations and maintenance post project has not been sorted**	Unlikely	Minor	Low	Prevention	Develop and agree on ongoing management strategies prior to completion of project	Low
Project development & delivery	**Project scope creep occurs**	Possible	Moderate	Medium	Accept	Manage as required and refer creep to governance committee for resolution	Medium
Project development & delivery	**Concept designs don't meet functional requirements**	Possible	Major	High	Reduction	Implement quality assurance to prevent this happening	High
Project development & delivery	**Breakdown with construction contracts**	Possible	Moderate	Medium	Reduction	Make sure contracts are managed and processes are in place to handle any problems	Medium
Project development & delivery (financial)	**Tendered construction costs are over allocated budget**	Possible	Major	High	Reduction	Review of cost estimates and detailed designs by independent third party; Ensure risk allocation seeks to transfer risk to party best able to manage risk during contract negotiation phase.	Medium

Risks category	Risk Description	Likelihood (Almost certain; Likely; Possible; Unlikely; Rare)	Consequences (Extreme; Major; Moderate; Minor; Insignificant)	Risk Level (Extreme, High; Moderate; Low)	Mitigation Action (Prevention; Reduction; Transfer; Contingency; Accept)	Mitigation Strategies	Residual risk
Project development & delivery (financial)	**Cost estimates developed during planning have been under estimated**	Possible	Moderate	Medium	Reduction	Control scope changes, variations and any schedule of rates items; Ensure sufficient contingency allowance in total authorised contract value	Medium
Project development & delivery (legal & landholder)	**Delays due to landholders agreement to enter land not obtained**	Possible	Moderate	Medium	Prevention	Ensure all affected landholders are kept informed; Seek delegation under Section 19 of River Murray Act for authority to enter land and construct wetland structures	Low
Project development & delivery (financial)	**Delays caused by the requirement of an EPBC Act referral for any endangered species found**	Possible	Major	High	Accept	Baseline surveys undertaken to identify potential species present in area of impact; design and construction alternatives considered to minimise or avoid impact to sensitive areas; Progress construction at sites where there is no EPBC issues Start EPBC referral as soon as possible.	Medium
Legal and landholder	**Delay due to lack of landholder support and refusal to sign agreement**	Possible	Major	High	Reduction	Ensure all affected landholders are kept informed	Medium
Legal & landholder	**Landowners not supportive of wetland management**	Unlikely	Minor	Low	Accept	All Phase 2 wetlands have landholder support. Landholder's requirements have to be considered to ensure continued support.	Low
Legal & landholder	**Unexpected delays in obtaining regulatory approvals**	Possible	Minor	Medium	Reduction	Early engagement with approval authorities; Monitor situation with regulators to facilitate successful outcomes	Low
Social	**Contamination exposed during construction which causes injury or illness to workers**	Unlikely	Moderate	Medium	Reduction	Detailed design phase conducted geotechnical and environmental testing program to identify potential contaminants and PASS	Medium

Risks category	Risk Description	Likelihood (Almost certain; Likely; Possible; Unlikely; Rare)	Consequences (Extreme; Major; Moderate; Minor; Insignificant)	Risk Level (Extreme, High; Moderate; Low)	Mitigation Action (Prevention; Reduction; Transfer; Contingency; Accept)	Mitigation Strategies	Residual risk
Cultural Heritage	**Aboriginal Heritage Act stop work processes enacted on discovery of Aboriginal heritage objects or remains**	Likely	Moderate	High	Reduction	High level of engagement with Aboriginal nations heritage teams in design stages. Clarity on heritage conditions for detailed designs. Awareness raising and induction of contractors on heritage processes and stop work rules	Medium

Qualitative measures of likelihood

Level	Descriptor	Description
A	**Rare**	The event may only occur in exceptional circumstances. *(In probability terms this may mean less than 2% chance of occurrence.*)
B	**Unlikely**	The event could occur at some time. *(In probability terms this may mean between 3% to 10% chance of occurrence.)*
C	**Possible**	The event should occur at some time. *(In probability terms this may mean between 11% to 64% chance of occurrence.)*
D	**Likely**	The event will probably occur in most circumstances. *(In probability terms this may mean between 65% to 94% chance of occurrence.)*
E	**Almost Certain**	The event is expected to occur in most circumstances. *(In probability terms this may mean greater than 95% chance of occurrence.)*

Qualitative measures of consequences (impact)

Level	Descriptor	Examples of detailed descriptions in terms of Critical Success Factors (CSFs)
1	**Insignificant**	The consequences can be dealt with through routine operations/absorbed through normal business activity. Consequences could include low financial loss, small delays, no injuries, no reputation/image impact.
2	**Minor**	The consequences would threaten the efficiency or effectiveness of *some aspects* of the program, but would be dealt with internally. Consequences may include medium financial loss, minor infrastructure damage, minor political impact, injury requiring first aid.
3	**Moderate**	The consequences would not threaten the program but would mean changes to operations or significant review. Ability to meet targets affected. Consequences may include high financial loss, impaired capability, moderate reputation/image impact, medical treated injury/lost time injury < 2 weeks.
4	**Major**	The consequences would threaten the survival or continued effective function of the program, or require intervention by senior management or Ministers. Ability to meet targets significantly impaired but with proper management can be endured. Consequences may include major financial loss, loss of capability, major reputation/image impact, lost time injury > 2 weeks.
5	**Severe**	The consequences would threaten survival of the program and also the organisation/business unit, possibly causing major problems for clients. Ability to meet targets seriously impaired. Consequences may include the potential to cause business collapse, significant financial loss, long-term loss of capability, significant reputation/image impact, fatality.

10 Costs, benefits and funding arrangements

10.1 Summary of costs

Funding for the RRP is approved and provided through the Commonwealth Government's $12.9 billion *Water for the Future* program. As outlined within the Project Schedule, the Commonwealth Government has provided funding for the Yatco Lagoon and Phase 1 Wetlands Project Elements. Total project costs for these project components are:

- Yatco Lagoon Element- [redacted]; and
- Phase 1 Wetlands Project Element – [redacted].

A further breakdown of costs associated with individual activities for each component is provided within the Project Schedule provided at Appendix 1.

As outlined in the Project Schedule, in addition to Phase 1 funding, Commonwealth funding for Phase 2 Wetlands Project Element is also available. A business case has been submitted to the Commonwealth Government for consideration through a separate process. The proposed budget for delivery of Phase 2 Wetlands Project Element is approximately [redacted] as outlined in Table 4.

Consistent with the RRP Project Schedule, it is proposed that the Wetlands Phase 2 cost sharing will be on the basis of a 90:10 (Commonwealth: State split), with Commonwealth Government funding limited to only that specified in the final funding contract.

Table 4: Proposed Phase 2 budget.

Proposed Program Budget Line	**Budget ($)**
CONSTRUCTION PROGRAM	
Construction	[redacted]
Monitoring, Evaluation and Communications	[redacted]
Project Management	[redacted]
Contingency	[redacted]
TOTAL Construction Program	[redacted]

10.2 Governance arrangements for ongoing operations and maintenance of structures

The Minister for Water and the River Murray is the asset owner of all Riverine Recovery Project related infrastructure, supported by Section 17 of the River Murray Act 2003 which provides that the Minister may construct, maintain or remove such works, and undertaken any work, as the Minister thinks fit.

DEWNR is the authorised authority that acts on behalf of the Minister and is responsible for preventative and incidental maintenance of RRP structures (asset maintenance). Day to day management and monitoring and other activities may be undertaken by DEWNR or may be assigned to

other organisations or persons. Once construction of infrastructure is complete, the DEWNR's River Murray Infrastructure Operations Unit:

- will assign specific roles and responsibilities for the ongoing day to day management of a site and infrastructure. This may include, where appropriate, community groups acting as site managers for some aspects. Appendix 6 provides the definitions and accountabilities of roles for Wetland site Management.
- Record assets on an asset register
- Finalise relevant land management agreements including listing on land titles
- Update wetland management plans with details of new infrastructure, planned wetting and drying regimes and roles and responsibilities for each site
- Operate the infrastructure according to planned wetting and drying cycles (outlined in wetland management plans), advice from site managers, and river conditions (above entitlement flow).

10.3 Details of ongoing operation and maintenance funding arrangements and costs

The funding to support the operation and maintenance costs associated with these assets will be an on-going State responsibility.

It is estimated that approximately [redacted] per year of Operation and Maintenance investment will be required, as outlined in Table 5, which provides a high level estimate of expected ongoing operations and maintenance costs relating to RRP Wetland assets (including structures that were prior to RRP degraded and an unfunded liability). This estimate will be reviewed on an ongoing basis.

Table 5: Cost estimate of expected ongoing operations and maintenance costs relating to RRP Wetland assets.

Ongoing Operation and Maintenance costs	Budget 2014-15	Estimate 2015-16	Ongoing estimate
Total for RRP wetland structures	[redacted]	[redacted]	[redacted]

*excludes asset depreciation or replacement costs and does not include the cost of operating and maintaining new infrastructure constructed in the future under the South Australian Riverland Integrated Infrastructure Programme

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12 Appendices

APPENDIX 1: Sixth Variation to Schedule 2 to the Water Management Partnership Agreement for the South Australian Priority Project SA-05: Riverine Recovery Project Schedule

APPENDIX 2: Wetland Management Plans

Wetland sites managed via implementing wetting/drying regimes are the source of the water savings for the RRP and therefore the only sites applicable to the SDL adjustment process. As such, wetland management plans are provided for these sites only as indicated below.

RRP Project Element	Site Name	Map Reference (Figure 2)	Management Plan provided	Wet/Dry regime
Yatco Lagoon	Yatco Lagoon	20	X	X
Wetlands 1A	Slanley Complex	1	X	X
	Pipeclay	2	X	X
	Pilby Complex	3	X	X
	Bunyip Reach	4	Not available	X
	Martin Bend	11	X	X
	Causeway Complex	12, 13, 14	X	X
	Ngak Indau	15	X	X
	Loveday (Mussel) Lagoons	21	X	X
	Banrock Station	22	Not available	X
	Hart Lagoon	24	X	X
	Ramco Lagoon	25	X	X
	Nigra-Schillers	26, 27	X	X
	Morgan Conservation Park	28	X	X
	Brenda Park	29	X	X
	Murbpook Lagoon	31	X	X
	Sweeneys Lagoon	34	X	X
	Morgans Lagoon	35	X	X
	Noonawirra	36	X	X
	Devon Downs South	40	X	X
	Reedy Creek	47	X	X
	Paiwalla	48	Not applicable	
	Jury Swamp	49	Not applicable	
	Riverglades	50	Not applicable	
	Whirlpool Corner	9	Not applicable	
	Overland Corner	23	Not applicable	

Wetlands 1B	Lake Merreti	6	X	X
	Lake Woolpolool	7	X	X
	Beldora Wetlands	17, 18, 19	X	X
	Murbko South	30	X	X
	North Purnong	43	X	X
Wetlands Phase 2	Murtho-Weila	5	Not applicable	
	Woolenook Bend	8	Not applicable	
	Goat Island and Paringa Paddock	10	Not applicable	
	Pyap Horseshoe North Section	16	X	X
	Irwin Flat	32	X	X
	Sugar Shack Complex	37	Not available	X
	Silver Lea (Swan Reach Ferry)	38	X	X
	Big Bend	39	X	X
	North Caurnamont	42	X	X
	Teal Flat	45	X	X
	Teal Flat Hut	46	X	X
	Donald Flat – reserve site	33	X	X
	Kroehns Landing – reserve site	41	X	X
	Caurnamont – reserve site	44	X	X

APPENDIX 3: DEWNR 2012a. Monitoring and Evaluation Program

APPENDIX 4: DEWNR 2012b. Riverine Recovery Monitoring and Evaluation Program: Conceptual understanding of the ecological response to water level manipulation.

APPENDIX 5: Additional Modelling Information

SWET Model Modifications

A number of modifications to the original SWET models were required for the purposes of the SDL Adjustment Mechanism, including:

- to accept a transient river flow
- to use backwater curves to estimate daily river levels at each wetland based on the daily flow
- to allow overtopping of banks/regulators and filling of wetlands during floods
- to adjust the management regime to reinstate drying events that were not successful.

The daily river flow was converted to a river water level using a bilinear interpolation function which depended on both flow rate and river chainage. The data used by the interpolation function in shown in Figure A, which illustrates the effect of flow rate, river chainage, and weir location on river water levels. All wetlands are overtopped at flows of less than 60,000 ML/d, as such this was the limit of flows required for this purpose.

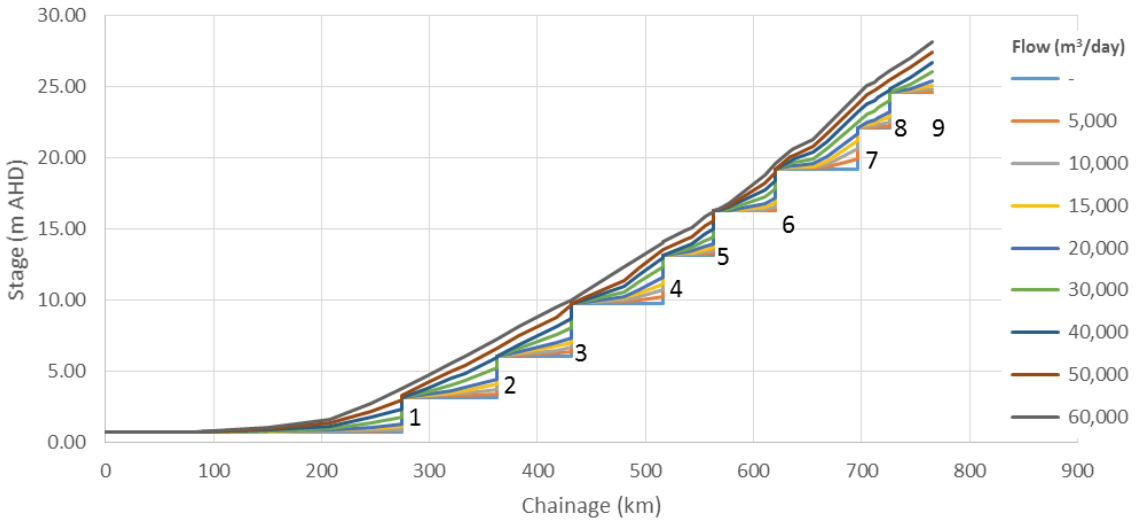


Figure A: Backwater curve data.

Top of regulator / top of banks data was identified for each wetland to allow estimation of uncontrolled filling due to overtopping. Depending on the data sources available at each site, these elevations were taken from a combination of surveyed structure levels, design drawings, and GIS analysis of banks using the DEM available. The SWET models were then modified to incorporate filling when the regulator / banks were over topped.

An example of a wetland management regime is shown in Figure 2, as the red dashed line, which involves one full drying event in the five year hydrological regime, and two partial drying events. The effect of overtopping is also shown in Figure B, in which the regulator was overtopped in both August year 1, and September year 5. In the September year 5 case, the wetland was drying due to management actions when the river water level caused the wetland to fill, causing the drying action to

end before the target water level had been reached. In the August year 1 case, the regulators were open and the wetland filled and emptied with the river.

Logic was included in the SWET model to control the regulators in response to river flow. For each drying period, the start day and the target water depth was provided as per the management plans, repeated in a continuous cycle. When the start day of a drying period was reached, the regulators were closed, and remained closed until either:

1) The target water level (as specified by the hydrograph outlined in the management plan) was reached
2) A flood caused overtopping, but the drying had reduced the water level to over 75% of the target water level.

This regulator control logic can be seen in Figure B. During the first drying period, the target water level was reached at the expected time. The second drying period required an additional month of drying before the target water level was reached in excess of the wetland manager's intended plan. The third drying period started with higher river water levels, so drying lagged the intended hydrograph by a few weeks. During winter, drying slowed as expected, but when the water level started dropping again in late spring, a flood caused the wetland to fill. The drying action had already caused the water level to reach 0.1 m AHD, 86% of the desired drawdown, and so the drying event was accepted as successful and not reattempted after the flood passed.

Another example of the regulator control logic is shown in Figure C, in which the first drying period was interrupted by a flood at the start of the drying period. Once the flood passed, the drying recommenced and the target water level was reached two months later. The second and fourth drying periods occurred as scheduled, but the third was also interrupted by a flood. However, as drying had been largely successful the third drying period was not restarted.

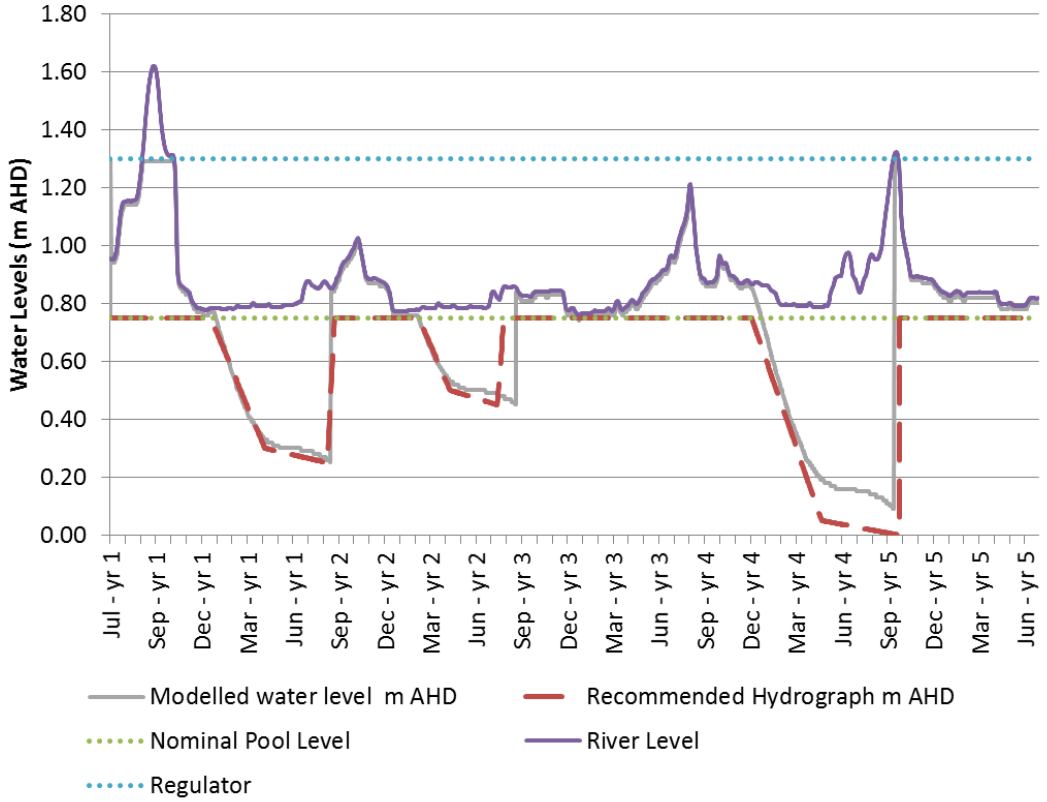


Figure B: Example wetland hydrograph (2400 GL flow scenario)

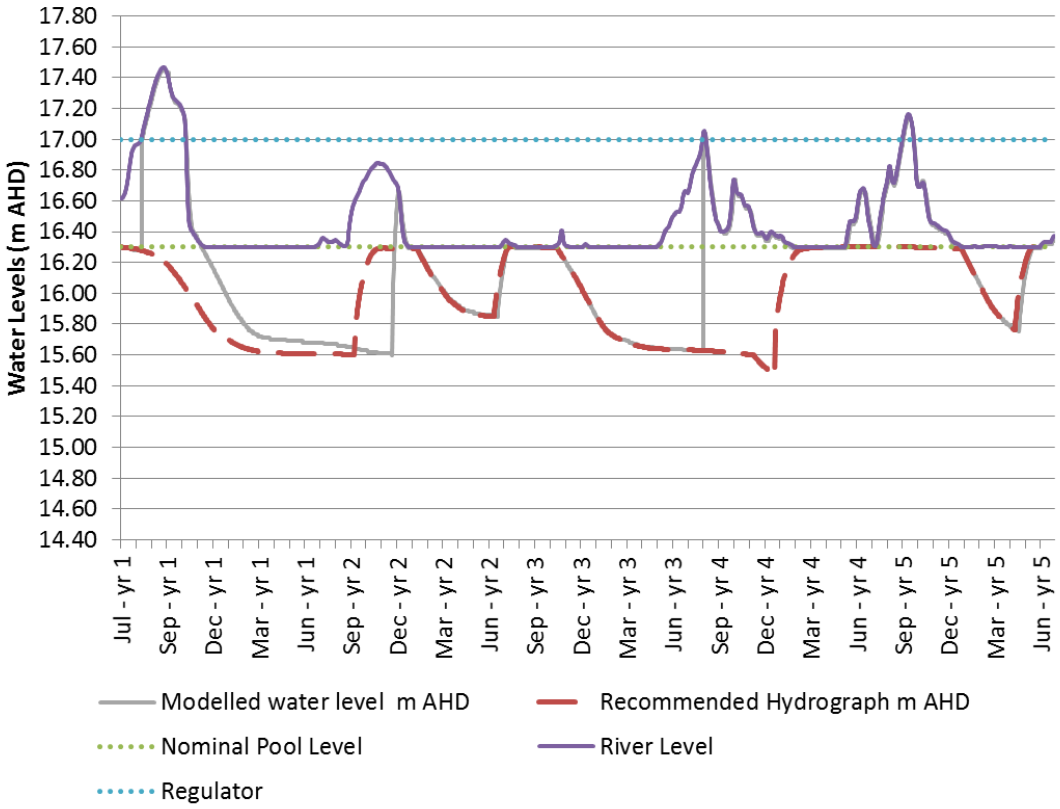


Figure C: Lake Woolpolool wetland hydrograph (2800 GL original basin plan flow scenario)

To assist with water accounting, the SWET models were modified to count volumes of water leaving the wetland. The static water level SWET models had only needed to count evaporation losses and water entering the wetland during filling. With transient river levels, it was also necessary to count volumes leaving the wetland on the falling limb of a river flow event so that this water was not counted as consumed by the wetland.

