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Executive Summary

As part of its national water information mission, the Bureau of Meteorology (the Bureau) has been given the task and resources to produce an annual National Water Account (NWA). Under the Water Act 2007 (Commonwealth) the Director of Meteorology is required to publish an annual national water account. The NWA will build upon the significant water accounting activities accomplished through the implementation of the National Water Initiative and related activities.

In late 2008, the Council of Australian Governments (COAG) resolved that a National Water Account Committee (NWAC) be established to support the Bureau in producing the NWA and that the Bureau's efforts be guided by a national water account roadmap.

This document provides a roadmap, setting out steps to be undertaken towards publication of a pilot version of the NWA in December 2009 and a comprehensive first version of the NWA in December 2010 and annually thereafter.

This roadmap has been informed by discussion and consultation with relevant stakeholders and experts, including through a national workshop convened in December 2008. A report of this workshop is available at www.bom.gov.au/water/nwa_workshop.shtml. This draft version of the roadmap has been prepared for the review by the National Water Account Committee at its inaugural meeting on 15 April, 2009.

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Acronyms List

ABS	Australian Bureau of Statistics
AWAS	Australian Water Accounting Standard
AWID	Australian Water Information Dictionary
BoM	Bureau of Meteorology
CoA	Charter of Accounts
COAG	Commonwealth of Australian Governments
COAG WSG	COAG Water Sub-Group
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEWHA	Department of Environment, Water, Heritage and the Arts.
JRGWI	Jurisdictional Reference Group for Water Information
NWA	National Water Account
NWAC	National Water Account Committee
NWADp	National Water Accounting Development Project
NWC	National Water Commission
NWI	National Water Initiative
PAWAS	Preliminary Australian Water Accounting Standard
PNWA	Pilot National Water Account
SWAC	Statement of Water Accounting Concepts
ToR	Terms of Reference
WACF	Water Accounting Conceptual Framework
WADC	Water Accounting Development Committee
WADCO	Water Accounting Development Committee Office
WASB	Water Accounting Standards Board
WIRADA	Water Information Research and Development Alliance (between the BoM and the CSIRO)
WTMAG	Water Take Metering Advisory Group
WUEAG	Water Use Estimation Advisory Group

1 Introduction

The Commonwealth *Water Act 2007* (the Act) assigns the Bureau of Meteorology (BoM) the role of “compiling and maintaining water accounts for Australia, including a set of water accounts to be known as the National Water Account.” Among other obligations under this Act, the Director of Meteorology is required to publish this National Water Account annually in a form readily accessible by the public. The Act does not specify the purpose, content and structure of the National Water Account (NWA) although S121 does state that “the National Water Account is to include such matters (if any) as are specified in the regulations.” Regulations pursuant to S121 of the Act have yet to be specified.

This document, the “Roadmap”, lays out how BoM, in partnership with participating agencies, will proceed with preparing a Pilot NWA by the end of 2009 and a comprehensive first NWA a year later. The preparation of a roadmap for the production of the NWA, has given consideration to:

- the priority areas for reporting (e.g. high risk or high conservation value);
- governance arrangements,
- reporting responsibilities,
- resource requirements; and
- proposed contents of the account and how they may change over time.

The Roadmap aims also to map out how the NWA will evolve and improve over time, beyond the production of the first comprehensive NWA in 2010. Key expectations are improving accuracy (as estimation and measurement techniques, and monitoring and reporting systems improve) and improving resolution (as capacity increases).

1.1 Report Structure

The *Roadmap* is structured as follows:

Section 2: Scene-setting

Section 3: National Water Account Purpose and Scope, covering

- Purpose – National Water Initiative (NWI) objectives and outcomes, user requirements of water accounting and accounts, Water Act and other legislative requirements.
- Outputs – structure and composition of the NWA

Section 4: Governance Arrangements:

- Roles and responsibilities – for leading, facilitating, preparing and reviewing the report
- Guidelines – for coordination of roles

Section 5: Development and Production of the Pilot NWA and 1st NWA:

- Plan – steps, resource requirements, timeline.

Section 6: Evaluation and Continuous Improvement:

- Evaluation – understanding how the NWA activity and publication may be improved

2 Scene-setting

2.1 Water Accounting and the National Water Initiative

Water accounting in Australia has been around in some form for many years, essentially serving specific water resource management needs, such as:

- (i) River Murray water-sharing tracking and reconciliation by the Murray Darling Basin Commission;
- (ii) Murrumbidgee irrigation 'capacity-share' administration; and
- (iii) Water allocation and use at a bulk supply level in the Victorian Water Accounts (Victorian Government, 2008), which reports on water entitlements, consumption, trade and environmental releases and initiatives.

The Australian Bureau of Statistics (ABS) has also reported every four years at a state/territory and national level on the quantity of water supply and use in the economy, in a publication known as Water Account, Australia (ABS, 2006, catalogue no. 4610.0). The stated purpose of the ABS water account is to inform decision-making, research and discussion within governments and the broader community, while moving towards water accounting requirements of NWI. ABS water accounts are based on the principles for integrated environmental and economic accounting outlined in the System of Integrated Environmental and Economic Accounting 2003 (SEEA) (UN 2003), which is consistent with Australia's economic accounting framework, the System of National Accounts.