To assist with draining of wetlands on the falling limb of river flow events, the regulator logic included a check for river stage vs. wetland water level. During drying cycles, regulators would usually be closed, but if the wetland had been filled by a flood it may be worthwhile opening the regulator to let flood waters back into the river, rather than rely on evaporative drying from a high starting water level. The effect of this logic can be seen in the first drying event in Figure D, where the wetland is drained back into the river after the flood before evaporative drying commences in November.

Impact of Change in Flow Regime on Evaporation Savings

The daily flow to SA from the following Basin Plan were used to consider a range of flow regimes:

- Run 847 - 2800 GL
- Run 863 - 3200 GL
- Run 859 - 2400 GL

Five wetlands were tested for the impact of changes in river levels on the evaporative savings generated, representing a range of evaporative savings volumes and management plans. Cumulative evaporative savings compared to the no management case are presented for each of the five wetlands considered in Figures D – H. The draining (increase in evaporative savings compared to permanently connected) and filling (decrease in evaporative savings compared to permanently connected) can be seen as the spikes in the figures.

It can be seen from figures that the cumulative evaporative savings are very similar across the flow regimes. As an example for Lake Merreti (Figure D), the difference in the evaporative savings generated is small between the 2400 GL and 3200 GL water recovery scenarios, with a difference of 18 ML/yr, or 2%. This small range of change can be seen to be consistent across the five wetlands considered. This is low variation in savings considering the range of flows tested, and indicates that the projected water savings are expected to be able to be achieved (i.e. management plan can be implemented) regardless of flow scenario.

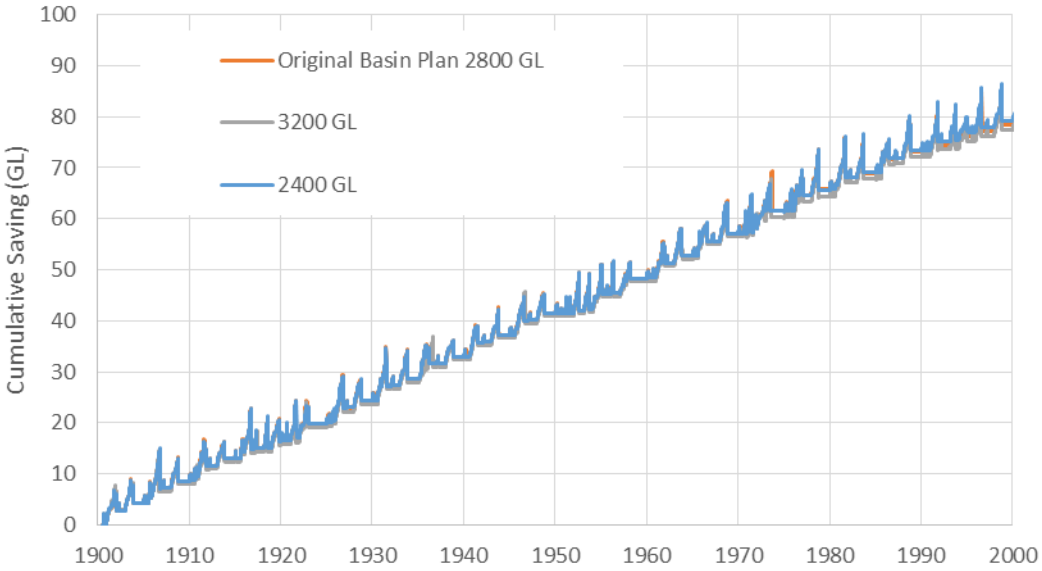


Figure D: Lake Merreti cumulative water savings

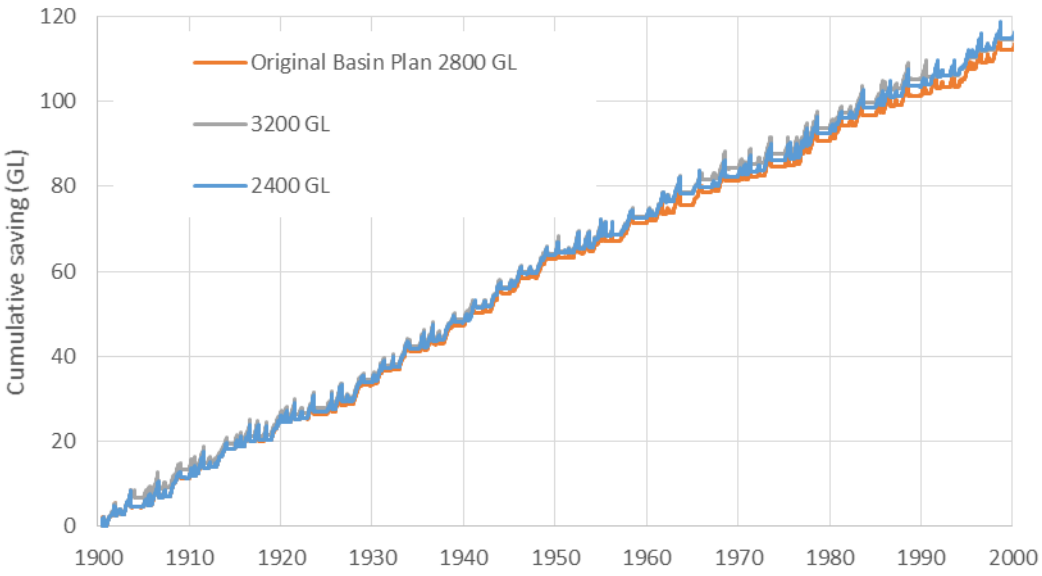


Figure E: Lake Woolpolool cumulative water savings

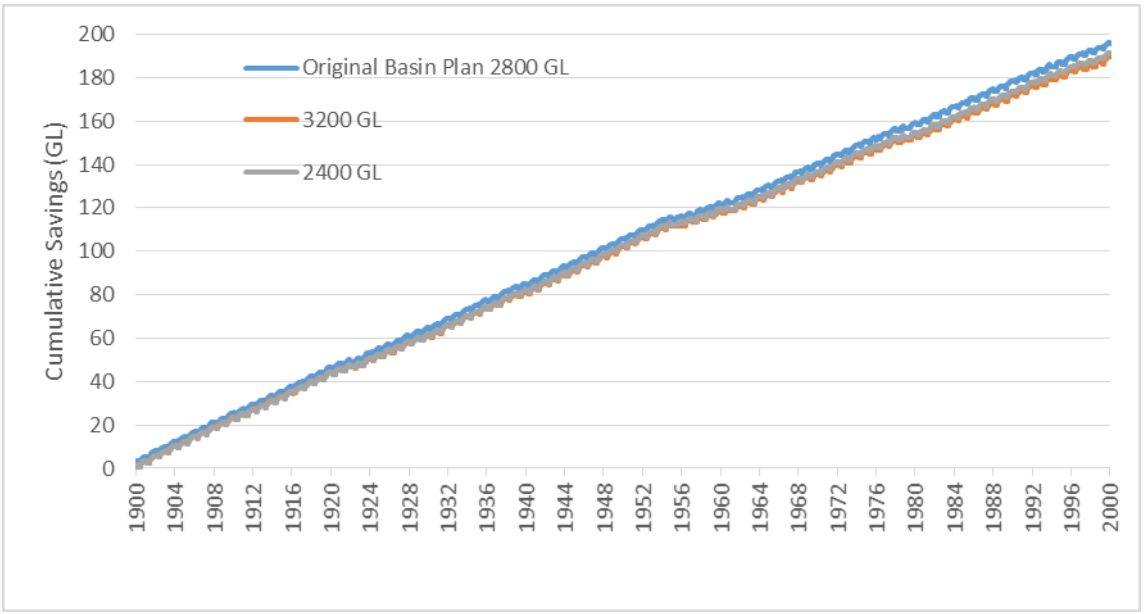


Figure F: Banrock Station wetland cumulative water savings

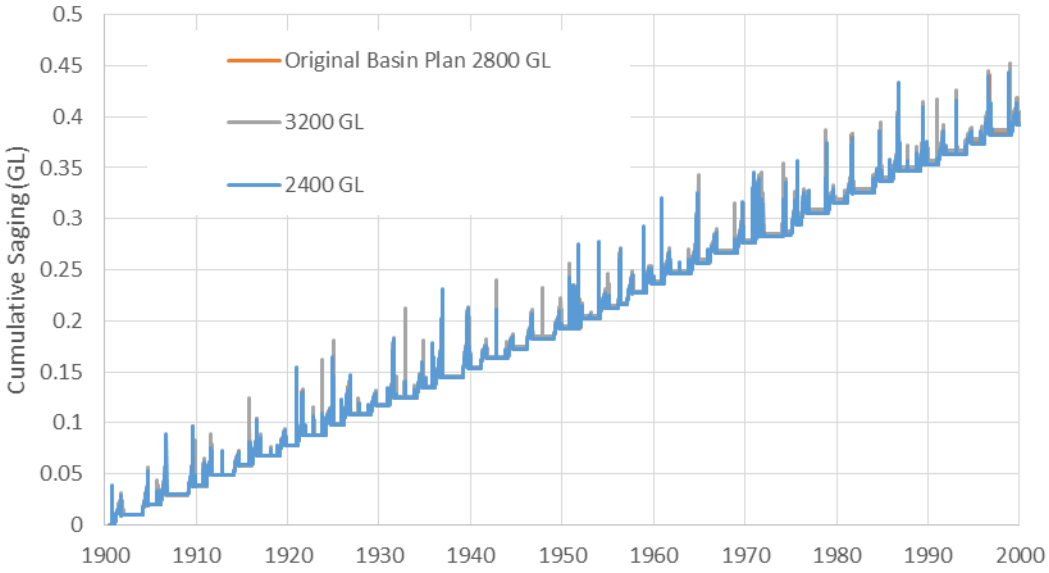


Figure G: Martin's Bend cumulative water savings

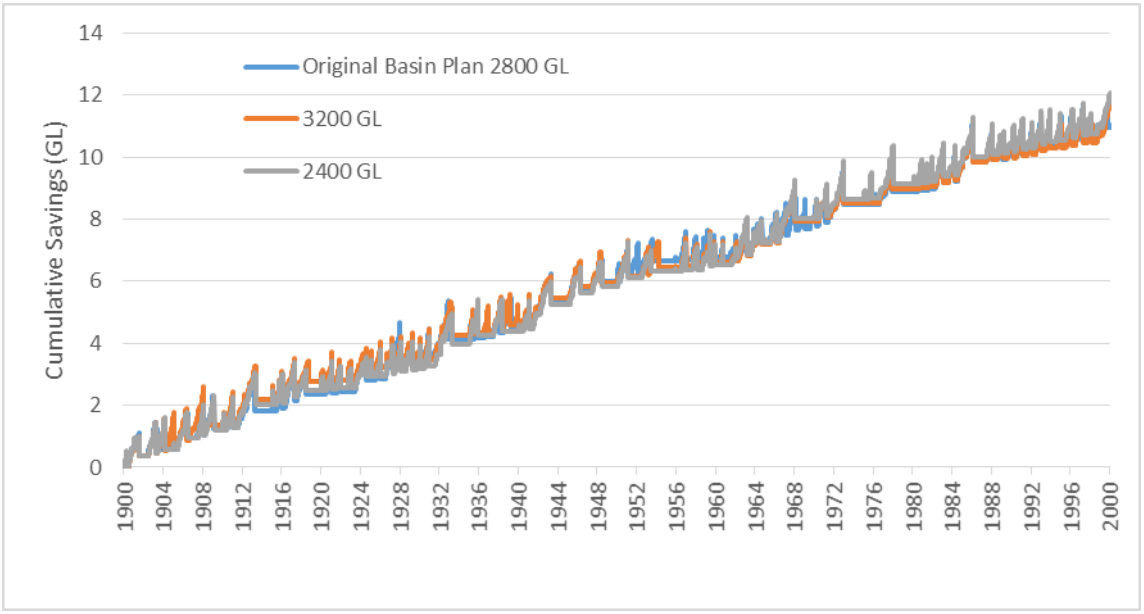


Figure H: Brenda Park Complex cumulative water savings

APPENDIX 6: Roles and Responsibilities, Definitions and Accountabilities of Infrastructure and Wetland Site Management

Role Name	Responsibility	Designated to	Authorised by	Communicates with
Owner	To record an asset on an asset register.	The Department or Authority responsible for ownership of the capital value of the infrastructure e.g. DEWNR, SA Water or MDBA.	N/A	Asset Funding Source
Maintenance	To ensure that the asset remains in safe operable, working order throughout its design life. This includes preventative (regular scheduled inspections and replacement of worn out and/or faulty parts) and incidental (replacement of parts after structure breaks) maintenance. To liaise with Operators to schedule incidental maintenance as required.	An internal Branch or Unit of the Owner.	Owner	Operator
Site Manager – Land[3]	To adaptively[1] manage the land based outcomes and operational objectives[2] at the site where the asset is located.	Landholder; and/or A Community Group, State Government Branch, Unit, Region or Unit.	Landholder	Site Manager - Water Owner Operator
Site Manager – Water[3]	To adaptively[1] manage the movement of water and operational objectives[2] at the site where the asset is located.	A Community Group, State Government Branch, Unit, Region or Unit.	Water Resource Manager	Site Manager – Land Owner Operator
Water Resource Manager	To ensure that water management actions are coordinated across the River Murray so that they do not adversely influence the water quality of the River Murray Main Channel or adjacent wetland and/or sites; and to adaptively[1] manage the water based outcomes and operational objectives[2] where the asset is	Department, Authority or intergovernmental committee or working group responsible for	Owner	Owner Site Managers (Land and

	located. The water resource manager is in most cases the RMOWG.	ensuring the quality of water in the River Murray Main Channel for a variety of River users.		Water)
Operator	To operate the water regulating assets such penstock regulators, removal of stop boards in regulators and rotation of fish screens and other associated on ground actions[4]. Liaise with Maintenance to report operational problems as they arise.	An internal Branch, region, unit of DEWNR; or A community group.	Site Managers (Land and Water)	Maintenance
Monitoring	To undertake ecological, groundwater and surface water monitoring at a site to inform adaptive management. Provision of data to Site Managers (Land and Water) for recording in the Management Action Database.	An internal Branch, region, unit of DEWNR; or A community group; or A contractor authorised by Land or Water Site Managers.	Site Managers (Land and Water)	Site Managers (Land and Water)

[1]Adaptive management is achieved through review of monitoring data, recording of management actions in the Management Action Database (MAD) and adaptation of management actions in accordance with monitoring data.

[2]Operational Objectives and Outcomes at a site are derived from legislative drivers such as the River Murray Act, The Natural Resources Management Act and the National Parks and Wildlife Act. Outcomes are listed as components in site management plans such as wetland management plans, habitat management plans and operations guidelines and collated and summarised in an overarching Integrated Site Operations Plan.

[3]There can be more than one Site Manager (Land and Water) in cases where there are multiple objectives at a site.

[4]For water regulating infrastructure, there is a Healthy and Safety requirement that two people attend a site during operation of infrastructure. In many cases the responsible officers for this operation may come from two different sections within DEWNR. For example, this may include an Ecologist, from NR SAMDB and an Operational Officer from River Murray Infrastructure Operations.

Government of South Australia
Department of Environment,
Water and Natural Resources

DEED OF VARIATION

Sixth Variation to Schedule 2 to the Water Management Partnership Agreement for the South Australian Priority Project SA–05: Riverine Recovery Project Schedule

Between:

THE COMMONWEALTH OF AUSTRALIA as represented by the Department of the Environment, ABN 34 190 894 983 (**Commonwealth**)

THE MINISTER FOR WATER AND THE RIVER MURRAY, a body corporate pursuant to section 7 of the *Administrative Arrangements Act 1994* (SA) as represented by the Department of Environment, Water and Natural Resources ABN 36 702 093 234 (**State**)

Details

Parties

1. Commonwealth of Australia as represented by the **Department of the Environment** (formerly the Department of Sustainability, Environment, Water, Population and Communities) ABN 34 190 894 983 of John Gorton Building, Environment Entrance, King Edward Terrace, Parkes ACT 2600, Australia (**Commonwealth**).

2. **The Minister for Water and the River Murray**, a body corporate pursuant to section 7 of the *Administrative Arrangements Act 1994* (SA) as represented by the Department of Environment, Water and Natural Resources ABN 36 702 093 234 of Level 1, 25 Grenfell Street, Adelaide SA 5000, Australia (**State**).

Recitals

A. The Commonwealth and the State (then using the name of the Minister for Water Security for and on behalf of the Crown in right of the State of South Australia acting through the Department of Water, Land and Biodiversity Conservation) are parties to a Water Management Partnership Agreement dated 4 November 2009 (**Agreement**).

B. In accordance with clauses 5.1.1.b and 16.2.1 of the Agreement, the parties agreed, completed and signed the Project Schedule SA-05 for the Riverine Recovery Project (**Original Project Schedule**) dated 17 June 2011, thereby incorporating the Project Schedule into the Agreement as a Priority Project

C. Pursuant to clause 16.3.1. of the Agreement, the parties agree to vary the terms of the Agreement, in accordance with this deed.