The NWI seeks to regularise the practice of water accounting and impart some rigour, such that 'accounts' across different water 'systems' may be reconciled, disclosed and a national picture producible, so that consistent and comparable data is available to decision-makers at the following levels:

- (i) at the state level for water resource planning and monitoring,
- (ii) at water organisation levels (i.e. water suppliers and users) for water resource management,
- (iii) at farm level for on-farm water management, and
- (iv) at the national level for policy development.

The NWI establishes a commitment on all jurisdictional parties to the development and implementation of water accounting system standards, standardised reporting formats, and water accounts that can be reconciled and aggregated to produce a national water balance.

Specifically, Clause 82 of the NWI states that the parties agree to develop and implement:

- (i) *accounting system standards, particularly where jurisdictions share the resources of river systems and where water markets are operating;*
- (ii) *standardised reporting formats to enable ready comparison of water use, compliance against entitlements and trading information;*
- (iii) *water resource accounts that can be reconciled annually and aggregated to produce a national water balance, including:*
 - a) *a water balance covering all significant water use, for all managed water resource systems;*
 - b) *systems to integrate the accounting of groundwater and surface water use where close interaction between groundwater aquifers and streamflow exist; and*
 - c) *consideration of land use change, climate change and other externalities as elements of the water balance.*

A stocktake of water accounting practices commissioned by the NWI parties (SKM 2006) recommended a disciplinary approach to the development of water accounting using a financial accounting analogy, particularly as water accounting was recognised as a distributed activity. The stocktake report briefly described the production of a national level report through the aggregation of reports from contiguous 'accounting entities', but didn't explore the information requirements specific to the national level, nor the financial precedent for such an aggregation.

The National Water Accounting Development Project (NWADp) was established in February 2007 to develop water accounting, coordinate standards development, and assist jurisdictions with systems development where necessary. In the two years since its establishment, six NWADp pilot projects have

been undertaken throughout Australia. These pilots have played a vital testing role for the development and refinement of a water accounting conceptual framework, accounting standards and systems development (see Section 4.6).

2.2 Water Accounting Standards Development

In late 2006, parties to the NWI established the National Water Accounting Development project to create a disciplinary approach to water accounting, including a conceptual framework and standards, and demonstrating the feasibility of the 'financial' analogy to water. A user requirements study undertaken early in the project endorsed the approach but was not able to identify the specific user requirements of a water account. The focus of the project to date has been, therefore, on the development of an approach to the production of General Purpose Water Accounting Reports (GPWARs) by those with water management responsibilities. The Preliminary Australian Water Accounting Standard (PAWAS) directs a report preparer in the preparation and presentation of GPWARs.

GPWARs have been designed to be broadly consistent with SEEA and its companion, the System of Environmental-Economic Accounting for Water (SEEAW). The SEEA and the SEEAW are both interim international statistical standards with close links to the System of National Accounts, the international standard for compiling economic statistics. Further work on the development of SEEA (and SEEAW) is continuing under the auspices of the United Nations and related international organisations.

The accounting principles underlying SEEA are consistent with those underpinning the development of GPWARs for Australia. Both measure stocks of water in a system at the beginning of an accounting period, the inflows to and outflows from the system during the accounting period, and the stocks of water remaining in the system at the end of the accounting period. The concept of stocks and flows is central to both standards such that changes in stocks between the start and end of the accounting period are fully reconciled by the flows occurring within the period.

Through an extensive pilot program and consultation process, the National Water Accounting Development project has recommended that GPWARs will comprise:

- The Statement of Physical Flows;
- The Statement of Water Assets and Water Liabilities;
- The Statement of Changes in Water Assets and Changes in Water Liabilities;
- Note Disclosures;
- The Contextual Statement;
- The Accountability Statement; and
- The Assurance Statement.

Through the Water Act 2007, the Bureau of Meteorology has gained powers to issue standards and to collect and share water information, as well as an obligation to produce annually a National Water Account (NWA). The NWA is envisaged as a collection and 'consolidation' of sub-national accounts, much like the National Greenhouse Account. An expectation expressed by NWI parties is that the NWA will be founded on the same disciplinary approach as other water accounts, to ensure consistency of reporting and assurance.

The Bureau of Meteorology, in partnership with State-based water agencies will prepare and consolidate (where appropriate) a set of sub-national water accounting reports consistent with the PAWAS to produce a Special Purpose Water Accounting Report (SPWARs), the NWA. Special purpose water accounting reports are water accounting reports tailored to meet specific information needs of a user able to command this information. In this case, the specific needs and ability to command this information does not come from the management of the resource, but rather conferred by the powers and obligations under the Water Act 2007.

Therefore this document has been developed assuming that the NWA will be a 'collection' and a 'consolidation', where appropriate, of sub-national, special-purpose water accounts that:

- (i) serve the specific purpose/objective of the NWA (see Section 2);
- (ii) cover all significant water use for all 'managed' systems (as per the NWI);
- (iii) are formed consistently, with the same assumptions and techniques (so that they may be

aggregated); and

(iv) contain the same (minimum) line items and disclosures (so that they may be consolidated).

This model of the NWA will require the following items to be prescribed ahead of its preparation:

- (a) the sub-national entities for which special-purpose water accounts are to be prepared (the water reporting entities);
- (b) the reporting period;
- (c) a standard chart of accounts;
- (d) the methods that will be used to populate the accounts

Further, to ensure consistency of national water resource reporting, the line items and disclosures of the NWA and the methods used to populate these should align with the water balance framework and methods to be used in national water resource assessments. The definitions of terms to be used in the NWA should also align with the definitions used by the ABS in their national reporting of water supply and use in the economy. The BoM is undertaking development of an Australian Water Information Dictionary (AWID) to aid in this consistency (see Section 4.7). The AWID will build upon the water dictionary recently published by the NWC (http://dictionary.nwc.gov.au/water_dictionary/) and the terms defined in the Act.

3 National Water Account Purpose and Scope

3.1 Purpose

One of the high-level NWI objectives states the need for:

“water accounting which is able to meet the information needs of different water systems in respect to planning, monitoring, trading, environmental management and on-farm management.”

In the NWI it is further agreed:

“...that the outcome of water resource accounting is to ensure that adequate measurement, monitoring and reporting systems are in place in all jurisdictions, to support public and investor confidence in the amount of water being traded, extracted for consumptive use, and recovered and managed for environmental and other public benefit outcomes.”

The NWI asserts that measurement, monitoring and reporting of water resources is vital to protect the integrity of the water access entitlement system.

3.1.1 Working Objective: National Water Account

The following **working objective** for the NWA is proposed:

To disclose the availability, rights to take, and actual take of water on a national and consistent basis to inform water planning (sharing) processes, water markets, investment decisions, and environmental management

The BoM notes that existing publications (e.g. the Australian Water Markets Report 2007-08; NWC, 2008a) cover some of these areas individually: the NWA will add value through integrating and reconciling these data sources.

The specific information required to serve each of the above end-uses will differ. Therefore, part of this NWA roadmap will include a process for clearly identifying the different information needs of these groups and determine how they can be fulfilled within the NWA framework.

The scope of the NWA includes surface and groundwater assets. Water quality will not be considered in the Pilot NWA.

The aim of the NWA is to answer the following questions for each reporting unit and reporting period:

- How much water was available in different parts of the system (ie. storage, groundwater, river flow)?
- What entitlements exist, including details on the holder, size and location?
- What water management plans apply that constrain access?
- How much water was allocated as available for use?
- How much of the (permanent) water entitlements and (temporary) water allocations was traded and to where?
- How much water was taken by entitlement holders?
- How much water was made available to the environment?

The key elements for disclosure and reconciliation through the NWA and their relationship to each other are represented schematically in Figure 1. This figure shows:

In rows 1 and 2, how the water resource plans and rules operating within a region moderate the amount of water that may be ‘taken’ within a reporting period (the allocation) against the amount that may not (reserved), having regard to established rights to take water and the total water resource available, and,

In row 3, the amount of water that was ‘taken’ during a reporting period, whether by means of an allocation or not, and including any ‘take’ by means of an environmental allocation (e.g. item 9, being regulated environmental water).

Implicit in Figure 1 are definitions (see Figure 1 key) that need to be tested and confirmed during the preparation of the pilot NWA. It is expected that the utility of this diagram will also be tested and additional diagrams will be developed to encapsulate the elements for disclosure and reconciliation as they relate to systems such as groundwater.