D. The parties varied the Original Project Schedule on 29 June 2012 (**First Variation**), on 18 October 2012 (**Second Variation**), on 7 February 2013 (**Third Variation**), on 23 September 2013 (**Fourth Variation**) and on 27 March 2014 (**Fifth Variation**).

E. The parties have agreed to further amend the terms of the Original Project Schedule, as amended by the First Variation, the Second Variation, Third Variation, Fourth Variation, Fifth Variation (together comprising the **Project Schedule SA-05**), in accordance with this deed of variation.

F. This variation consolidates elements of the South Australian Priority Project SA-04 Riverine Recovery Program – Early Works (Yatco Lagoon, Katfish Reach and Pike Floodplain) project, dated 3 March 2011(**Project Schedule SA-04**) into the Project Schedule SA-05.

G. To facilitate the consolidation of the two Project Schedules for SA-04 and SA-05 into one Project Schedule the parties have agreed to the following:

i. Project Schedule SA-04 will be terminated through a Deed of Termination and Release, releasing the parties from all obligations; and

ii. The activities for the Final Milestone 3 and the Final Report in Project Schedule SA-04 will be transferred to the Project Schedule SA-05. Noting that previous Milestones 1 and 2 are complete; and

iii. The associated payments for Final Milestone 3 and the Final Report in Project Schedule SA-04 of [redacted] (GST exclusive) will be transferred to the Project Schedule SA-05. Noting that the Commonwealth has already provided the remaining [redacted] (GST exclusive) of funding for the completion of Milestones 1 and 2 from the total available funding of up to [redacted] (GST exclusive) for the works within Project Schedule SA-04; and

iv. State funding totalling [redacted] (GST exclusive) from Project Schedule SA-04 will be transferred to the Project Schedule SA-05. Noting that the State has already made payments of [redacted] (GST exclusive) from the State's total contribution of [redacted] (GST exclusive); and

v. Other funding contributions of [redacted] (GST exclusive) from the Yatco Irrigators will be transferred from Project Schedule SA-04 to the Project Schedule SA-05; and

vi. Interest earned through Project Schedule SA-04 will be transferred Project Schedule SA-05.

Agreed terms

1. Defined terms and interpretation

1.1 Defined terms

In this deed, except where the context otherwise requires, defined terms have the same meaning as given to them in the Agreement.

1.2 Interpretation

In this deed, except where the context otherwise requires:

(a) the singular includes the plural and vice versa, and a gender includes other genders;

(b) another grammatical form of a defined word or expression has a corresponding meaning;

(c) a reference to a clause, paragraph, schedule or attachment is to a clause or paragraph of, or schedule or attachment to, this deed, and a reference to this deed includes any schedule or attachment;

(d) a reference to a document or instrument includes the document or instrument as novated, altered, supplemented or replaced from time to time;

(e) a reference to AUD, A$, $A, dollar or $ is to Australian currency;

(f) a reference to time is to the local time in Canberra, Australia;

(g) a reference to a party is to a party to this deed, and a reference to a party to a document includes the party's executors, administrators, successors and permitted assigns and substitutes;

(h) a reference to a person includes a natural person, partnership, body corporate, association, governmental or local authority or agency or other entity;

(i) headings are for ease of reference only and do not affect interpretation;

(j) a reference to a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;

(k) a word or expression defined in the *Corporations Act 2001* (Cth) has the meaning given to it in the *Corporations Act 2001* (Cth);

(l) the meaning of general words is not limited by specific examples introduced by including, for example or similar expressions;

(m) any agreement, representation, warranty or indemnity by two or more parties (including where two or more persons are included in the same defined term) binds them jointly and severally;

(n) any agreement, representation, warranty or indemnity in favour of two or more parties (including where two or more persons are included in the same defined term) is for the benefit of them jointly and severally; and

(o) a rule of construction does not apply to the disadvantage of a party because the party was responsible for the preparation of this deed or any part of it.

2. Variation to Project Schedule SA-05

With effect from the date of this deed, the Agreement is varied by replacing the Riverine Recovery Project Schedule SA-05, dated 17 June 2011, as set out in Attachment A to this deed.

3. Payment acknowledgement

The parties acknowledge that the amount of [redacted] (GST exclusive) (including overpayment and interest held by SA) has already been paid by the Commonwealth to the State as part of the Funds payable under the Project Schedule.

4. Continued force and effect of Project Schedule SA-05

The Project Schedule SA-05 continues in full force and effect, as amended by this deed.

5. Miscellaneous

5.1 Counterparts

This deed may be executed in counterparts. All executed counterparts constitute one document.

5.2 Governing law and jurisdiction

This deed is governed by the law of the Australian Capital Territory and each party irrevocably submits to the non-exclusive jurisdiction of the courts of the Australian Capital Territory.

5.3 Date of effect

The date of this deed will be on and from the date that the Commonwealth signs the deed.

Execution page

Executed as a deed

SIGNED SEALED AND DELIVERED
for and on behalf of the Commonwealth of Australia as represented by the **Department of the Environment** by a duly authorised representative

[redacted]

SIGNED SEALED AND DELIVERED
by the **Minister for Water and the River Murray**, a body corporate pursuant to section 7 of the Administrative Arrangements Act 1994 (SA)

[redacted]

ATTACHMENT A

to Deed of Variation

Riverine Recovery Project Schedule SA-05 to the South Australian and Commonwealth Water Management Partnership Agreement

SCHEDULE 2 – SOUTH AUSTRALIA PRIORITY PROJECT SA-05 – RIVERINE RECOVERY PROJECT SCHEDULE

A. Terminology used in this Project Schedule

A.1.1. Except where indicated in Item A.1.2 capitalised terms in this Project Schedule have the same meaning as in clause 18.4 of the Water Management Partnership Agreement between the Commonwealth and the State of South Australia dated 4 November 2009 (the Agreement).

A.1.2. For the purpose of this Priority Project and Project Schedule only, the terms specified in this item have the following meaning:

a. Activities: means, in respect of a Project Element, the activities specified in or referred to an Attachment that are required to complete that Project Element;

b. Attachment: means an attachment to this Project Schedule;

c. Construction Contract: means any contract that the State has with its subcontractors for the construction of Works;

d. Evaluation Period: means the period that expires 12 months after the completion of the project as specified at Item B.1.10;

e. Phase 1: means the completion of all of the Project Elements in Attachments A, B, C, D, E, F and H in accordance with this Project Schedule;

f. Phase 2 Enhanced River Operations and Weir Pool Manipulation: means the first tranche of Phase 2, completion of the Project Element in Attachment G in accordance with this Project Schedule;

g. Phase 2 Wetlands Projects, Communications, Partnerships and Project Management: means the second tranche of Phase 2, any activities, other than Phase 1 Activities and Phase 2 Enhanced River Operations and Weir Pool Manipulation Activities, that the Commonwealth agrees to fund as a result of the Review;

h. Priority Project: means Phase 1 Project Elements and Phase 2 Enhanced River Operations and the Weir Pool Manipulation Project Element, unless Phase 2 Wetlands Projects, Communications, Partnerships and Project Management are agreed and this Project Schedule is varied accordingly to encompass Phase 2 Wetlands Projects, Communications, Partnerships and Project Management details;

i. Project Charter means the document agreed by the Commonwealth and State specified in Item B.5 of this Project Schedule;

j. Project Element: means a part of the Priority Project as specified in Attachment A to H to this Project Schedule. A Project Element is a "Component" for the purpose of the Agreement;

k. Project Element Milestone: means a milestone for the completion of a Project Element;

l. Project Schedule SA-04: the South Australian Priority Project SA-04 Riverine Recovery Program – Early Works (Yatco Lagoon, Katfish Reach and Pike Floodplain) project, dated 3 March 2011 and now terminated through a Deed of Termination and Release dated June 2014;

m. Review: means the Commonwealth review of the State's Phase 2 proposals as outlined in Item B.4.;

n. Department of the Environment : means the Commonwealth Department of the Environment (formerly the Department of Sustainability, Environment, Water, Population and Communities);

o. Verified Water Savings: means the water savings verified under the *Savings at Wetlands from Evapotranspiration Daily Time Series* (SWET) model;

p. Works: means any part of this Priority Project that comprises construction and building activities, including the construction and building activities specified in Attachments A to H to this Project Schedule;

q. Works Locations: means the locations where the Works are to be undertaken including any premises in, or land on, which those Works are to be constructed, including the locations identified in the maps at Attachment I; and

r. Works Purposes: means use of the Works in a manner consistent with the aims and objectives of the Priority Project.

B. Priority Project SA-05: *Riverine Recovery Project*

B.1. Summary and duration of the Priority Project

B.1.1. The Commonwealth has agreed to provide Funding of up to [redacted] in two phases as outlined in Items B.1.2 to B.1.4 below.

B.1.2. The Commonwealth has agreed to provide a maximum amount of [redacted] of Funding to the State under this Project Schedule for:

a. Phase 1; and

b. Phase 2 Enhanced River Operations and Weir Pool Manipulation.

In exchange for this Funding, the State agrees to transfer to the Commonwealth, Water Entitlements of a minimum of 4.2 GL and if savings are realised as evidenced by detailed hydrological modelling, then up to 4.547 GL to reflect the Agreed Water Savings for Phase 1 as per Item E of this Project Schedule.

B.1.3. This Priority Project also includes the conduct of the Review by the Commonwealth as set out in Item B.4. The Review will determine the

scope and the amount of Commonwealth funding for any Phase 2 Wetlands Projects, Communications, Partnerships and Project Management activities under the Priority Project.

B.1.4. In addition to the Funding referred to in Item B.1.2, a maximum possible amount of [redacted] of Commonwealth funds is available for Phase 2 Wetlands Projects, Communications, Partnerships and Project Management activities in return for Water Entitlements totalling up to 9.7752 GL.

B.1.5. The parties' intention is that 9.7752 GL of Agreed Water Savings will be transferred to the Commonwealth if the full funding for Phase 2 Wetlands Projects, Communications, Partnerships and Project Management activities is agreed.

B.1.6. The actual amount of Commonwealth funding to be provided by the Commonwealth in respect of Phase 2 Wetlands Projects, Communications, Partnerships and Project Management activities will depend on the outcomes of the Review and the State agreeing to contribute a minimum of 10 per cent of the agreed cost of any Phase 2 Wetlands Projects, Communications, Partnerships and Project Management activities.

B.1.7. If, as a result of the Review, the Commonwealth agrees to fund Phase 2 Wetlands Projects, Communications, Partnerships and Project Management activities, this Project Schedule will be amended by the parties so that the details of those Phase 2 activities, including the Milestones, Funding, State Contributions, reporting and water savings for those activities, are included in this Project Schedule. This Project Schedule may be varied more than once as a result of the Review.

B.1.8. Subject to Item D.3.3 the State is required to provide the State Contributions as specified in Item D.3.1.

B.1.9. The State is required to ensure that Other Contributions are provided as specified in Item D.5.

B.1.10. This Priority Project commences on the date that this Project Schedule is signed by both parties. Phase 1 is to be completed by 30 June 2016 and Phase 2 Enhanced River Operations and Weir Pool Manipulation is to be completed by 31 December 2016. If agreed, Phase 2 Wetlands Projects, Communications, Partnerships and Project Management activities are expected to be completed by 30 June 2016, with the final date being a matter for agreement following the Review.

B.1.11. This Priority Project requires the State to complete the following eight distinct Project Elements:

a. Pike Floodplain in accordance with Attachment A;

b. Katfish Floodplain in accordance with Attachment B;

c. Wetlands Projects in accordance with Attachment C;

d. Phase 1 - Enhanced River Operations and Weir Pool Manipulation in accordance with Attachment D;

e. Information Management to Support Decision Making in accordance with Attachment E;

f. Communication, Partnerships and Project Management in accordance with Attachment F;

g. Phase 2 - Enhanced River Operations and Weir Pool Manipulation in accordance with Attachment G; and

h. Yatco Lagoon in accordance with Attachment H.

B.2. Outcomes of the Priority Project

B.2.1. The Priority Project Activities aims to:

a. implement an improved riverine management regime for the River Murray from the South Australian / Victorian border to Wellington;

b. utilise a landscape-scale approach to provide for a more effective, efficient and flexible management of environmental water;

c. achieve positive environmental outcomes and improved ecosystem health through improved management of wetland and floodplain health and ecosystem functioning;

d. support regional communities and economies, including through the provision of more secure irrigation water sources; and

e. deliver Agreed Water Savings of up to 14.3222 GL for transfer to the Commonwealth for environmental purposes. .

B.2.2. The outcomes of Phase 1 and Phase 2 Enhanced River Operations and Weir Pool Manipulation of the Priority Project are to:

a. Return a minimum of 4.2 GL of Water Entitlements and up to 4.547 GL to the Commonwealth;

b. Maintain and improve water dependent ecosystem health, resilience and connectivity;

c. Optimise conditions for ecological community recovery, distribution and population viability;

d. Increase community knowledge, understanding and involvement in Riverine Recovery activities; and

e. Improve the scientific knowledge and understanding for the management of floodplains, wetlands and environmental river management.

B.2.3. The specific initial outcomes for the eight Project Elements are set out in Attachments A to H of this Project Schedule.

B.3. Priority Project Requirements

B.3.1. The State and the Commonwealth recognise that the State has, prior to the signing of this Project Schedule:

a. stated that there will be no third party impacts arising from the provision of Water Entitlements to the Commonwealth from the

Priority Project and agreed that the State will continue to work with all stakeholders to address their concerns and to increase the transparency of allocation against class 9 water entitlements; and

b. stated that each wetland in which investments are made as part of this Priority Project is subsequently covered by class 9 licence provisions and that at least parity of allocation is maintained with class 3(a) (irrigation) water entitlements, unless otherwise directed by First Ministers.

B.3.2. The State agrees that:

a. it is responsible for ensuring the proper and efficient conduct of the Priority Project, in accordance with this Project Schedule;

b. it will comply, and ensure its subcontractors comply, with all requirements of the *National Code of Practice for the Construction Industry* as set out in Attachment J to this Project Schedule;

c. it will ensure the requirements of the *Australian Government OHS Accreditation Scheme* as set out in Attachment K to this Project Schedule are complied with; and

d. if requested by the Commonwealth, it will facilitate the Commonwealth's access to the State's records, contracts and personnel to enable the Commonwealth to conduct its own independent audit or review of any aspect of the Priority Project.

B.3.3. The State also agrees:

a. to ensure that the Works Locations and the completed Works are used for, and are fit to be used for, the Works Purposes throughout the Evaluation Period;

b. to ensure that the Works are constructed at the Works Locations specified in this Project Schedule (as set out in the maps at Attachment I to this Project Schedule);

c. to ensure that the Works Locations and the Works, (both during and after their completion) are safeguarded against damage and unauthorised use at all times.

B.3.4. If a third party has proprietary or other rights or interests in relation to the Works Locations or the Works, the State agrees prior to commencing the Works to:

a. enter into binding written agreements under which all such third parties agree to the use of:

i. the Works Locations to complete the Works; and

ii. the Works Locations and completed Works for the Works Purposes for the duration of the Evaluation Period; and

b. not do anything that would give any of these third parties a right to rescind their agreement to that use of the Works Location or the completed Works.

B.3.5. The State agrees to ensure that its subcontractors involved in the performance of the Works take out and maintain insurance that adequately covers the fixed and contingent obligations of those organisations under their Construction Contracts as well as liability for death and injury of persons employed by those organisations. The State agrees to ensure that each Construction Contract contains an undertaking on terms sufficient to ensure the due and proper performance of the Construction Contract and the State agrees to ensure that any such undertaking is enforced as and when necessary to ensure that the Construction Contract is so performed.

B.3.6. The Commonwealth and State agree that:

a. the Priority Project will be carried out, and the Works Locations and completed Works will be used, in accordance with all applicable laws and regulations (including, but not limited to, planning, environmental, occupational health and safety, building and regulatory approvals), in particular the *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)* and the *Native Title Act 1993 (Cth)* and *Natural Resources Management Act 2004 (SA)*, and all applicable Australian standards;

b. this Project Schedule may be signed by the parties in two counterparts, in which case, the two counterparts together will be taken to constitute the one Project Schedule;

c. for the purposes of clause 16.1 of the Agreement, a variation to this Project Schedule may be signed for and on behalf of the Commonwealth as specified in clause 16.1.2, with the addition that a variation may be signed for and on behalf of the State by its relevant Minister or an authorised State official;

d. this Priority Project, including all Project Elements and Activities, will be managed by the State in accordance with this Project Schedule and, to the extent that it is consistent with this Project Schedule, the Project Charter; and

e. any interest earned on the parties' contributions that have been provided for the Priority Project in accordance with Item D will only be used for this Priority Project.

B.3.7. The State acknowledges that it is responsible for managing and performing this Priority Project and that the Commonwealth has no responsibility for performing any aspect of this Priority Project other than undertaking its part of the Review, and its own due diligence and conveyancing activities to transfer the Water Entitlements specified in Item E of this Project Schedule.

B.4. Review

B.4.1. The State will undertake the required investigations, analysis and activities (detailed in Attachments C, D and F) in preparation for the Review. The Review will comprise two parts:

a. Phase 2 Enhanced River Operations and Weir Pool Manipulation; and

b. Phase 2 Wetlands Projects, Communications, Partnerships and Project Management.

Phase 2 Enhanced River Operations and Weir Pool Manipulation

B.4.2. The State is required to submit its proposal for the Review of the Phase 2 Enhanced River Operations and Weir Pool Manipulation to the Commonwealth by 24 December 2012.

B.4.3. The proposal will include a detailed description, budget and timeframe for each of these proposed activities.

B.4.4. The Commonwealth will assess this proposal against the following criteria:

a. demonstration of long term benefits that can be sustained over a 20 year horizon;

b. value for money of the proposal (including an analysis of reasonableness of the proposed cost, budget, technical feasibility, and risk assessment of the proposal and the reasonableness of project management, contingency and indexation costs of the proposed Phase 2 activities);

c. consistency with best practice and other national approaches and standards; and

d. evidence of consultation with relevant parties and agreement by critical related parties (including the Murray-Darling Basin Authority) in relation to the proposal.

B.4.5. The Commonwealth will finalise its assessment of the State's proposal by 9 March 2013.

Phase 2 Wetlands Projects, Communications, Partnerships and Project Management

B.4.6. The State is required to submit its proposal for the Phase 2 Wetlands Projects and the Communications, Partnerships and Project Management proposal to the Commonwealth by 31 July 2014.

B.4.7. The proposal will include a detailed description, budget and timeframe for each of these proposed activities.

B.4.8. The Commonwealth will assess the Phase 2 Wetlands Projects proposal against the following criteria:

a. analysis of the relevant outcomes of Phase 1 (particularly water savings achieved, actual costs, benefits achieved other than water savings, any negative impacts of the Activities for this Project Element);

b. demonstration of long term benefits that can be sustained over a 20 year horizon;

c. value for money of the proposal (including an analysis of the proposed cost, budget, technical feasibility, and risk assessment of the proposed activities and the reasonableness of project management, contingency and indexation costs of the proposed Phase 2 activities);

d. nature and quantum of expected water savings from the proposed activities (including method of calculating water savings, form and class of proposed water savings and capacity of water savings to be used for purposes that reflect the Commonwealth's environmental priorities);

e. consistency with best practice and other national approaches and standards; and

f. evidence of community support.