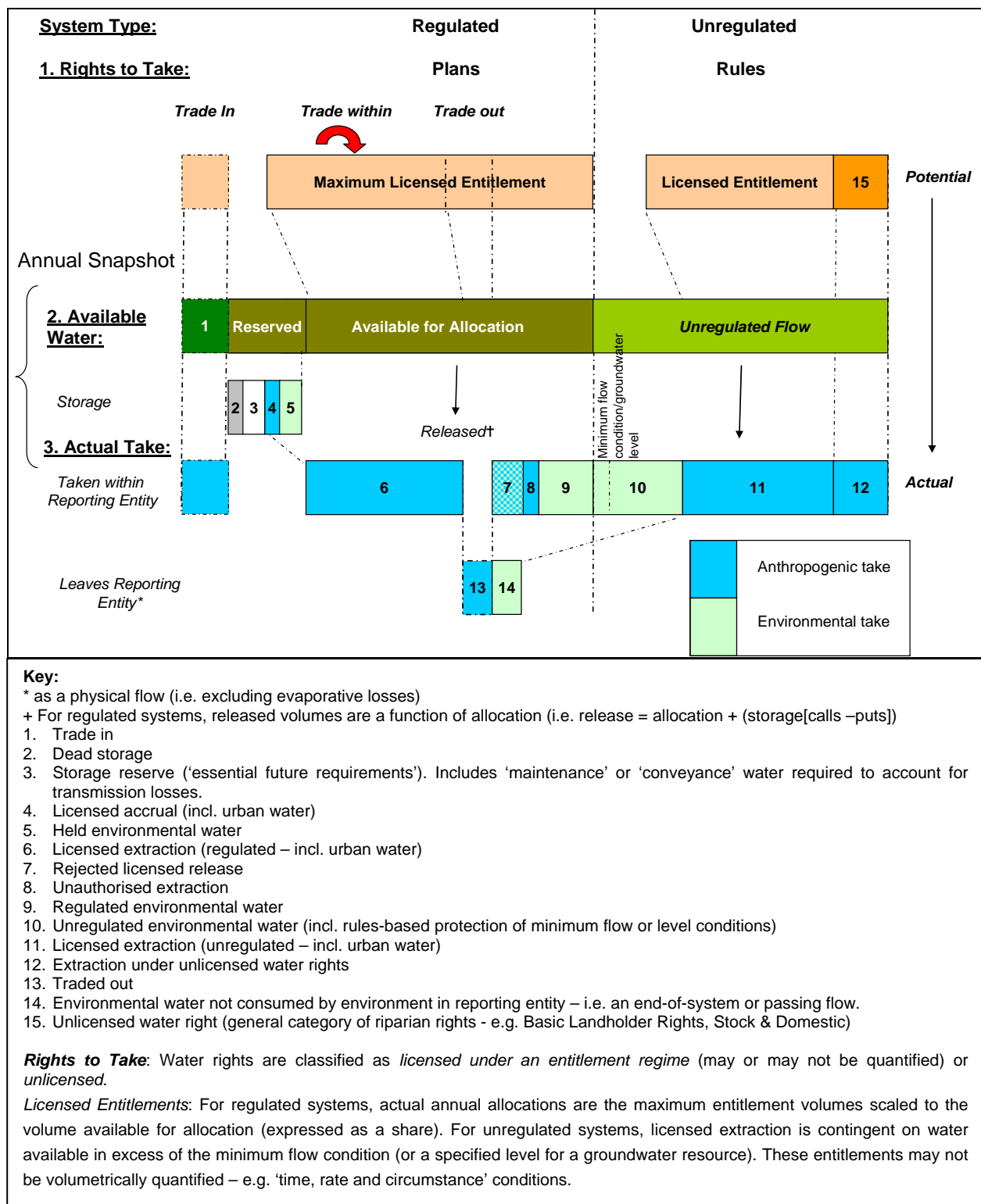


Figure 1: Schematic representation of the key elements for disclosure and reconciliation through the NWA and their relationship to each other (not to scale).

3.1.2 Specific Objective: Pilot National Water Account

For the pilot NWA to be published in late 2009, the primary objective will be the testing of data availability, data delivery processes, hydrologic analysis methods, disclosures, water accounting concepts and standards, governance arrangements and an approach to publication.

In this regard, it is not vital that the product achieve blanket national coverage, nor that it be underpinned by authoritative data to inform policy or management decisions.

For the first comprehensive NWA to be published in late 2010, the primary objective will be the provision of a useful national product that informs improved water policy and management decision-making. This requires that the product has national reach, contains the best possible, quality-assured data, and has been properly considered by key stakeholders prior to public release.

3.2 Scope

3.2.1 Structure and Content

The proposed structure of the NWA contains six parts:

1. Statement of Changes in Water Assets and Water Liabilities
2. Statement of Water Assets and Water Liabilities
3. Statement of Physical Flows
4. Note Disclosures
5. Contextual Statement
6. Accountability Statement
7. Assurance Statement

The first three parts are quantitative reports, while the later three are qualitative reports. Each of these elements is briefly described below. Note that further guidance on the proposed structure and format of the pilot NWA and the definition of water accounting terms will be provided in a reporting pack being prepared by the Water Accounting Development Committee Office (WADCO). This activity is discussed further in Section 5 of this report.

An important aspect of water accounting reports is that they will be prepared on both a 'cash' and 'accrual' basis. The 'cash' report (Statement of Physical Flows) will report the flows that have actually occurred over the reporting period. In contrast, the 'accrual' report (Statement of Water Assets and Liabilities and the Statement of Changes in Water Assets and Changes in Water Liabilities) adjusts for future outflows or inflows currently attributable to the entity. For example, if the water reporting entity has a commitment to provide water currently within its system to another entity, this obligation will be reflected in the statement of water assets and water liabilities (and therefore the statement of changes in water assets and water liabilities) but not in the statement of physical flows.

The *Statement of Water Assets and Water Liabilities* shows the water assets and the liabilities against those water assets at a point in time, prepared on an accrual basis. The standard chart of accounts currently under development for the pilot NWA will specify three possible levels of reporting (minimum, intermediate and detailed) and is likely to include, as a minimum, surface water assets, groundwater assets, other water assets, allocation carryovers and other water liabilities.

The *Statement of Changes in Water Assets and Water Liabilities* shows the changes in water assets and liabilities over a given reporting period, prepared on an accrual basis. The standard chart of accounts currently under development for the pilot NWA is likely to include, as a minimum, surface water inflows, groundwater inflows, surface water outflows and groundwater outflows.

The *Statement of Physical Flows* will be very similar to a statement of changes in water assets and changes in water liabilities, though it will not be prepared on an accrual basis. As such, only events that have occurred will be represented in this statement.

It is also proposed that estimates of the uncertainty in each of the numbers in the 'face statements' be reported. Advice on an appropriate and feasible uncertainty framework for the NWA has been sought from CSIRO and it is anticipated that a robust framework will be trialled in the pilot NWA.