B.4.9. The Commonwealth will assess the Communications, Partnerships and Project Management proposal (including funding for professional services contracts, corporate overheads, communications and Indigenous partnerships) against the following criteria:

a. value for money of the proposal (including an analysis of the proposed cost, budget and risk assessment of the proposed activities and the reasonableness of contingency and indexation costs of the proposed Phase 2 activities); and

b. the extent to which outcomes of communications and Indigenous partnership Activities within Phase 1 have been applied to the proposal.

B.4.10. The Commonwealth will finalise the assessment of the Phase 2 Wetlands Projects and Communications, Partnerships and Project Management proposal within three calendar months of receiving it by the State.

B.4.11. Should any further funding be agreed for Phase 2 activities, the Commonwealth may choose to apply Phase 1 funding conditions to Phase 2 and/or determine new funding conditions for Phase 2.

B.5. Project Charter

B.5.1. A Project Charter for this Priority Project will be agreed and signed between the Commonwealth and the State.

B.5.2. The intent of the Project Charter is to facilitate the parties' working relationship and provide operational guidelines for the Priority Project.

B.5.3. The parties agree that the Project Charter may be amended by the written agreement (including in an exchange of letters or emails) of:

a. the Assistant Secretary, Water Infrastructure Southern Branch, Department of the Environment; and

b. the Group Executive Director, Partnerships and Stewardship, South Australian Department of Environment, Water and Natural Resources.

B.5.4 For the avoidance of doubt, if there is any inconsistency between the Project Charter and this Project Schedule, the Project Schedule prevails to the extent of the inconsistency.

C. Project Milestones

C.1.1. The Project Milestones for the Priority Project Elements are set out in the following table:

Project Milestone Number	Project Milestone	Completion Date for Project Milestone
1.	Signing of Project Schedule by State and Commonwealth	17 June 2011 (Completed)
2.	Completion of the following Project Element Milestones as identified in Attachments A-F: A.1 a) & b) B.1 a) & b) C.1 a), b) & c) D.1 a) E.1 a) & b) F.1 a) & b) Signing of Project Charter	30 September 2011 (Completed)
3.	Completion of the following Project Element Milestones as identified in Attachments A-F: A.2 a), b), c), d) & e) B.2 a), b) & c) C.2 a), b), c), d), e), f), g), h), i), j), k) & l) D.2 a), b), c), d), e), f), g) & h) E.2 a), b) & c) F.2 a), b) & c)	31 December 2011 (Completed)
4.	Water transfer contract exchanged (if required by the Commonwealth), trade approved, settlement and registration finalised for transfer of 2.1 GL of Water Entitlements to the Commonwealth in accordance with Item E.	29 February 2012 (Completed)

Project Milestone Number	Project Milestone	Completion Date for Project Milestone
5.	Completion of the following Project Element Milestones as identified in Attachments A-F: A.3 a), b), c) & d) B.3 a) & b) C.3 a), b), c), d), e), f), g), h) & i) D.3 a), b), c), d), e) & f) E.3 a), b), c), d) & e) F.3 a), b) & c)	30 June 2012 (Completed)
6.	Completion of the following Project Element Milestones as identified in Attachments A-F: A.4 a), b), c) & d) B.4 Nil C.4 a), b), c), d), e), f), g), h) & i) D.4 a), b), c), d), e), f) & g) E.4 a) & b) F.4 a) & b)	31 December 2012 (Completed)
7.	Water transfer contract exchanged, trade approved, settlement and registration finalised for the transfer of a minimum of 2.1 GL and, if savings are realised through detailed hydrological modelling, up to 2.447 GL, of Water Entitlements to the Commonwealth, in accordance with Item E of this Project Schedule.	28 February 2013 (Completed)
8.	Completion of the following Project Element Milestones as identified in Attachments A-F: A.5 a), b), c) & d) B.5 a) & b) C.5 a), b), c), d), e), f), g), h), & i) E.5 a) & b) F.5 a), b) & c)	30 June 2013 (Completed)

Project Milestone Number	Project Milestone	Completion Date for Project Milestone
8a.	Signing of Variation No 4 which incorporates funding provisions for Phase 2 - Enhanced River Operations and Weir Pool Manipulation element by State and Commonwealth	30 September 2013 (Completed)
9.	Completion of the following Project Element Milestones as identified in Attachments A-G: A.6 a) & b) B.6 a), b), & c) C.6 a), b), c), d), e), f), g), h), i), j) & k) E.6 a) & b) F.6 a), b) & c) G.1 a), b), c) & d)	31 December 2013 (Completed)
10.	Completion of the following Project Element Milestones as identified in Attachments A-H: A.7 a), b), c) & d) B.7 a), b) & c)C.7 a), b), c), d), e) f), & g) E.7 a) F.7 a) G.2 a), b), c), d) & e) H. 1.1), 1.2), 1.3) &1.4)	5 June 2014
11.	Completion of the following Project Element Milestones as identified in Attachments A- H: A.8 a), b), c & d) B.8: Nil C.8 a), b), c), d), e), f) and g) E.8 a),b) & c F.8 a) G.3 a), b), c) & d) H. 1.5),1.6) and 1.7)	31 December 2014

Project Milestone Number	Project Milestone	Completion Date for Project Milestone
12.	Completion of the following Project Element Milestones as identified in Attachments A- H: B.9 a) & b) E.9 a) & b) F.9 a) G.4 a), b), c), d) & e)	30 June 2015
13.	Completion of the following Project Element Milestones as identified in Attachments A- H: B.10 a) E.10 a) & b) F.10 a) G.5 a), b), c) & d)	31 December 2015
14.	Completion of the following Project Element Milestones as identified in Attachments A- H: E.11 a) & b) F.11 a) G.6 a), b), c), & d)	30 June 2016
15.	Completion of the following Project Element Milestones as identified in Attachments A- H: G.7 a) & b)	31 December 2016

D. Project Cost

D.1. Project Cost

D.1.1. The maximum GST- exclusive Phase 1 and Phase 2 Enhanced River Operations and Weir Pool Manipulation Project Cost for this Priority Project is [redacted] as detailed in the following table.

Project Elements	Commonwealth Funding $	State Contribution $	Other Contributions $	Total Project Cost $
Pike Floodplain	[redacted]			
Katfish Floodplain				
Wetlands projects				
Phase 1 Enhanced River Operations and Weir Pool Manipulation				
Phase 2 Enhanced River Operations and Weir Pool Manipulation				
Information Management to Support Decision Making				
Communications, Partnerships and Project Management				
Yatco Lagoon				
TOTAL	as per Item **J** of this Project Schedule	as per Item D.4 of this Project Schedule	as per Item D.5 of this Project Schedule	as per Item D.1.1 of this Project Schedule

* As further explained in Item D.1.3 below, the Commonwealth Funding for this Priority Project includes [redacted] of overpayment and interest that the State has earned on Funds previously provided by the Commonwealth to the State under the Agreement for the Lower Lakes Integrated Pipelines Priority Projects and the Woodlane Irrigation Board Infrastructure Project.

D.1.2. The parties acknowledge that the State may earn Interest which will be an amount in addition to the said maximum total Project Cost and will be applied to the Priority Project in accordance with clause 6.1.9 of the Agreement.

D.1.3. The parties acknowledge that interest earned against Project Schedule SA-04 forms part of the Funding of this Priority Project and will treated in accordance with Item D.1.2 of this Project Schedule.

D.1.4. As at 31 December 2012 the State will have the overpayment and interest earned on Funds the Commonwealth provided the State under the Agreement for the Lower Lakes Integrated Pipeline Priority Projects and for the Woodlane Irrigation Board Infrastructure Project.

As at 31 December 2012, the total overpayment and interest on the Funding provided by the Commonwealth to the State for the completed projects will be [redacted] (the **Overpayment and Interest Amount**). Pursuant to clause 6.3.1(e) of the Agreement the State agrees:

a. that the Overpayment and Interest Amount of [redacted] held by the State forms part of the Commonwealth's Funding for this Priority Project;

b. to spend the Overpayment and Interest Amount on its performance of this Priority Project (in particular the completion of Milestones 6 and 7) and to account for the Overpayment and Interest Amount as Funds provided by the Commonwealth under this Project Schedule for this Priority Project; and

c. as this Overpayment and Interest Amount is already held by the State, the maximum amount of Funding physically transferred by the Commonwealth to the State for this Priority Project is [redacted] (being [redacted] minus [redacted] of the Overpayment and Interest Amount already held by the State).

D.2. Contingency amounts contained in the Project Cost

D.2.1. The Project Cost contains a maximum contingency amount of [redacted] and comprises the following contingency amount for each Project Element:

Project Element	**Contingency provision for Project Element***
Pike Floodplain	[redacted]
Katfish Floodplain	
Wetlands Projects	
Phase 1 Enhanced River Operations and Weir Pool Manipulation	
Information Management to Support Decision Making	
Communications, Partnerships and Project Management	
Phase 2 Enhanced River Operations and Weir Pool Manipulation	
Yatco Lagoon	
Total	

* The figures in the above table include both Funding and State Contributions.

D.2.2. The parties agree that over the term of this Project Schedule the State can vary the contingency amount specified in the above table for a Project Element by up to 5 per cent more or less than that amount without the need for the Commonwealth's prior agreement, as long as the total contingency budget is unchanged.

D.2.3. In each Project Report, the State is required to report on any contingency amount it has spent on a Project Element during the relevant reporting period. Once the Commonwealth is satisfied with the evidence provided by the State in relation to the expenditure of the contingency amount, the Commonwealth will reimburse the State for 90 per cent of the contingency amount, with the State to contribute the remaining 10 per cent, as set out in Item J.

D.2.4. The Commonwealth approval to pay contingency Funds will not be unreasonably withheld.

D.3. Contribution Components of Priority Project

D.3.1. Subject to Item D.3.3 and Phase 2 Wetlands Projects, Communications, Partnerships and Project Management Contributions, if Phase 2 Wetlands Projects, Communications, Partnerships and Project Management is agreed, the Funding and State Contributions to the Project Cost for the Priority Project as specified in Item D.1 are set out in the following table:

Contribution		**Maximum Contribution**
1.	Commonwealth Funding (including contingency funding)	[redacted]
2.	State Contributions (including contingency funding)	
3.	Other Contributions	
Project Cost as set out in Item D.1		

D.3.2. If cost savings are achieved in the course of delivering Phase 1 of the Priority Project and if the Commonwealth agrees to provide funding for Phase 2 Wetlands Projects, Communications, Partnerships and Project Management, the excess Phase 1 Funds and State Contribution and Phase 2 Enhanced River Operations and Weir Pool Manipulation Funds and State Contributions that comprise those cost savings will form part of the Phase 2 budget.

D.3.3. If cost savings are achieved in the course of the Priority Project and if the Commonwealth does not agree to provide Funds for Phase 2 Wetlands Projects, Communications, Partnerships and Project Management, the Project Cost will be deemed to be reduced accordingly and the parties' new financial contributions to that reduced Project Cost for this Priority Project shall be calculated on the parties relative contributions as outlined in D.1.1 of this Project Schedule.

D.4. State Contributions

D.4.1. The State agrees to provide the following cash contributions to the total Project Cost for this Priority Project at the following times:

GST-exclusive amount of State Contribution	Date by which State Contribution is to be provided
[redacted]	Upon execution of this Project Schedule by both parties
	Upon completion of Project Milestone 2 (30 September 2011) and provision of Progress Report No. 1
	Upon completion of Project Milestone 3 (31 December 2011), provision of Progress Report No. 2 and completion of Project Milestone 4 (29 February 2012)
	Upon completion of Project Milestone 5 (30 June 2012) and provision of Progress Report No. 3
	Upon completion of Project Milestone 6 (31 December 2012), provision of Progress Report No. 4 and completion of Project Milestone 7 (28 February 2013)
	Upon completion of Project Milestone 8 (30 June 2013) and provision of Progress Report No. 5
	Upon completion of Project Milestone 8a (30 September 2013)
	Upon completion of Project Milestone 9 (31 December 2013) and provision of Progress Report No. 6
	Upon completion of Project Milestone 10 (30 June 2014) and provision of Progress Report No. 7
	Upon completion of Project Milestone 11 (31 December 2014) and provision of Progress Report No. 8
	Upon completion of Project Milestone 12 (30 June 2015) and provision of Progress Report No. 9
	Upon completion of Project Milestone 13 (31 December 2015) and provision of Progress Report No. 10
	Upon completion of Project Milestone 14 (30 June 2016) and provision of Progress Report No. 11
	Total
	Contingency contribution available
	Total State Contribution

D.4.2. The State agrees that its State Contributions will not include any financial assistance that the State has received from the Commonwealth for this Priority Project.

D.4.3. In Item D.4.2 'financial assistance' means Commonwealth money received under any Commonwealth program.

D.5. Other Contributions

D.5.1. The other Contributions for this Priority Project are [redacted] (excluding GST). The State agrees to ensure that the following contribution sources provide the following cash contributions to this Priority Project at the following times:

Source of Other Contributions	Item (Description/purpose)	GST-exclusive amount of Other Contributions	Date by which Other Contributions will be provided
Yatco Irrigation Community	Irrigator Contributions to the performance of the Yatco Lagoon Component of this Priority Project	[redacted]	Funds to be provided by 31 December 2014

E. Transfer of Water Entitlements

E.1. Agreed Water Savings

E.1.1. The Agreed Water Savings from Phase 1 of the Priority Project are:

Agreed Water Savings*	Water Characteristic
A minimum of 4.2 GL and, if savings are realised through detailed hydrological modelling, up to 4.547 GL from SA Licence 197352 held by Minister for River Murray in the River Murray Prescribed Water Course.	Permanent High Security SA Water Entitlement Class 9.

E.1.2. In addition, the parties have agreed that as part of this Priority Project, investigations will be undertaken to determine whether any water savings will result from the modifications and relocation undertaken as part of the Yatco Lagoon Component of this Priority Project (Component Milestone H.1.6 Attachment H).

E.2. The Commonwealth's Proportion of Agreed Water Savings

E.2.1. The Commonwealth's Proportion of the Agreed Water Savings from this Priority Project is 100 per cent of the Agreed Water Savings specified in Item E.1.1.

E.3. Transfer of Water Entitlements

E.3.1. Under this Priority Project, the following Water Entitlements, which equal the Commonwealth's Proportion of the Agreed Water Savings, will be transferred to the Commonwealth:

Water Entitlement Licence Number	No. of Unit Shares	Water Source	Security of Water Entitlement	Restrictions on Water Entitlement	Date for Transfer
[redacted]	2,100,000 unit shares	South Australian Prescribed River Murray Watercourse	SA Permanent High Security Share Class 9	N/A	Transfer to be finalised by 29 February 2012 (Completed)
	Between 2,100,000 unit shares and 2,447,000 unit shares as determined under Item E.1	South Australian Prescribed River Murray Watercourse	SA Permanent High Security Share Class 9	N/A	Transfer to be finalised by 28 February 2013 (Completed)

E.3.2. Any additional Agreed Water Savings arising from Phase 1 between 4.2 GL and 4.547 GL will be transferred to the Commonwealth as part of Phase 1 and by 28 February 2013.

F. Sharing Actual Water Savings additional to Agreed Water Savings

F.1 If Verified Water Savings achieved by the Priority Project exceed the Agreed Water Savings of 4.547 GL, and the Commonwealth agrees to provide funding for Phase 2, it will count any additional water savings towards the Agreed Water Savings that are required to be achieved during Phase 2.

F.2 If Verified Water Savings achieved by the Priority Project exceed the Agreed Water Savings of 4.547 GL, and the Commonwealth does not agree to provide funding for Phase 2, the Commonwealth and State will share any additional water savings of up to 1 GL on a basis commensurate with funding contributions, with the Commonwealth to receive 90 per cent of the savings and the State to receive 10 per cent of the savings. Any additional water savings in excess of 1 GL would be shared on the basis that the Commonwealth receives 50 per cent of the savings and the State receives 50 per cent of the savings.

G. Agreement Material and Existing Material relating to this Priority Project

G.1 No variation to clause 11 of the Agreement specified.

H. Indemnity

H.1.1. Notwithstanding any other provision of this Project Schedule, the State agrees to indemnify, and keep indemnified, the Commonwealth against any cost, liability, loss or expense incurred by the Commonwealth:

a. in rectifying any environmental damage; or

b. in dealing with any third party (including Commonwealth Personnel) claims against the Commonwealth, which includes without limitation the Commonwealth's legal costs and expenses on a solicitor/own client basis and the cost of time spent, resources used and disbursements paid by the Commonwealth,

c. arising from any act or omission by the State or its Personnel in connection with the Priority Project specified in this Project Schedule.

H.1.2. The State's liability to indemnify the Commonwealth under this Item H will be reduced proportionally to the extent that any fault on the Commonwealth's part contributed to the relevant cost, liability, loss or expense. In this Item H.1.2, 'fault' means any reckless, negligent or unlawful act or omission or wilful misconduct.

H.1.3. The right of the Commonwealth to be indemnified in this Item H is in addition to, and not exclusive of, any other right, power or remedy provided to the Commonwealth by law, but the Commonwealth is not entitled to be compensated in excess of the relevant cost, liability, loss or expense.

I. Project Reports

I.1. Priority Project Reports

I.1.1. The State is required to prepare and provide the Commonwealth with the following Project Reports:

Project Reports		
Report Type	**Details**	**Date Report Due**
Progress Report No. 1	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 2.	31 October 2011 (Completed)
Progress Report No. 2	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 3.	31 March 2012 (Completed)
Progress Report No. 3	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 5.	30 September 2012 (Completed)
Progress Report No. 4	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 6.	31 March 2013 (Completed)
Progress Report No. 5	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 8.	30 September 2013 (Completed)

Project Reports		
Report Type	**Details**	**Date Report Due**
Progress Report No. 6	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 9.	31 March 2014 (Completed)
Progress Report No.7	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 10.	5 June 2014
Progress Report No. 8	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 11.	31 March 2015
Progress Report No. 9	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 12.	30 September 2015
Progress Report No. 10	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 13.	31 March 2016
Progress Report No. 11	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 14.	30 September 2016
Progress Report No. 12	A progress Report that contains the information specified in Item I.2 of this Project Schedule that demonstrates the completion of Project Milestone 15.	31 March 2017
Final Project Report	A final project Report that contains the information specified in Item I.3 of this Project Schedule.	By the date specified in Item I.3.2.
Audited Financial Report	An audited financial Report as required by Item C of Schedule 4 of this Agreement that contains the information specified in that Item.	By the dates specified in Item C of Schedule 4 of this Agreement.
Evaluation Report	An Evaluation Report that contains the information specified in Item I.5 of this Project Schedule.	By the date specified in Item I.5.2.

I.1.2. The Commonwealth's approval of each Project Report listed in Item I.1.1 is required.

I.2. **Progress Reports**

I.2.1. Each Progress Report must include at a minimum:

a. a description of work undertaken in respect of the Priority Project up to and including the completion of the Project Milestone to which the Report relates that includes:

i. Priority Project achievements to date, including evidence that each of the Project Element Milestones specified in the relevant Project Milestone have been met;

ii. the initial outcomes of the Priority Project (as specified in Attachments A to H) that have been achieved to date, as evidenced by monitoring and evaluation activities funded through the Priority Project, to the extent possible. This includes a discussion of the extent to which the completed Works are being used for the purpose of the Priority Project's outcomes; and

iii. an explanation of any difficulties or delays encountered to date in the performance of the Priority Project, including the extent to which the Priority Elements' expected initial outcomes have not been met.

b. a detailed statement of the State's receipt and expenditure of the Funds and the State Contributions to date for the Priority Project, including interest earned by the State on the Funds or State Contributions and any contingency funds expended during the report period;

c. details of all promotional activities undertaken in relation to, and media coverage of, the Priority Project during the period that is the subject of the Report and any expected promotional opportunities, during the next reporting period of the Priority Project;

d. a description of the work that will be undertaken to complete the Priority Project;

e. a statement as to whether the Priority Project is proceeding within the Project Cost and if it is not, an explanation as to why the Project Cost is not being met and the action the State proposes to immediately take to address this; and

f. any other items that are agreed by the State and the Commonwealth to be included in the Progress Reports.

I.3. Final Project Report

I.3.1. The Final Project Report must be a stand-alone document that can be used for public information dissemination purposes regarding this Priority Project.

I.3.2. The Final Project Report for the Priority Project is due within 60 Business Days of the earliest of:

a. the completion of the Priority Project; or

b. the termination of the Agreement or this Project Schedule.

I.3.3. The Final Project Report must contain the following information:

a. a description of the conduct, benefits and outcomes of the Priority Project as a whole;

b. an analysis of this Priority Project, including assessing the extent to which the outcomes of the Priority Project (as specified in Item B.2 of this Project Schedule) have been achieved and explaining why any aspect of the Priority Project was not achieved;

c. high level financial information regarding the State's receipt and expenditure of the Funds and State Contributions to date, a summary of contingency funds expended, and any interest earned by the State on the Funds, for the entire period of the Priority Project;

d. a summary of all promotional activities undertaken in relation to, and media coverage of, the Priority Project;

e. a discussion of any other matters, relating to the Priority Project, which the Commonwealth notifies the State should be included in this Final Project Report at least 20 Business Days before it is due; and

f. any other information that is agreed by the State and the Commonwealth to be included in the Final Project Report.

I.3.4. The Final Project Report should be accompanied by a separate document that contains a certified income and expenditure statement signed by the Chief Finance Officer, Department for Water that clearly identifies:

a. the State's receipt and expenditure of the Funding for this Priority Project, that separately identifies the contingency expenditure paid for by the Funding and confirms the amount of Funding that was expended by the State in accordance with this Project Schedule;

b. the State's receipt and expenditure of any interest earned by the State on the Funding and State Contributions;

c. the receipt and expenditure of any State Contributions provided by the State for the Priority Project that separately identifies the contingency expenditure paid for by the State Contributions;

e. any cost savings or cost overruns for the Priority Project; and

f. the amount, if any, of Funds paid to the State and the amount of any State Contributions that the State has not spent on this Priority Project in accordance with this Agreement.

I.4. Audited Financial Reports

I.4.1. Audited Financial Reports are to be provided for the Priority Project as specified in Schedule 4 Item C of the Agreement.

I.5. Evaluation Report

I.5.1. An Evaluation Report is to be provided by the State, building on information provided in progress reports for the Priority Project, that clearly demonstrates:

a. the extent to which the completed Works are being used for the Priority Project outcomes as specified in Item B.2.2 throughout the Evaluation Period;

b. the extent to which the Priority Project has met, exceeded or fallen short of the Priority Project outcomes as specified in Item B.2.2 during the Evaluation Period; and

c. any other items that are agreed by the State and the Commonwealth to be included in the Evaluation Report.

I.5.2. The Evaluation Report is due within 40 Business Days of the expiry of the Evaluation Period.

J. Payment Schedule for Commonwealth Funding for this Priority Project

J.1.1. The maximum GST exclusive amount of Funding for this Priority Project is [redacted] which comprises the Overpayment and Interest Amount of [redacted] specified in Item D.1.3. (which is already held by the State) and the [redacted] of Funding payable by the Commonwealth to the State as set out in the following table. The provision of all Funding is subject to the terms of clauses 6 and 17 of the Agreement:

Payment Schedule for Commonwealth Funding		
Funding Payment Number	**Funding instalment (GST excl)**	**Payment Preconditions for Funding instalment**
1.	[redacted]	Execution of this Project Schedule by the parties (Milestone No. 1). The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.
2.		The State's completion of Project Milestone No. 2 (30 September 2011) and its provision of Progress Report No. 1 and the Commonwealth's acceptance of that Project Milestone and that Report. The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.
3.		The State's completion of Project Milestone No. 3 (31 December 2011) and its provision of Progress Report No. 2 and the Commonwealth's acceptance of that Project Milestone and that Report. The State's completion of Milestone No. 4 (29 February 2012). The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth
4.		The State's completion of Project Milestone No. 5 (30 June 2012) and its provision of Progress Report No. 3 and the Commonwealth's acceptance of that Project Milestone and that Report. The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.

Payment Schedule for Commonwealth Funding		
5.	[redacted]	The State's completion of Project Milestone No. 6 (31 December 2012) and its provision of Progress Report No. 4 and the Commonwealth's acceptance of that Project Milestone and that Report. The State's completion of Milestone 7 (28 February 2013). The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth. The invoice must clearly note that this payment is [redacted] rather than [redacted] because [redacted] of Funding has already been provided to the State as per Item D.1.3 of this Project Schedule.
6.		The State's completion of Project Milestone No. 8 (30 June 2013) and its provision of Progress Report No. 5 and the Commonwealth's acceptance of that Project Milestone and that Report. The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.
6a.		The State's completion of Project Milestone No. 8a (30 September 2013). The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.
7.		The State's completion of Project Milestone No. 9 (31 December 2013) and its provision of Progress Report No. 6 and the Commonwealth's acceptance of that Project Milestone and that Report. The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.
8.		The State's completion of Project Milestone No. 10 (5 June 2014) (and its provision of Progress Report No. 7 and the Commonwealth's acceptance of that Project Milestone and that Report. The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.
9.		The State's transfer to the Commonwealth of any Verified Water Savings in addition to the Agreed Water Savings, if required by Item F of this Project Schedule. The State's completion of Project Milestone No. 11 (31 December 2014) and its provision of Progress Report No. 8 and the Commonwealth's acceptance of that Project Milestone and that Report. The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.
10.		The State's completion of Project Milestone No. 12 (30 June 2015) and its provision of Progress Report No. 9 and the Commonwealth's acceptance of that Project Milestone and

Payment Schedule for Commonwealth Funding		
	[redacted]	that Report. The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.
11.		The State's completion of Project Milestone No. 13 (31 December 2015) and its provision of Progress Report No. 10 and the Commonwealth's acceptance of that Project Milestone and that Report. The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.
12.		The State's completion of Project Milestone No. 14 (30 June 2016) and its provision of Progress Report No. 11 and the Commonwealth's acceptance of that Project Milestone and that Report. The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.
Final Payment		The State's completion of Project Milestone No. 15 (31 December 2016) and its provision of Progress Report No. 12 and the Final Project Report and the Commonwealth's acceptance of that Project Milestone, that Report and the Final Project Report. The State's provision of an invoice for this payment of Funds and acceptance of that invoice by the Commonwealth.
Total		
Total available Contingency funding		
Total Common-wealth Funding		

*The maximum total Commonwealth Funding for this Priority Project includes the Overpayment and Interest Amount of [redacted] already held by the State as per Item D.1.3. and the [redacted] of Funding payable in instalments by the Commonwealth under this Item J.

J.1.2. In accordance with Items D.2.1 to D.2.4 the Commonwealth may pay up to [redacted] of the Funding as reimbursement for contingency expenditure that the State has incurred in its performance of this Priority Project, with the State to contribute 10 per cent (or up to [redacted] of agreed total contingency costs. The Commonwealth's contribution will be added to, and included in, the payment that the Commonwealth makes to the State under Item J.1.1 in accordance with Item D.2.4 once the Commonwealth is satisfied with the contingency expenditure evidence the State has provided.

ATTACHMENT A

Project Element Name

1. Pike Floodplain

Project Element Initial Outcomes

Initial outcomes from this Project Element, include:

- implementation of ecologically appropriate hydrological regimes;
- collection and storage of ecological and surface water monitoring data to inform operational strategy; and
- improvement of the environmental health of the Pike anabranch through increased flows, hydrological connectivity and fish passage and improvement of hydraulics for natural flow events.

The parties acknowledge that by delivering the Project Element Milestones below, progress is being made towards achieving these initial outcomes.

Project Element Deliverables, Conduct and Conditions

This Project Element requires the State construct / decommission seven structures located within the Pike Floodplain, These are referred to as 'surface water infrastructure' within the milestones A. 6, A. 7 and A.8 (below) and comprise of the following activities:

- the removal of Snake Creek Stock Crossing, Bank G, Bank H and Coombs Bridge; and
- the replacement of regulating structures at Banks B, B2 and C.

The Commonwealth's original approval through its Due Diligence for this Project Element also included the replacement of additional structures at Banks D, E, F and F1 that also included a pool riffle fishway. The scope of activities is now defined by this Attachment A. In the event that the *South Australia Riverland Floodplain Integrated Infrastructure Program (SARFIIP)*, administered by the Murray Darling Basin Authority (MDBA) does not deliver the environmental outcomes through the replacement of structures at Banks D, E, F and F1, the parties will need to consider varying the scope of this Project Element.

This Project Element also requires the State to:

- refine hydraulic model and multiple management scenarios with model outputs;
- undertake technical investigations and modelling (including hydraulic, groundwater and tree condition) under a range of natural and managed inundation regimes;
- undertake ecological risk assessment of infrastructure options involving on-going monitoring programs and ecological surveys;
- modify sumps and pumps to allow a variable hydrological regime within the Pike anabranch;
- develop a scientifically robust operational strategy;
- obtain necessary State and Australian Government approvals as required;
- satisfactorily resolve land access agreements with third parties as needed, in accordance with Item B.3.4 of this Project Schedule;
- consult with the Murray-Darling Basin Authority and Commonwealth Environmental Water Holder during the development and implementation of the project to ensure consistency of environmental watering operation planning; and

- confirm detailed infrastructure costings with Commonwealth once detailed designs are undertaken.

This project element also includes also requires the State to complete the following activities:

- replacement of the existing inlet structure at the Deep Creek inlet with a combined inlet regulator, fishway and fish friendly bridge; and
- completion of erosion protection measures downstream from the combined inlet structure; and

The proposed combined structure is designed to control the amount of water flowing into the Pike Floodplain. This will provide critical infrastructure for the effective management of environmental flows, fish passage (across all life stages) and habitat for the floodplain.

The erosion protection measures at various points downstream of the inlet structure and along Deep Creek are designed to ensure the increased flow through the new inlet structure reduces the risk of inundation to adjacent properties.

Project Element Milestone number	**Project Element Milestones**	**Completion Date**
A.1	a) Pike Floodplain Implementation Plan developed. b) Monitoring project management commenced.	30 September 2011 (Completed)
A.2	a) Hydraulic modelling commenced with initial outputs provided, landholder negotiations recommenced, all necessary State and Commonwealth approvals prepared and submitted. b) Service provider for detailed design engaged and detailed design commenced. c) Service providers engaged and risk assessment (to form part of the operational strategy) commenced. d) Ecological monitoring commenced, development of surface water monitoring system commenced. e) Community engagement commenced and initial promotional materials developed.	31 December 2011 (Completed)
A.3	a) Hydraulic modelling continuing and all required statutory approvals sought and more than half gained and documented. b) Continuing ecological and surface water monitoring and data collection. c) Continuing communication with community and stakeholder groups. d) Land access issues resolved.	30 June 2012 (Completed)
A.4	a) Hydraulic modelling used to inform operation strategies. b) Detailed design commenced for all infrastructure. c) Operational strategy developed. d) Approvals under the *Aboriginal Heritage Act 1988* (SA) and *Native Vegetation Act 1991* (SA) gained and documented.	31 December 2012 (Completed)

A.5	a) Detailed design completed, costs confirmed for all infrastructure. b) Modification of pumps and sumps has commenced. c) Continuing ecological and surface water monitoring and data collection. d) Continuing communication with community and stakeholder groups.	30 June 2013 (Completed)
A.6	a) Continuing hydraulic modelling. b) Construction commenced for surface water management infrastructure.	31 December 2013 (Completed)
A.7	a) Construction continued for surface water management infrastructure. b) Continuing ecological and surface water monitoring and data collection. c) Continuing communication with community and stakeholder groups. d) Complete procurement and contracting arrangements for the construction of a combined inlet regulator, fishway and fish friendly bridge at Deep Creek and commencement of erosion protection measures at various points downstream of Deep Creek.	5 June 2014
A.8	a) All construction completed and surface water management infrastructure commissioned. b) Operational strategy implemented for commissioned structures. c) Continuing hydraulic modelling undertaken, hydraulic model calibrated with actual surface water data. d) Commissioning completed of the construction and installation of a combined inlet regulator, fishway and fish friendly bridge at Deep Creek; and completion of erosion protection measures at various points downstream of Deep Creek	31 December 2014

Expected Project Element completion date	**30 June 2016**
Funding: Pike Floodplain	**TOTAL Project Cost (up to)**
Pike Floodplain Deep Creek	[redacted]
Planning, Monitoring & Engagement	
Construction Surface Water Infrastructure Works – Pump Modifications, Regulators, Levees, Fishway	
Project Management	
Contingencies	
TOTAL* (as per Item D of this Project Schedule)	

* The figures in the above table include both Funding and State Contributions

Project Element Name
2. Katfish Floodplain
Project Element Initial Outcomes
Initial outcomes from this Project Element, include: • implementation of ecologically appropriate hydrological regimes as defined in hydrological operation plan (with site specific objectives targeting ecological characteristics), to facilitate water level variation of 20 km of waterway and associated wetlands; • improved connectivity/transport processes (water, nutrients, biota in particular fish) between wetlands, water courses and river channel with all in stream fish and flow barriers replaced, increasing flows and fish passage through up to 38km of waterway; • collection and storage of ecological and surface water monitoring data to inform hydrological operations planning and increased system knowledge. The parties acknowledge that by delivering the Project Element Milestones below, progress is being made towards achieving these initial outcomes.
Project Element Deliverables, Conduct and Conditions
This Project Element requires the State to construct or replace eight hydrological structures to improve flow management and fish movement by removing in-stream fishways and flow barriers. These are referred to as 'surface water infrastructure' within the milestones B.7, B.9 and B.10 (below) and comprise of the following activities: • the construction of Bank,K and N, replacing MDBA structures; and • the construction of South Arm Rd, Eckert Nth Bridge, Eckert's Main Bridge, Log Crossing and Stone Weir to replace State Government Structures. This Project Element also requires the State to: • develop ecological and surface water monitoring systems; • develop a hydrological operation plan; • relocate licensed water diverter access points; • obtain necessary State and Australian Government approvals as required; • satisfactorily resolve land access agreements with third parties as needed, in accordance with Item B.3.4 of this Project Schedule; • consult with the Murray-Darling Basin Authority and Commonwealth Environmental Water Holder during the development and implementation of the project to ensure consistency of environmental watering operation planning; and • confirm detailed infrastructure costings with Commonwealth once detailed designs are undertaken. This Project Element also requires the State to complete and have commissioned the following Works: • upgrading Murray Hardyhead habitat through installing outfall sumps, regulators and a 3,000 metre pipeline; • restoration of the Katarapko Island saline water disposal basin; and • enhancing floodplain flow and fish passage connectivity.

Project Element Milestone number	Project Element Milestones	Completion Date
B.1	a) Implementation plan for Katfish Reach finalised. b) Monitoring project management commenced.	30 September 2011 (Completed)
B.2	a) Ecological assessment commenced, hydrological modelling commenced to inform hydrological operation plan and detailed designs. b) Detailed designs commenced. c) Ecological monitoring commenced, development of surface water monitoring system commenced.	31 December 2011 (Completed)
B.3	a) Hydrological operation plan developed. b) Continuing ecological and surface water monitoring and communications activities.	30 June 2012 (Completed)
B.4	a) Nil.	31 December 2012 (Completed)
B.5	a) Detailed designs completed and revised project cost available for surface water management infrastructure with the exception of the Bank J structure. b) Continuing ecological and surface water monitoring and communications activities.	30 June 2013 (Completed)
B.6	a) Construction supervision service provider engaged. b) Licenced water diverters connected to CIT supply and modification of pump infrastructure. c) Detailed designs completed and revised project cost available for surface water management infrastructure at Bank J.	31 December 2013 (Completed)
B.7	a) Continuing ecological and surface water monitoring and communications activities. b) Commencement meeting for surface water management infrastructure held with construction supervision service provider. c) Completion of the construction, installation and commissioning of the Murray Hardyhead habitat, restoration of the Katarapko Island saline water disposal basin and enhancing floodplain flow and fish passage connectivity.	5 June 2014
B.8	a) Nil.	31 December 2014

B.9	a) Construction of surface water management infrastructure completed. b) Continuing ecological and surface water monitoring and communications activities.	30 June 2015
B.10	a) New surface water management infrastructure tested and commissioned.	31 December 2015

Expected Project Element completion date	**30 June 2016**
Funding: Katfish Floodplain	**TOTAL Project Cost (up to)**
Planning, Monitoring & Engagement	[redacted]
Construction Surface Water Infrastructure Works – Pump Modifications, Regulators, Levees, Fishway, testing & commissioning	
Project Management	
Contingencies	
TOTAL* (as per Item D of this Project Schedule)	

* The figures in the above table include both Funding and State Contributions

Project Element Name
3. Wetland Projects (Phases 1A, 1B & 1C)
Project Element Initial Outcomes
Initial outcomes from this Project Element, include • introduction of ecologically appropriate hydrological regimes (as defined in management plans with site specific objectives targeting wetland characteristics) at targeted wetlands; • improvement in connectivity/transport processes between wetland and river channel; • achievement of environmental water savings to deliver of a minimum of 4.2GL and up to 4.547GL of high security water savings to the Commonwealth through wetland management; • community acceptance of the new management plan objectives; • improved knowledge regarding proposed Phase 2 activities. The parties acknowledge that by delivering the Project Element Milestones below, progress is being made towards achieving these initial outcomes.
Project Element deliverables, conduct and conditions
This Project Element requires the State to: • undertake detailed hydrological assessment and modelling; • undertake on-ground works for habitat restoration at target sites; • relocate water access points from wetlands to river channel (if required); • construct or upgrade regulator infrastructure; • review, update or develop wetland management plans for identified sites; • undertake investigations and feasibility studies for between 12 and 37 wetlands (Phase 1C), including: - consultation; - baseline surveys; - detailed hydrological modelling and associated water savings estimates; and - refining engineering designs and cost estimates; • transfer Agreed Water Savings Entitlement to the Commonwealth; • wetlands management water use and water savings placed on license; • relevant information used from investigations and feasibility studies (Phase 1C) to prepare proposal for Phase 2 of the project; • consult with the Murray-Darling Basin Authority and Commonwealth Environmental Water Holder during the development and implementation of the project to ensure consistency of environmental watering operation planning; • obtain necessary State and Australian Government approvals as required; • establish appropriate monitoring and evaluation arrangements that are consistent with relevant national initiatives;

- confirm detailed infrastructure costings with Commonwealth once detailed designs are undertaken; and
- confirm water savings once detailed hydrological assessment and modelling has been undertaken.