The *Note Disclosures* will provide further information with respect to the numbers reported in these three 'face statements', including reconciliations and quantification method. They will also present a range of explanatory and ancillary information which is not presented elsewhere. The reporting pack for the Pilot NWA will prescribe some specific disclosures. Examples could include, but are not limited to, information

about entitlements, trades and adherence to environmental watering rules under a water resource plan, water market activity and contingent water assets and liabilities.

In addition to the information supplied in the quantitative statements described above, three qualitative statements are proposed to help the users of the NWA to interpret the quantitative information. These will describe the context within which the accounts should be read, attesting compliance to the Australian Water Accounting Standards and any relevant legislation, as well as declaring that the information in the report has been assured.

The *Contextual Statement* of the sub-national components of the pilot NWA might include:

- A map of the Water Reporting Entity;
- Information relating to the climactic conditions for the reporting period;
- Information on the water policy and management regime applicable to the water reporting entity
- Information on the various environmental allocations and rules operating in the water reporting entity;
- Statistics describing how water is used in the entity.

An *Accountability Statement*, to be signed by the report preparer(s), would attest as a minimum to a report having been prepared in accordance with the relevant Australian Water Accounting Standards (AWAS). For the pilot NWA a single, Preliminary AWAS (PAWAS) is being prepared to guide the preparation of the sub-national special-purpose water accounts and their consolidation, where appropriate.

An *Assurance Statement*, to be signed by an independent auditor, would attest to whether, in the auditor's opinion, the other components of the water account reports are prepared and presented in accordance with the requirements of the relevant Australian Water Accounting Standards, the Water Accounting Conceptual Framework and any other relevant water accounting practices and principles. Whether an assurance statement will be required for the pilot and first NWA is still to be confirmed.

3.2.2 Reporting period

The reporting period of the NWA will align with the standard financial year (i.e 1 July – 30 June). The current proposal is that each account will cover the reporting year plus the previous year (as a minimum) for comparison.

For the Pilot NWA the proposed reporting year is 2007-08, with 2006-07 information provided (as a minimum) for comparison. For the first NWA the proposed reporting year is 2009-10, with 2008-09 information provided (as a minimum) for comparison.

The rationale for this proposal is twofold: (i) current year data and information is unlikely to be available before September 2009, leaving insufficient time to prepare the pilot NWA in time for publication in December 2009; and (ii) a focus on historical data initially will facilitate the building of a four-year history of account information over the next two years.

3.2.3 Water reporting entities

The Water Accounting Conceptual Framework (WACF), currently under development by the Water Accounting Development Committee (WADC), defines a water entity broadly as:

- “A water entity is a physical entity, an organisation or individual, which:*
- (a) holds or transfers water, or rights or other direct or indirect claims to water; or*
 - (b) has inflows and/or outflows of water; or*
 - (c) has responsibilities relating to the management of water.”*

and a water reporting entity as:

“A water reporting entity is a water entity in respect of which it is reasonable to expect the existence of users who depend on general purpose water accounting reports for information about water, or rights or other claims to water, which shall be useful to them for making and evaluating decisions about the allocation of resources.”

The primary focus for the NWA is on water reporting entities that are physical water entities, sub-national reporting aligned with water planning 'areas', and any sub-sub-national reporting aligned with catchment and/or water supply scheme boundaries.

The alignment of sub-national reporting with water planning areas reflects a focus of the NWI on the preparation of statutory water plans as a means of, among other things, ensuring the security of water access entitlements and recognises the significant investments already made by the NWI parties in preparing these plans.

The governance and institutional arrangements for metropolitan, rural and regional water planning and management varies amongst the Australian states and territories (Table 1). For example, Queensland has a framework of Water Resource Plans (WRP) and Regional Water Supply Strategies, with WRP's covering the majority of the state (see www.nrw.qld.gov.au/wrp/catchments.html). New South Wales has water sharing plans that cover the rivers from which the vast majority of the state's water is derived. There are also metropolitan water plans for Sydney, Central Coast and Lower Hunter.

The concept of water planning 'areas' does not therefore map simply to the various State water planning regimes and so its utility for water accounting will have to be proven.

In selecting water reporting entities for inclusion in the NWA, priority will be assigned to:

- Areas of significant water use;
- Areas of high risk viz water security for entitlement holders;
- Areas of high risk with respect to over-extraction and river health decline; and
- Areas of high conservation value.

For the pilot NWA, only a limited number of sub-national water reporting entities will be included, with priorities to be advised by the National Water Account Committee (see Section 4.5).

Table 1: Summary of Key Water Planning and Management Entities in each State/Territory

Jurisdiction	Key Water Planning and Management Entities
Australian Capital Territory	Water Resource Management Plan 2004: Think Water, Act Water
New South Wales	Water Sharing Plans Metropolitan Water Plans
Northern Territory	Water Allocation Plans
Queensland	Water Resource Plans and Resource Operations Plans Regional Water Supply Strategies
South Australia	Regional Natural Resource Management Plans Water Allocation Plans
Tasmania	Water management plans
Victoria	Bulk Entitlements Groundwater Management Plans Surface Water Management Plans
Western Australia	Regional Water Plans → Water Management Areas

4 Governance Arrangements: roles and responsibilities

4.1 Bureau of Meteorology

The *Water Act 2007* gives the Bureau of Meteorology responsibility for, among other things:

“compiling and maintaining water accounts for Australia, including a set of accounts to be known as the National Water Account.”

and obliges the Director of Meteorology to publish annually the National Water Account in a publicly accessible form.