Project Element Milestone number	**Project Element Milestones**	**Completion Date**
C.1	*Phase 1(a)* a) Implementation Plan for Phase 1(a) activities developed. *Phase 1(b)* b) Implementation Plan for Phase 1(b) activities developed. *Phase 1(c)* c) Implementation Plan for Phase 1(c) activities developed.	30 September 2011 (Completed)
C.2	*Phase 1(a)* a) Bathymetry collected, modelling method and inputs identified, climate data acquired, scenarios determined, detailed modelling commenced. b) Engineering and geotechnical survey completed and detailed design commenced. c) Drafting of management plans commenced. d) Necessary state and Commonwealth approvals related to Habitat Restoration sought. *Phase 1(b)* e) Pump survey completed, sites identified for modelling and infrastructure design, modelling methods and inputs endorsed by the State. f) Infrastructure design commenced. g) Sites identified for field survey, survey methods identified, initial landholder consultation undertaken, survey underway. h) Drafting of management plans commenced. *Phase 1(c)* i) Landholder consultation commenced, modelling methods and inputs endorsed by the State. j) Landscape / habitat investigations commenced. k) Baseline survey methods identified and documented. l) Initial communications materials developed.	31 December 2011 (Completed)

Project Element Milestone number	Project Element Milestones	Completion Date
C.3	*Phase 1(a)* a) Detailed modelling of 26 wetlands completed, hydrology in management plans for these wetlands reviewed to ensure aligned with ecological objectives, integrated operational schedule developed, management water needs and water savings estimations quantified and placed on Minister's licence. b) Detailed designs completed, detailed costs confirmed, necessary State and Commonwealth approvals sought, construction process commenced for all infrastructure except the new Bunyip Reach regulator. c) Final management plans for 3 sites endorsed by the State. d) Habitat restoration works commenced, including the completion of the installation of carp screens at 1 site. *Phase 1(b)* e) Detailed modelling of between 5 and 8 wetlands commenced, pump requirements and high level cost estimates for these wetlands established. f) Engineering and geotechnical survey and detailed designs for between 4 and 7 wetlands commenced. g) Monitoring and evaluation survey method and results documented and provided to management plan process. *Phase 1(c)* h) Bathymetry collection commenced, climate data acquired, pump survey completed, refined list of sites. i) Baseline survey procurement process commenced for refined list of sites.	30 June 2012 (Completed)
C.4	*Phase 1(a)* a) Detailed modelling of 1 wetland completed, hydrology in management plan for this wetland reviewed to ensure aligned with ecological objectives, integrated operational schedule developed, management water needs and water savings estimations quantified and placed on Minister's licence. b) Detailed designs completed for 3 new regulating structures at Bunyip Reach (Gilles Inlet, Gilles Outlet and 40 Acre Swamp), continue to seek necessary State and Commonwealth approvals. c) Construction completed on 1 regulator (Martin's Bend) and on 1 regulator upgrade (Morgan's Lagoon – Lower Murray) and asset handover finalised. d) Habitat restoration works completed, including removal of	31 December 2012 (Completed)

Project Element Milestone number	Project Element Milestones	Completion Date
	flow obstruction at 1 site (Murbpook Lagoon) and enhancement of purple-spotted gudgeon habitat enhanced at 1 site (Jury Swamp). *Phase 1(b)* e) Management needs and water savings estimations quantified for between 5 and 8 wetlands. *Phase 1(c)* f) Concepts and design criteria determined and Infrastructure design process commenced. g) Landscape / habitat investigation results provided to the management planning process. h) Management Plan process commenced for refined list of sites. i) Communications material developed.	
C.5	*Phase 1(a)* a) Detail costs confirmed for 3 new regulating structures at Bunyip Reach completed, detailed costs confirmed, necessary State and Commonwealth approvals obtained. b) Construction commenced for 1 regulator upgrade at Morgan's Lagoon Conservation Park. c) Final management plan for Bookmark Creek endorsed by the State *Phase 1(b)* d) Engineering and geotechnical survey and detailed designs for between 4 and 7 wetlands continued. e) Construction process for regulating structures commenced. f) Construction process for pump relocation commenced (if required). *Phase 1(c)* g) Detailed hydrological models created for sites identified on refined list. h) Landscape / habitat investigation commenced. i) Baseline survey commenced.	30 June 2013 (Completed)
C.6	*Phase 1(a)* a) Construction completed for 1 new regulator at Noonawirra and on new regulators at 4 sites (Bunyip Reach –Gillies Outlet, Braddy's Inlet, 40 Acre Swamp and Nigra Creek and Schillers Lagoon Complex) and asset handover finalised.	31 December 2013 (Completed)

Project Element Milestone number	Project Element Milestones	Completion Date
	b) Construction completed for 1 regulator upgrade at Morgan's Lagoon Conservation Park and asset handover finalised *Phase 1(b)* c) Response monitoring of sites commenced. d) All required State and Commonwealth approvals sought for between 4 and 7 wetlands. e) Engineering and geotechnical survey and detailed designs for between 4 and 7 wetlands completed. f) Management plans for between 5 and 8 wetlands endorsed by the State and management water needs and water savings estimations quantified and placed on Minister's licence. *Phase 1(c)* g) Engineering and geotechnical survey for Batch 1 Phase 2 wetlands completed. h) Scenarios determined, management needs and water savings estimations quantified for Batch 1 Phase 2 wetlands. i) Draft management plans developed for Batch 1 Phase 2 wetlands. j) Landscape/habitat investigation completed. k) Baseline survey continued.	
C.7	*Phase 1(a)* a) Construction continued for one new regulator at Bunyip Reach – Gillies Inlet, and asset handover finalised. *Phase 1(b)* b) Construction of new regulators 75% completed for between 4 and 7 wetlands. *Phase 1(c)* c) Engineering and geotechnical survey for the remainder of Phase 2 wetlands (dependant on landholder engagement and available budget) continued. d) Final drafts of detailed designs for Batch 1, Phase 2 wetlands completed. e) Scenarios and management needs determined for the remainder of Phase 2 wetlands (dependant on landholder engagement and available budget). f) Draft management plans developed for the remainder of Phase 2 wetlands (dependant on landholder engagement and available budget). g) Baseline survey continued.	5 June 2014

Project Element Milestone number	Project Element Milestones	Completion Date
C.8	*Phase 1(a)* a) Construction completed for one new regulator at Bunyip Reach – Gillies Inlet, and asset handover finalised. Phase 1(b) b) Construction of new regulators completed for between 4 and 7 wetlands. c) Asset handover for regulating structures. Phase 1(c) d) Engineering and geotechnical survey for the remainder of Phase 2 wetlands (dependant on landholder engagement and available budget) completed. e) Final detailed designs for all Phase 2 wetlands. f) Water savings estimations quantified for the remainder of Phase 2 wetlands (dependant on landholder engagement and available budget). g) Management plans finalised for the remainder of Phase 2 wetlands (dependant on landholder engagement and available budget). Baseline survey completed.	30 December 2014

Project Element completion date	**30 June 2016**
Funding: Wetlands Projects Phase 1A, 1B and 1C	**TOTAL Project Cost (up to)**
Phase 1A	
Planning, Monitoring & Engagement	[redacted]
Construction -Regulating Structures (1(a))	
Project Management	
Contingencies	
Sub - Total Phase 1A	
Phase 1B	
Planning, Monitoring & Engagement	
Construction Regulating Structures (1(b))	
Project Management	
Sub - Total Phase 1B	
Phase 1C	
Planning, Monitoring & Engagement	
Pre-construction and Preliminaries (1(c))	
Project Management	
Contingencies	
Sub -Total Phase 1C	
TOTAL OF PHASES 1A, 1B AND 1C* (as per Item D of this Project Schedule)	

* The figures in the above table include both Funding and State Contributions.

** Following completion of the pump survey this activity was no longer required and was re-allocated to cost increases for the Regulating Structures.

Project Element Name
4. Phase 1 - Enhanced River Operations and Weir Pool Manipulation (completed)
Project Element Initial Outcomes
The initial outcome of this Project Element, is: • increased knowledge of means of improving environmental river management through weir pool manipulation and river operation protocols and practices and community acceptance of proposed new protocols. The parties acknowledge that by delivering the Project Element Milestones below, progress is being made towards achieving this initial outcome.
Project Element deliverables, conduct and conditions
This Project Element requires the State to: • undertake investigations to assess inundation extent to be derived from improved river flow management (including weir pool raising and lowering); • scope the range of environmental flow delivery and options assessment to inform operation strategy; • provide detailed results of the investigations undertaken; • prepare detailed designs and costing of required infrastructure; • complete base line monitoring methodology and identify reference monitoring sites; • consult with the Murray-Darling Basin Authority and the Department of the Environment's Environmental Water Branch in relation to the Commonwealth Environmental Water Holder throughout the investigations phase; • ensure linkage with proposed monitoring and evaluation activities undertaken by other Commonwealth initiatives; • obtain necessary State and Australian Government approvals as required. The Parties note that collecting and analysing baseline data to inform future monitoring activities (with funding up to [redacted] will not be undertaken prior to December 2012 and, further note, that: • if Phase 2 is agreed, these activities will be undertaken by December 2013; or • if Phase 2 is not agreed, these activities will not be undertaken.

Project Element Milestone number	**Project Element Milestones**	**Completion Date**
D.1	a) Implementation plan for Enhanced River Operations and Weir Pool Manipulation developed.	30 September 2011 (Completed)

Project Element Milestone number	Project Element Milestones	Completion Date
D.2	a) Salinity investigations commenced. b) Pump surveys at Locks 3-4 and Lock 4-5 reaches commenced. c) Inundation model upgraded to incorporate full extent of weir pool manipulation capacity following lock and weir upgrades. d) Process commenced for the assessment of environmental flow delivery and options. e) Risk assessment commenced regarding water use, water quality, acid sulphate soils and navigation issues. f) Proposed sites for infrastructure construction identified and design process commenced. g) Base line monitoring scoped. h) Draft communications plan developed.	31 December 2011 (Completed)
D.3	a) Salinity modelling undertaken. b) Pump surveys underway. c) Inundation scenarios identified and modelling undertaken. d) Environmental flow conceptual models developed. e) Monitoring methods documented. f) Communications plan finalised.	30 June 2012 (Completed)
D.4	a) Salinity investigations completed and risks associated with weir pool manipulation events quantified. b) Pump survey results added to existing data sets. c) Completion of inundation model for predetermined manipulation scenarios. d) Identification and documentation of opportunities for optimising environmental flows. e) Key risks and water use estimations relating to manipulated events quantified. f) Detailed designs and costings for proposed secondary regulating structures. g) Base line monitoring methodology completed and reference monitoring sites identified.	31 December 2012 (Completed)

Project Element completion date	**31 December 2012**
Funding: **Enhanced River Operations and Weir Pool Manipulation**	**TOTAL Project Cost (up to)**
Feasibility Investigations	[redacted]
Development of monitoring methodology	
Communication Plan and materials	
Project Management	
Corporate Support Services Cost Recovery	
Contingencies	
TOTAL* (as per Item D of this Project Schedule)	

* The figures in the above table include both Funding and State Contributions

Project Element Name

5. Information Management to Support Decision Making

Project Element Initial Outcomes

The Information Management to Support Decision Making Project Element is made up of three components which, when combined, aim to improve knowledge and understanding about management for water dependent ecosystems.

Monitoring and Evaluation (M&E)

Initial outcomes from this Project Element component, include:

- ensure initial and subsequent decisions and actions for floodplain work, changed wetland management regimes and river operation decisions, are examined and reviewed;
- increased knowledge and understanding of water dependant ecosystems.

Management Action Database (MAD)

The initial outcome from this Project Element component is:

- improved consistency and coordination of data entry and management of current and historical data through creation of a central repository of data about the River Murray in South Australia.

Ecological Response Models/Integrated Operations Schedules

The initial outcome from this Project Element component is:

- improved ability to model long term ecological outcomes from altered hydrological management and water availability scenarios.

The parties acknowledge that by delivering the component milestones below, progress is being made towards achieving these outcomes.

Project Element deliverables, conduct and conditions

Monitoring and Evaluation (M&E)

In relation to the Monitoring and Evaluation (M&E) component, the State is required to:

- establish on ongoing adaptive monitoring and evaluation system to enable the assessment of the RRP project outcomes for water dependent ecosystems; and
- define required monitoring at each site and establish the monitoring, reviewing and reporting requirements and processes to inform future management.

Management Action Database (MAD)

In relation to the Management Action Database (MAD) component, the State is required to:

- develop modules of the MAD to provide a repository for current and historical monitoring and management data collected through existing wetland programs as well as those developed under RRP;
- scripting database on to new hosting environment and development of database queries; and
- host and upgrade / maintain the MAD as required.

Ecological Response Models/Integrated Operations Schedules

In relation to the Ecological Response Models component, the State is required to:

- refine the Ecological Response Models to inform long term ecological outcomes from altered hydrological management and water availability scenarios.

Project Element Milestone number	Project Element Milestones	Completion Date
E.1	*Monitoring and Evaluation* a) Monitoring and Evaluation Project Implementation Plan developed. *Management Action Database* b) MAD Project Implementation Plan developed, including prioritisation of modules.	30 September 2011 (Completed)
E.2	*Monitoring and Evaluation* a) Development of the Monitoring and Evaluation Plan commenced. *Ecological Response Models* b) Scope Murray Flows Assessment Tool curves to be refined. *Management Action Database* c) Development of MAD modules, as per Project Implementation Plan, commenced.	31 December 2011 (Completed)
E.3	*Monitoring and Evaluation* *a) Development of the Monitoring and Evaluation Plan completed.* *b) Assessment of monitoring undertaken and ongoing coordination of monitoring and evaluation activities.* *Ecological Response Models* *c) Data collection and finalise refinement of Murray Flow Assessment Tool curves.* *d) Implement new Murray Flow Assessment Tool curves and operate.* *Management Action Database* *e) Update the MAD with historical data.*	30 June 2012 (Completed)
E.4	*Monitoring and Evaluation* a) Annual review of the Monitoring and Evaluation Plan and refinement as necessary. *Management Action Database* b) Development of MAD modules as determined by the Implementation Plan, completed.	31 December 2012 (Completed)

E.5	*Monitoring and Evaluation* a) Assessment of monitoring undertaken and ongoing coordination of monitoring and evaluation activities. b) *Integrated Operations Schedule* - Run the model to inform decision making.	30 June 2013 (Completed)
E.6	*Monitoring and Evaluation* a) Annual review of the Monitoring and Evaluation Plan and refinement as necessary. *Management Action Database* b) Population of data.	31 December 2013 (Completed)
E.7	*Monitoring and Evaluation* a) Assessment of monitoring undertaken and ongoing coordination of monitoring and evaluation activities. b)	5 June 2014
E.8	*Monitoring and Evaluation* a) Annual review of the Monitoring and Evaluation Plan and refinement as necessary. b) *Integrated Operations Schedule* Re-run the model to inform decision making. *Management Action Database* c) Population of data.	31 December 2014
E.9	*Monitoring and Evaluation* a) Assessment of monitoring undertaken and ongoing coordination of monitoring and evaluation activities. b) *Integrated Operations Schedule* Re-run the model to inform decision making.	30 June 2015
E.10	*Monitoring and Evaluation* a) Annual review of the Monitoring and Evaluation Plan and refinement as necessary. *Management Action Database* b) Population of data.	31 December 2015
E.11	*Monitoring and Evaluation* a) Assessment of monitoring undertaken and ongoing coordination of monitoring and evaluation activities. b) *Integrated Operations Schedule* Re-run the model to inform decision making.	30 June 2016

Expected Project Element completion date	**30 June 2016**
Funding: Information Management to Support Decision Making	**TOTAL Project Cost (up to)**
Planning, Monitoring & Engagement	[redacted]
Project Management	
Contingencies	
TOTAL* (as per Item D of this Project Schedule)	

* The figures in the above table include both Funding and State Contributions

Project Element Name
6. Communication, Partnerships and Project Management
Project Element Initial Outcomes
Initial outcomes from this Project Element component, include: • coordinated development and implementation of Priority Project Components; • increased understanding, awareness and engagement of stakeholders; • provide ongoing communications, consultation and engagement with stakeholders; and • establish effective Indigenous, community and Government partnerships for delivery of the Priority Project. The parties acknowledge that by delivering the Project Element Milestones below, progress is being made towards achieving these initial outcomes.
Project Element deliverables, conduct and conditions
This Project Element requires the State to: • develop and implement an integrated communications plan; • develop and utilise promotional materials and maintain a Riverine Recovery website presence; • scope requirements and strategies for negotiating Indigenous partnership arrangements; • engage Indigenous communities in the delivery of the Priority Project; • undertake consultation with stakeholders; and • consider the Commonwealth's request for transferring entitlements saved under the project from Class 9 to Class 3, as part of the review of the River Murray Water Allocation Plan.

Project Element Milestone number	**Project Element Milestones**	**Completion Date**
F.1	*Communications* a) Commence the development of an overarching Communications Plan. *Project Management* b) Implementation Plan for the Communications, Partnerships and Project Management Element developed.	30 September 2011 (Completed)

Project Element Milestone number	Project Element Milestones	Completion Date
F.2	*Communications* a) Completed the development of an overarching Communications Plan. *Partnerships* b) Commence development of partnership arrangements with Indigenous Nations. *Project Management* c) Ongoing coordination and management of Riverine Recovery project.	31 December 2011 (Completed)
F.3	*Communications* a) Ongoing communications activities with stakeholders. *Partnerships* b) Review and assess partnership arrangements. *Project Management* c) Ongoing coordination and management of Riverine Recovery project.	30 June 2012 (Completed)
F.4	*Communications* a) Ongoing communication activities with stakeholders. *Project Management* b) Ongoing coordination and management of Riverine Recovery project.	31 December 2012 (Completed)
F.5	*Communications* a) Ongoing communications activities with stakeholders. *Partnerships* b) Review and assess partnership arrangements. *Project Management* c) Ongoing coordination and management of Riverine Recovery project.	30 June 2013 (Completed)
F.6	a) South Australia considers the Commonwealth's request for transferring entitlements saved under the project from Class 9 to Class 3, as part of the review of the River Murray Water Allocation Plan. *Communications* b) Ongoing communication activities with stakeholders. *Project Management* c) Ongoing coordination and management of Riverine Recovery project.	31 December 2013 (Completed)

F.7	*Project Management* a) Ongoing coordination and management of Riverine Recovery project.	5 June 2014
F.8	*Project Management* a) Ongoing coordination and management of Riverine Recovery project.	31 December 2014
F.9	*Project Management* a) Ongoing coordination and management of Riverine Recovery project.	30 June 2015
F.10	*Project Management* a) Ongoing coordination and management of Riverine Recovery project.	31 December 2015
F.11	*Project Management* a) Ongoing coordination and management of Riverine Recovery project.	30 June 2016

Expected Project Element completion date	**30 June 2016**
Funding:	**TOTAL Project Cost (up to)**
Planning, Monitoring & Engagement	[redacted]
Project Management	
Contingencies	
TOTAL* (as per Item D of this Project Schedule)	

* The figures in the above table include both Funding and State Contributions

Project Element Name
7. Phase 2 - Enhanced River Operations and Weir Pool Manipulation
Project Element Initial Outcomes
The initial outcome of this Project Element, is: • increased knowledge of means of improving environmental river management through weir pool manipulation and community acceptance of manipulations. • improved lateral connectivity/transport process (water, nutrients, biota) between the river and the floodplain fringe. • collection and storage of ecological monitoring data to inform weir pool manipulations and increased system knowledge. The parties acknowledge that by delivering the Project Element Milestones below, progress is being made towards achieving this initial outcome.
Project Element deliverables, conduct and conditions
This Project Element requires the State to: • undertake investigations to assess inundation extent to be derived from improved river flow management (including weir pool raising and lowering); • construct required infrastructure to facilitate weir pool manipulations; • complete base line monitoring and ongoing monitoring of weir pool manipulations for each year of the project ; • consult with the Murray-Darling Basin Authority and the Commonwealth Environmental Water Office in relation to the Commonwealth Environmental Water Holder; • ensure linkage with proposed monitoring and evaluation activities undertaken by other Commonwealth initiatives; • Complete a risk assessment at the beginning of the project and at the end of each year's weir pool manipulations; • obtain necessary State and Australian Government approvals as required.