While the obligation to produce the NWA rests with the BoM, it will take some time for BoM to build sufficient knowledge of the water systems under the management responsibility of the State and Territory water agencies to prepare a credible national product. BoM is seeking, therefore, a partnership approach to the production of the pilot NWA and the first NWA with the relevant State and Territory water agencies. BoM will take the lead on the preparation and production of the accounts, but will need to call on the extensive local knowledge of its partners.

BoM will take responsibility for facilitating the interaction between the groups and organisations mentioned below and arranging for suitable review of the water accounts before their public release.

4.2 COAG and the Water Sub Group

In 2004 the Council of Australian Governments (COAG) signed off on the National Water Initiative (NWI), as the policy blueprint to improve the way Australia manages its water resources. The NWI builds upon a water reform process which commenced in 1994 with the development by COAG of a water reform framework. The overall objective of the NWI is:

“to achieve a nationally compatible market, regulatory and planning based system of managing surface and groundwater resources for rural and urban use that optimises economic, social and environmental outcomes.”

As outlined in Section 3.1, within this overall objective, one of the key high level objective is the implementation of water accounting which meets the information needs with respect to water planning, monitoring, trading, and management. As such, water accounting is one of the action areas within the national water reform process.

The Water Sub Group (WSG) was established to support the Working Group on Climate Change and Water in its task to provide recommendations to the COAG on measures to ensure sustainable water use across Australia. The group’s work program covers a wide range of tasks, one of which is accelerating the implementation of water accounting under the NWI through a focus on the production of the first National Water Account. The BoM will therefore periodically report to WSG on progress with the national water accounting process.

4.3 Lead Water Agencies

In taking up its expanded water information role, BoM asked each state and territory to nominate a single agency to be its point of contact. These lead water agencies are classified as Category A persons in the Water Regulations 2008.

The role of each of the lead water agencies listed in Table 2, includes, but is not limited to, facilitating an active and ongoing collaboration between the Bureau and the state and territory’s water agencies.

Lead water agencies and departments of premier and cabinet have responsibility for fulfilment of their jurisdiction’s NWI commitments. The BoM works closely with the lead water agencies through the Jurisdictional Reference Group on Water Information (JRGWI). This provides another channel for the BoM to keep states and territories informed *viz* progress with the national water accounting process.

Table 2: Lead Water Agencies

Jurisdiction	Agency
New South Wales	Department of Water and Energy
Victoria	Department of Sustainability and Environment
Queensland	Department of Environment and Resource Management
Western Australia	Department of Water
South Australia	Department of Water, Land and Biodiversity Conservation
Tasmania	Department of Primary Industry
Australian Capital Territory	Department of Territory and Municipal Services
Northern Territory	Department of Natural Resources, Environment, the Arts and Sport

4.4 Linkage to Related Initiatives

The NWA complements several existing reporting products, such as the ABS Water Account, NWC Australian Water Markets Report and Australian Water Resources 2005, as described below. While there is some cross-over in scope and content, the NWA is not intended to replace these three mentioned products, as each has a distinct purpose and focus. Over time, the distinctions between these reporting products will become more clearly defined, as will their linkages. The BoM will liaise with the relevant agencies to identify opportunities to maximise value-add across this collective set of publications, guided by the principles of coordination and complementarity.

ABS Water Account, Australia – 2004-05 (ABS, 2006): This publication presents information on the supply and use of water in the Australian economy, for regions, states and territories and the nation as a whole. There are several areas of commonality in the content of the ABS Water Accounts published to date and the proposed NWA, including: (i) water access entitlements, allocations and trading; and (ii) water stocks. It is anticipated that the scope of future ABS Water Accounts will shift towards the latter area of commonality given the publication of the NWC Australian Water Markets Report and the upcoming publication of the NWA. The next ABS Water Account will also, for the first time, present statistics in both volumetric and monetary values. The main feature distinguishing the content of the ABS Water Account is its focus on sector and industry water use across the economy, e.g. forestry and fishing, mining, agriculture, power generation, manufacturing, and household use. The ABS Water Account does not attempt to close a water balance in the sense of total inflows reconciled against total outflows, although it does reconcile water supply and use. In comparison, the NWA has the task of closing the water balance which will involve reconciliation of all terms for the whole physical water reporting entity.

NWC Australian Water Markets Report – 2007-08: The NWC states the primary objective of this report is to ‘...inform market participants about its structure, trading activity, prices and key policy drivers. Providing this type of information to both direct and indirect participants in the market is an important step towards improving market performance’ (NWC, 2008a). This publication focuses exclusively on trading activity and ‘...features trading summaries for each state and territory, as well as information about their various operational practices, pricing and governance arrangements’ (NWC, 2008b). In contrast, the NWA will consider trading activity in the context of hydrological conditions within each reporting entity, supported by comprehensive entitlement information. The NWA will offer a higher level of spatial disaggregation of trades, but will not consider pricing.