Project Element Milestone number	**Project Element Milestones**	**Completion Date**
G.1	a) Undertake baseline monitoring. b) Commence Phase 2 communications with the community and stakeholder groups. c) Commence one or more tender processes for secondary infrastructure upgrades. d) Identify which weirs will undergo Year 1 weir pool manipulation and the expected outcomes for each weir pool.	31 December 2013 (Completed)

Project Element Milestone number	Project Element Milestones	Completion Date
G.2	a) Complete necessary modelling and/or investigations to support Year 1 weir pool manipulations. b) Continue tender processes for secondary infrastructure upgrades. c) Undertake Year 1 weir pool manipulations subject to suitable conditions. d) Implement communications plan for Year 1 weir pool manipulations subject to suitable conditions. e) Continue communications with the community and stakeholder groups.	5 June 2014
G.3	a) Undertake monitoring of Year 1 weir pool manipulation events and confirm outcomes for each weir pool. b) Continue communications with the community and stakeholder groups. c) Identify which weirs will undergo Year 2 weir pool manipulation and the expected outcomes for each weir pool. d) Commence the necessary secondary infrastructure upgrades	31 December 2014
G.4	a) Complete necessary modelling and/or investigations to support Year 2 weir pool manipulations. b) Continue with the necessary secondary infrastructure upgrades. c) Undertake Year 2 weir pool manipulations subject to suitable conditions. d) Implement communications plan for Year 2 weir pool manipulations subject to suitable conditions. e) Continue communications with the community and stakeholder groups.	30 June 2015
G.5	a) Complete with the necessary secondary infrastructure upgrades. b) Undertake monitoring of Year 2 weir pool manipulation events and confirm outcomes for each weir pool. c) Continue communications with the community and stakeholder groups. d) Identify which weirs will undergo Year 3 weir pool manipulation and the expected outcomes for each weir pool.	31 December 2015

Project Element Milestone number	Project Element Milestones	Completion Date
G.6	a) Complete necessary modelling and/or investigations to support weir pool manipulations. b) Undertake Year 3 weir pool manipulations subject to suitable conditions. c) Implement communications plan for Year 3 weir pool manipulations subject to suitable conditions. d) Continue communications with the community and stakeholder groups.	30 June 2016
G.7	a) Complete final monitoring report which confirms Year 3 weir pool manipulation outcomes for each weir pool and details the overall outcomes for the Phase 2 weir pool manipulation project and outlines likely long term outcomes of the project. b) Complete handover.	31 December 2016

Project Element completion date	**30 June 2016**
Funding: **Phase 2 - Enhanced River Operations and Weir Pool Manipulation**	**TOTAL Project Cost (up to)**
Planning, Monitoring & Engagement	[redacted]
Construction of Infrastructure	
Project Management	
Contingencies	
TOTAL* (as per Item D of this Project Schedule)	

* The figures in the above table include both Funding and State Contributions

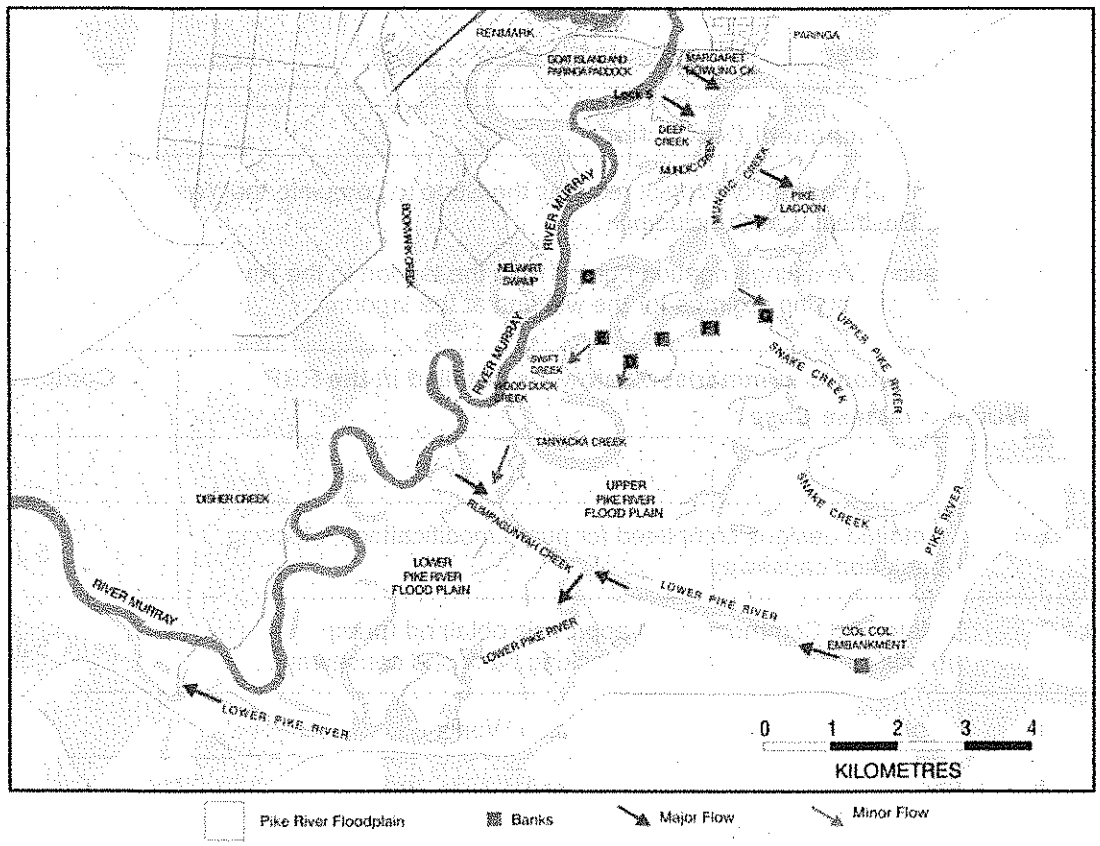
Project Element Name
8. Yatco Lagoon
Priority Project Component Key Aims and Objectives
• Protect a high priority wetland at Yatco Lagoon. • To improve environmental health and water use efficiency through improved management of the Yatco Lagoon. • Transfer the Agreed Water Savings to the Commonwealth.
Priority Project Component Description
This Component of the Priority Project requires the State to complete the Yatco Lagoon project, as detailed in the Business Case, including: • relocation of existing irrigation pumps from the lagoon to the River Murray to allow proper wetting and drying regimes for the wetland at the lagoon.

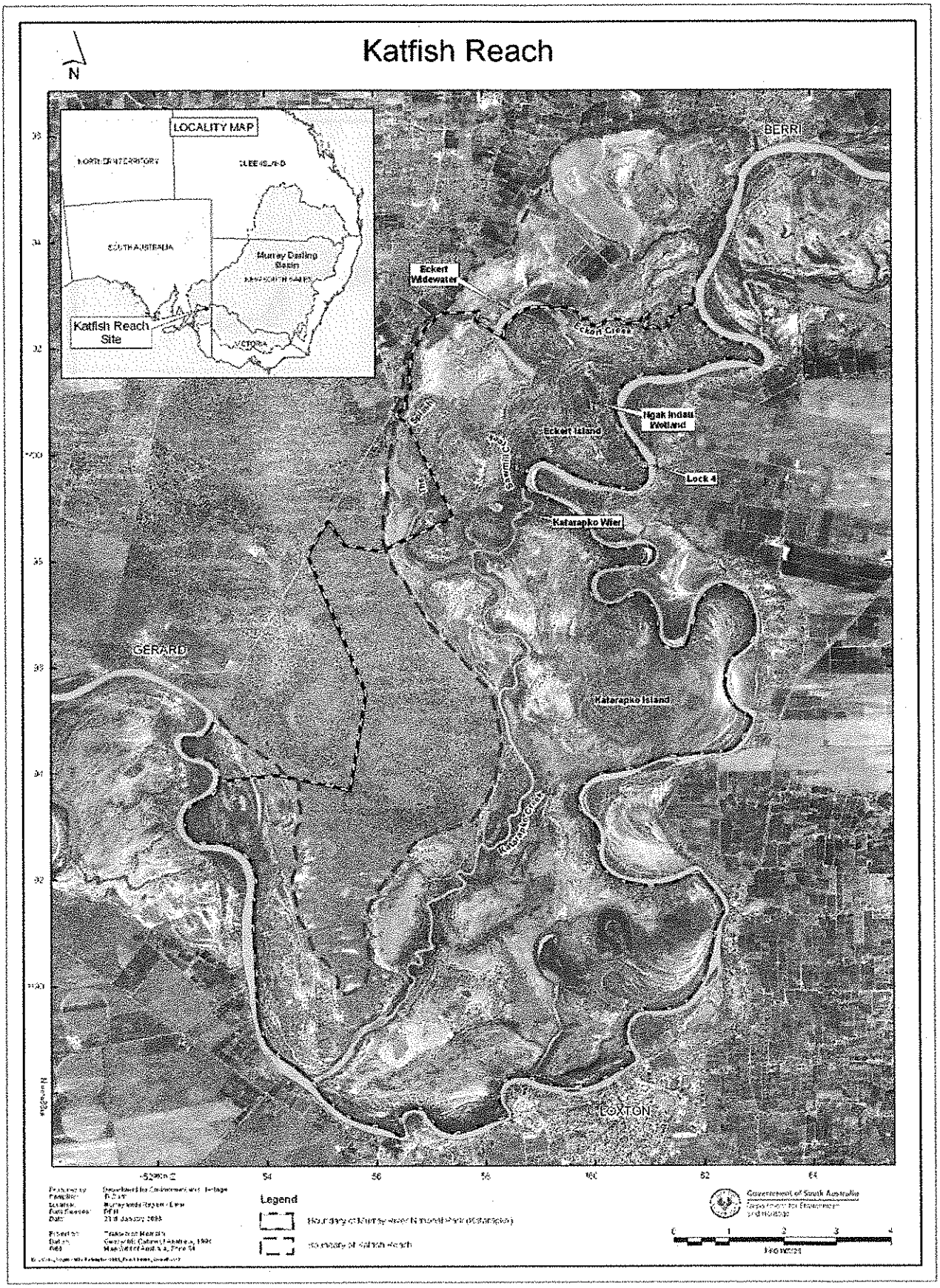
Component Milestones summarised below, as detailed in the RRP Early Works Business Case		**Completion Date**
H.1.1	Detailed designs completed for pump modifications, blocking bank and causeway.	5 June 2014
H.1.2	State and Commonwealth approvals obtained (pump modifications, regulators – blocking bank and causeway).	5 June 2014
H.1.3	Commencement of Pump relocation Works	5 June 2014
H.1.4	Completion and commissioning of the works to Construct blocking bank and causeway regulators	5 June 2014
H.1.5	Completion of Monitoring and Evaluation Plan.	31 December 2014
H.1.6	Investigation of further irrigation efficiency gains through pump modifications/relocation completed.	31 December 2014
H.1.7	Pump relocation Works completed. Commissioning completed	31 December 2014

Project Cost attributable to this Component	**$**
Relocation of pumps	[redacted]
Contingency	
TOTAL PROJECT COST attributable to this Component (as per Item D.2.1)	

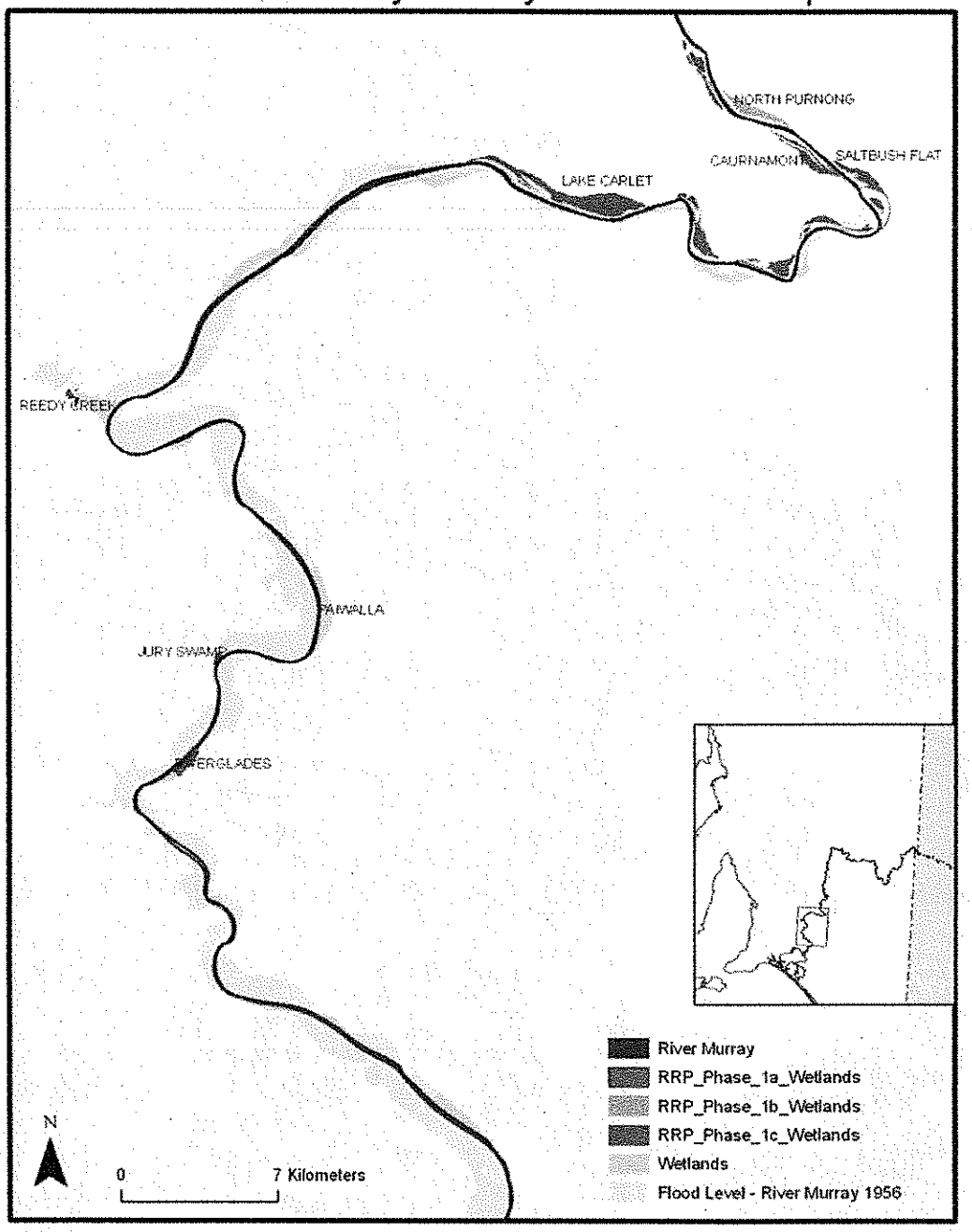
Riverine Recovery Works Maps

Pike Floodplain

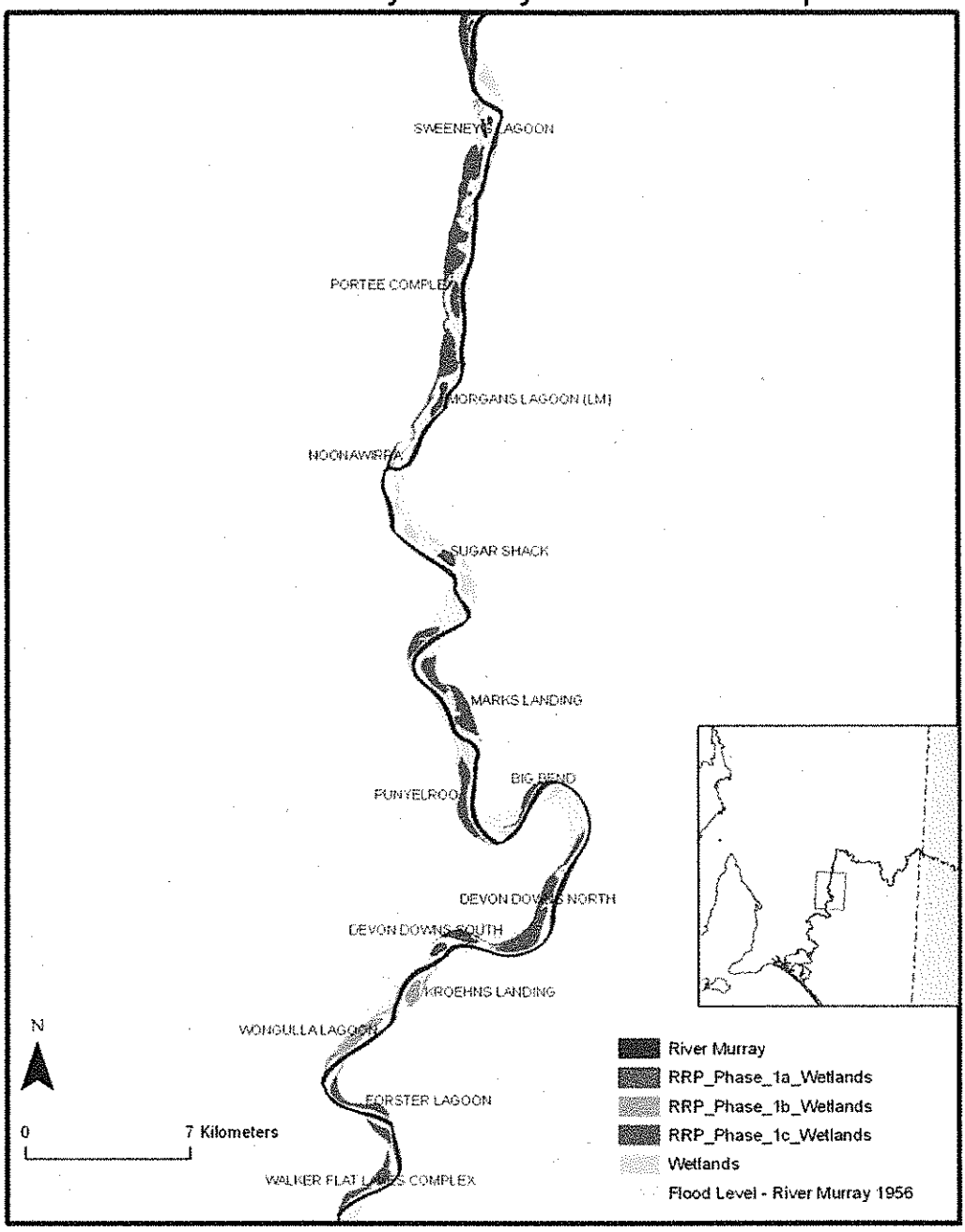



Katfish Reach
N
LOCALITY MAP
NORTHERN TERRITORY
QUEENSLAND
SOUTH AUSTRALIA
Murray Darling Basin
Katfish Reach Site
VICTORIA
BERRI
Eckert Widewater
Eckert Island
Ngak Indaa Wetland
Lock 4
Katarapko Inlet
GERARD
Katarapko Island
LOXTON
Legend
Government of South Australia