Australian Water Resources (AWR) 2005: This publication provided information on water availability, water use, river and wetland health and integrated assessment to address strategic issues in water management across Australia (NWC, 2007). The AWR 2005 was intended to compile a one-off baseline of condition of the nation’s water resources, against which subsequent assessments may be compared. The AWR 2005 differs from the NWA in both repeatability and scope. The NWA will be produced annually. It will not explicitly consider river health or evaluate management performance. However, the NWA will contain information that other parties may use as an input to such assessments.

A related future product being developed by BoM is an Australian Water Resource Assessment (AWRA) which builds on the insights gained from previous similar initiatives such as the above mentioned AWR 2005.. While the AWRA and the NWA will both be underpinned by the production of annual water

balances,,the AWRA will focus on the status and variability of the hydrological system and the NWA on the interface between the hydrological system and the water resource planning and management regime.

4.5 Partner State- and Territory-based Water Agencies

A close collaboration between the relevant water agencies (lead or otherwise) and BoM will be vital to enable the significant knowledge and understanding about water management and accounting across each planning area to be fully utilised in the development of the pilot and first NWA.

Reporting partner will be asked to provide assistance with:

- defining appropriate physical water reporting entities;
- coordinating data and advisory input;
- testing the water accounting standards and templates under development for the pilot NWA;
- planning the production of the pilot and 1st NWAs; and,
- evaluating the production process post-publication of the pilot and 1st NWAs.

Key aspects of the collaboration will be:

- A partnership approach to the preparation of the Pilot NWA and the first comprehensive NWA;
- Bilateral arrangements tailored to match each water agency's management and resourcing circumstances;
- Some funds to be made available from the BoM's discretionary grants programme to facilitate the participation of partner agencies;
- BoM to take the lead, in consultation with the lead water agencies, on determining how to gather the data to populate the water accounts in accordance with the Preliminary Australian Water Accounting Standard and the reporting pack being prepared by WADCO; and
- Progressive skills development of BoM staff over time to transition towards a lesser burden on lead water agencies with respect to the preparation of the NWA.

4.6 Water Accounting Development Committee and Office

The Water Accounting Development Committee (WADC) is an independent expert group established by the Natural Resource Management Ministerial Council to manage and undertake the National Water Accounting Development Project (NWADp). Membership of WADC includes water and accounting experts from industry, academia, environmental groups and government. The Water Accounting Development Committee Office (WADCO) supports the activities of WADC and is now incorporated within the BoM.

The NWADp was established in February 2007 to develop water accounting, coordinate standards development, and assist jurisdictions with systems development where necessary. In the two years since their establishment, they have led the WADC pilot projects which have been undertaken throughout Australia. These pilots have played a vital testing role for the development and refinement the water accounting conceptual framework, water accounting standards and reporting arrangements.

Key work areas for the period February 2009 through to February 2010 are to finalise the Australian Water Accounting Conceptual Framework, produce a Preliminary Australian Water Accounting Standard for the preparation of the pilot NWA, and ongoing work with Pilot Projects, particularly the testing of standards. The project is due for completion in March 2010 with the delivery of exposure drafts of a set of Australian Water Accounting Standards (AWAS).

In February 2009, the COAG WSG agreed to the transition of WADC from it's project role to an ongoing role as the Water Accounting Standards Board. Terms of reference and membership of the Board have yet to be drafted, but are due to be considered by WADC in late April.

4.7 National Water Account Committee

The BoM believes that the quality, timeliness and acceptance of the NWA will be maximized by the active participation of the States and other Commonwealth agencies with aligned interests in water accounting. Therefore, the National Water Account Committee (NWAC) will play an important role in assisting BoM in producing the pilot and comprehensive versions of the NWA in a way that satisfies the expectations of primary stakeholders, notably the lead water agencies in the States and relevant Commonwealth

agencies. The Commonwealth agencies represented on NWAC, and their respective interests in the National Water Account, include:

- Department of Environment, Water, Heritage and the Arts (DEWHA): responsible for overall portfolio coordination of the *Water for the Future* initiative (under which the BoM's National Water Account is one deliverable);
- National Water Commission (NWC): responsible for driving water reform under the *National Water Initiative* (NWI). The National Water Account is an integral component of the NWI agenda in raising national standards of water reporting, particularly in relation to entitlements and market trading.
- Murray-Darling Basin Authority (MDBA): responsible for planning the integrated management of water resources in the Murray–Darling Basin. The National Water Account will be a valuable tool to aid this task.
- Australian Bureau of Statistics (ABS): responsible for publishing the *Australian Water Account*, which presents information on the supply and use of water in the Australian economy. The water data harvested by BoM under the Water Regulations 2008 will be a key input to future versions of this ABS product as well as providing input to the National Water Account.

NWAC will have an advisory role only, as BoM requires the flexibility to make all of the critical decisions impacting on its ability to produce the NWA. The NWAC Terms of Reference are provided at Appendix A.

NWAC will be supported by advice from various expert groups (see Figure 2).

4.8 Advisory Groups and Panels

BoM will form two expert groups to advise on non-urban water use metering and estimation. These groups will be known as the *Water Take Metering Advisory Group* (WTMAG), and the *Water Use Estimation Advisory Group* (WUEAG).