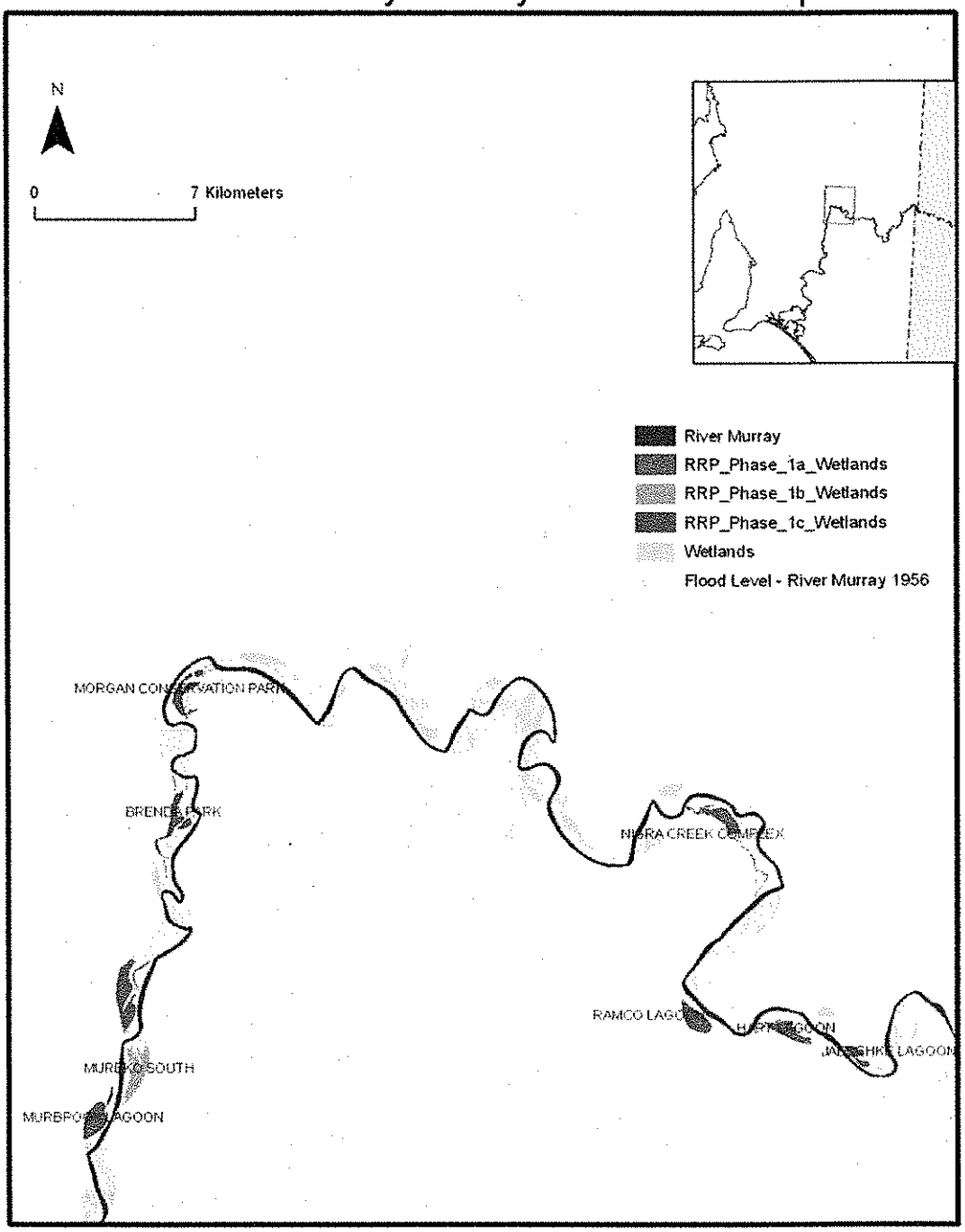
Riverine Recovery Priority Wetlands - Map1



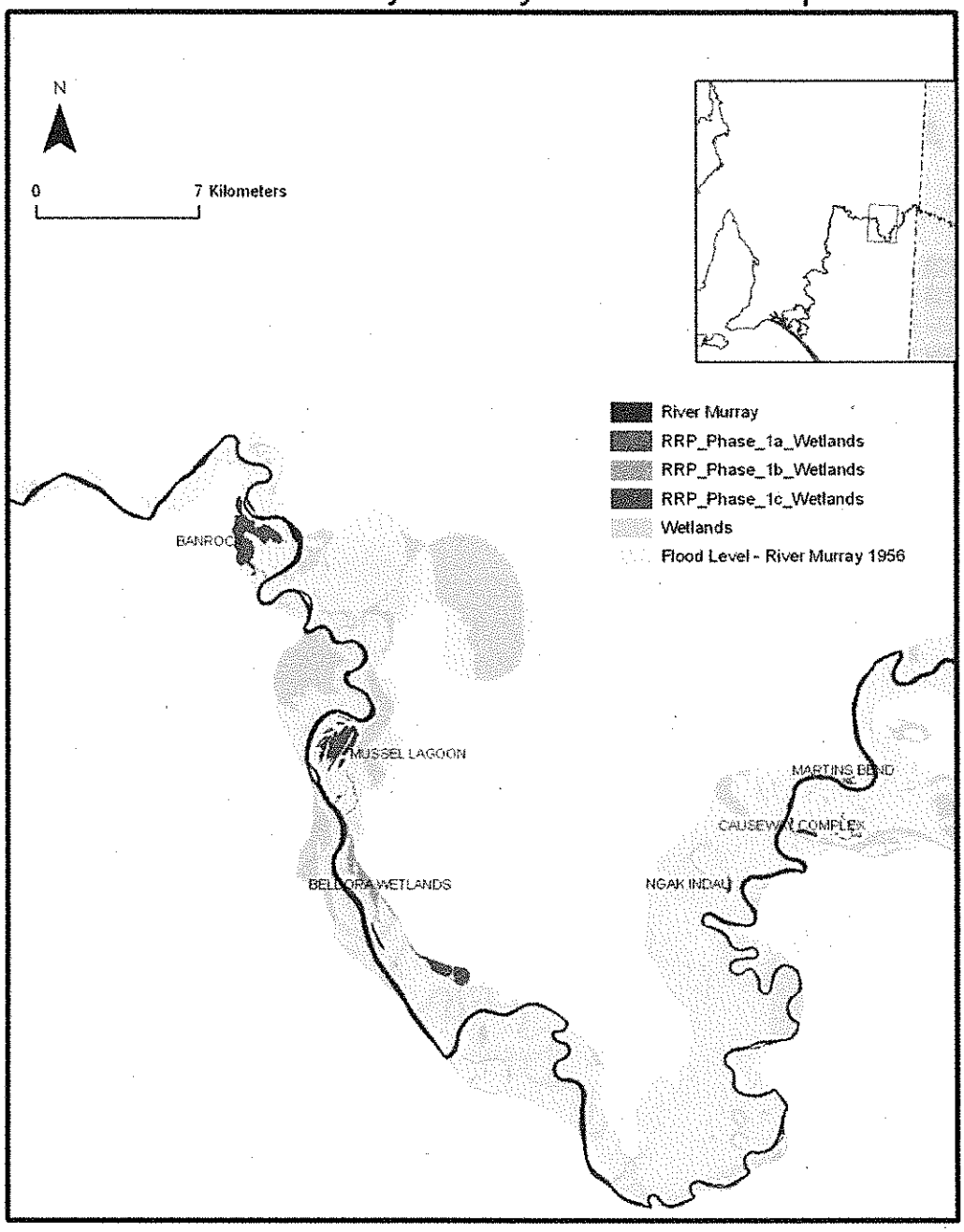
Riverine Recovery Priority Wetlands - Map 2



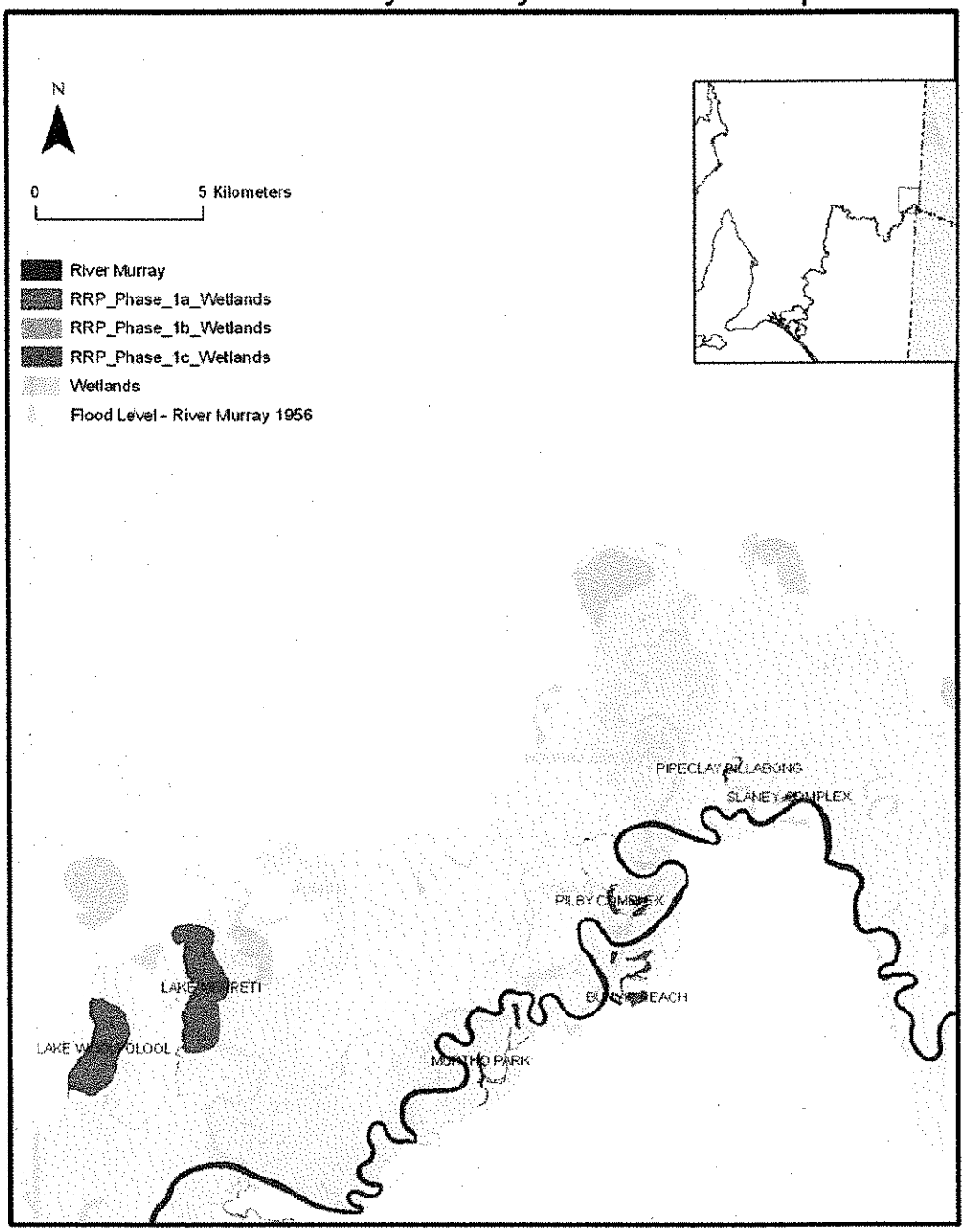
Riverine Recovery Priority Wetlands - Map 3



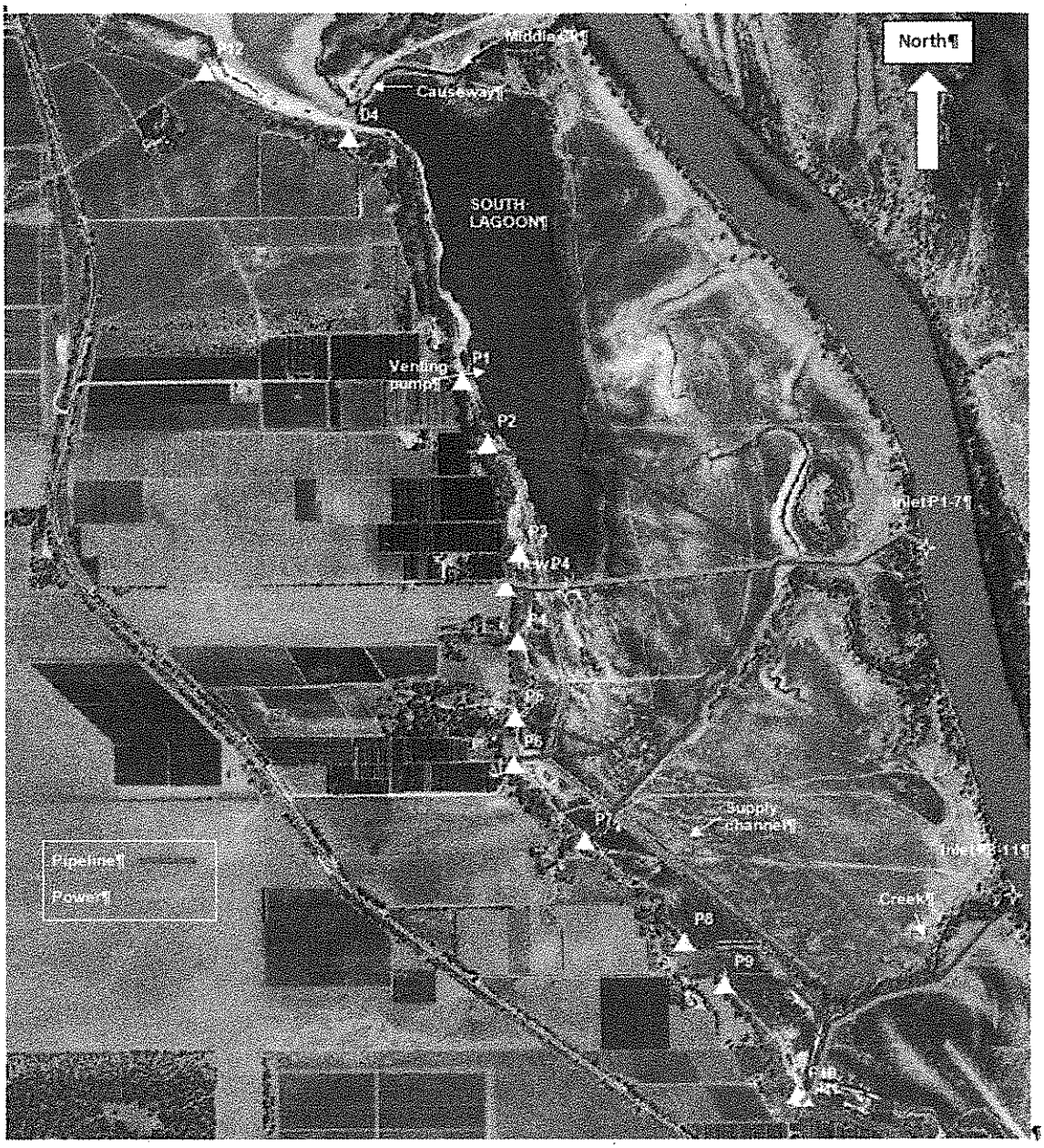
Riverine Recovery Priority Wetlands - Map 4



Riverine Recovery Priority Wetlands - Map 5



Yatco Lagoon



National Code of Practice for the Construction Industry

In this Attachment H to the Project Schedule:

Code	means the National Code of Practice for the Construction Industry 1997, a copy of which can be downloaded from www.deewr.gov.au/building.
Guidelines	means the Australian Government Implementation Guidelines for National Code of Practice for the Construction Industry, August 2009, a copy of which can be downloaded from www.deewr.gov.au/building.
Project Parties	means all contractors, subcontractors, consultants and employees who perform on-site work in relation to the Priority Project Component.

1. Where the Funding specifically relates to building and construction activity, subject to the thresholds specified in the Guidelines, the State must comply and ensure that the Project Parties comply with the Code and Guidelines.
2. The Guidelines require the State to ensure that:
    a. all requests for tender, expressions of interest, submissions and invitations to join Common Use Arrangements in relation to the Project Activities made by it or any of the Project Parties contain the commitment to apply the Code and Guidelines as set out in the model tender documents available at: http://www.deewr.gov.au/WorkplaceRelations/Policies/BuildingandConstruction/Pages/ModelTender.aspx; and
    b. all contracts entered into in relation to the Project Activities by it or any of the Project Parties contain the commitment to apply the Code and Guidelines as set out in the model contract clauses available at: http://www.deewr.gov.au/WorkplaceRelations/Policies/BuildingandConstruction/Pages/ModelTender.aspx.
3. The State must maintain adequate records of compliance by it and each of the Project Parties with the Code and the Guidelines. The State must permit the Commonwealth or any person authorised by the Commonwealth, including a person occupying a position in the Office of the Australian Building and Construction Commissioner, full access to premises and records of the State and the Project Parties to:
    a. inspect any work, material, machinery, appliance, article or facility;
    b. inspect and copy any record relevant to the Priority Project Component and works governed by this Project Schedule;
    c. interview any person,

as is necessary to monitor compliance with the Code and the Guidelines. Additionally, the State undertakes that it and each of the Project Parties will agree to a request from the Commonwealth, including a person occupying a position in the Office of the Australian Building and Construction Commissioner, to produce a specified document within a specified period, in person, by fax, or by post.

4. The Commonwealth and those authorised by it may publish or otherwise disclose information in relation to compliance by the State and the Project Parties with the Code and the Guidelines. The State must obtain the consent of the Project Parties to the publication or disclosure of information under this item.

5. While acknowledging that value for money is the core principle underpinning decisions on Government procurement, when issuing tenders the State may preference contractors, subcontractors and consultants that have a demonstrated commitment to:

    a. adding and/or retaining trainees and apprentices;

    b. increasing the participation of women in all aspects of the industry; or

    c. promoting employment and training opportunities for Indigenous Australians in regions where significant indigenous populations exist.

6. The State must not appoint a contractor, subcontractor or consultant in relation to the Project Activities where:

    a. the appointment would breach a sanction imposed by the Minister for Employment and Workplace Relations; or

    b. the contractor, subcontractor or consultant has had a judicial decision against them relation to employee entitlements, not including decision under appeal, and has not paid the claim.

ATTACHMENT K

Australian Government Building and Construction OHS Accreditation Scheme

1. In this Attachment K to the Project Schedule:

    c. 'the Act' means the *Fair Work (Building Industry) Act 2012* (Cth);

    d. 'Builder' has the same meaning as it has in section 35 of the Act;

    e. 'Building Work' has the same meaning as it has in section 5 of the Act;

    f. 'the Regulations' means the *Fair Work (Building Industry - Accreditation Scheme) Regulations 2005*; and

    g. 'Scheme' means the Australian Government Building and Construction OHS Accreditation Scheme established under the Act.

2. Subject to exclusions specified in the Regulations, construction projects that use funds provided under this Project Schedule are bound by the application of the Scheme.

3. The State must ensure that all contracts that it enters into, and all contracts that its subcontractors enter into, for Building Work as a part of the Activities that are valued at $3 million or more:

    h. are notified to the Office of the Federal Safety Commissioner at the earliest possible opportunity (that is, when approaching the market); and

    i. contain a requirement that the Builder:

        i. is accredited under the Scheme;

        ii. maintains Scheme accreditation for the life of the contract; and

        iii. must comply with all conditions of the Scheme accreditation.

4. The State agrees to notify the Commonwealth immediately if that Builder has ceased, or is likely to cease, to meet the accreditation requirements in paragraph 3(b) above.

5. The State must maintain adequate records of compliance by it, and each of its subcontractors, with the Scheme.