In addition, BoM has already formed an *Expert Panel* on the development of an *Australian Water Information Dictionary*. This dictionary will cover the terminology used by BoM in all of its products including the NWA.

Through its Water Information Research and Development Alliance with CSIRO (WIRADA), BoM will seek advice on a suitable uncertainty framework for water accounting, as well as methodological improvements to the derivation of some inputs to water accounts.

4.9 Coordination

Figure 2 illustrates the institutional arrangements that will support the production of the NWA. No input is expected from WTMAG or WUEAG for the pilot NWA. Note that reporting from NWAC to the COAG Water Sub-Group will be periodic via the chair of NWAC.

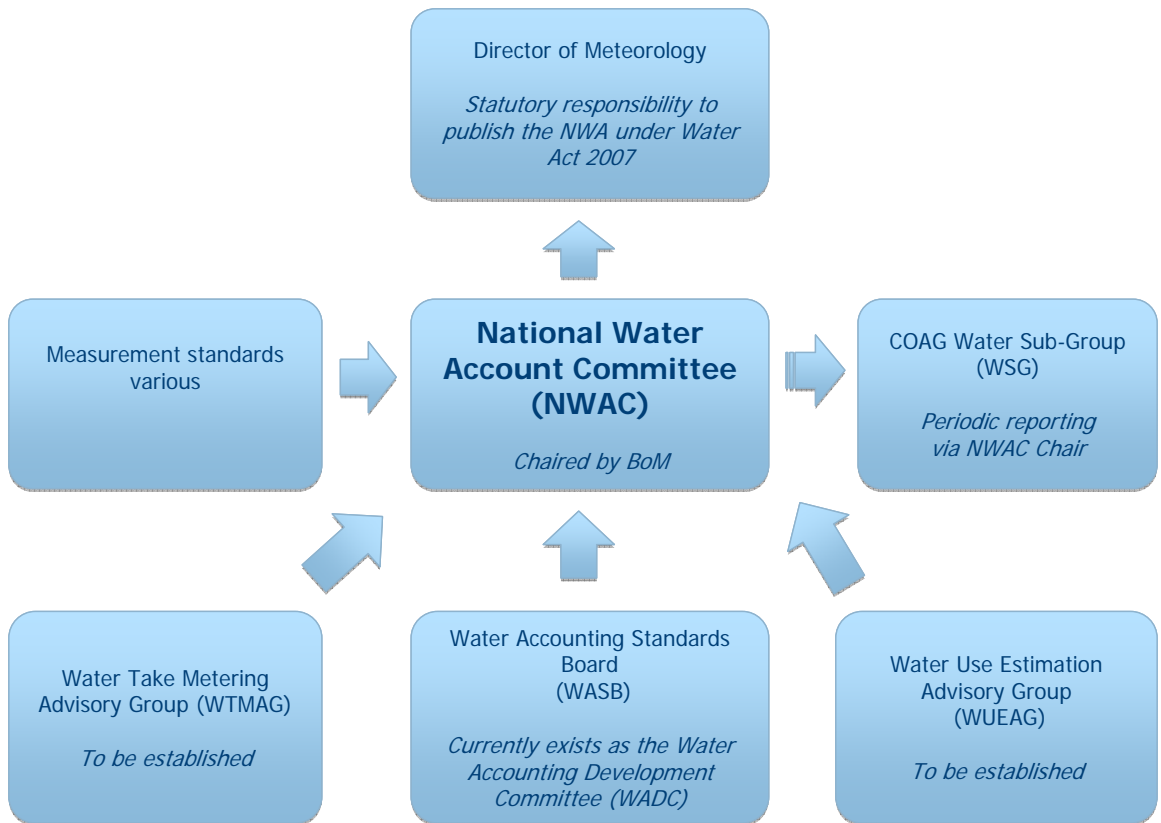


Figure 2: Institutional arrangements supporting the production of the National Water Account by the Bureau of Meteorology

5 Development and Production of the Pilot NWA and 1st NWA

5.1 Themes, activities and milestones

Activities and milestones for the national water accounting process have been grouped under six *themes*:

- (i) Governance – including oversight and reporting;
- (ii) Standards development – for water accounting, water use estimation, water use metering and water information definitions and terminology;
- (iii) Data capture and management – including data collection, modelling and estimation, coordination of data inputs to the accounts;
- (iv) Reporting – including planning, production and publication of the NWA;
- (v) Resources – including funds, systems and staff/skills access; and
- (vi) Research and Development.

Using this thematic structure, the key activities and milestones in the development and production of the pilot NWA and the first comprehensive NWA are outlined (on a monthly basis) in Table 4 and (on a quarterly basis) in Table 5, respectively. For the pilot NWA, an implementation plan, to be developed by the end of May 2009, will identify the links and dependencies between these activities and milestones and assess the risks to their successful achievement.

5.2 Initial Available Resources

The resources identified as required for the achievement of the outlined milestones are as follows:

- Bureau staff-time (approx. 12 Full-time-equivalent per annum) to define and test the water balance framework and methods and to populate components of the water balance for each identified water reporting entity
- Bureau staff-time (approx. 5 Full-time-equivalent per annum) to prepare sub-national accounts, consolidate where appropriate and ready the 'collection' for publication
- Bureau-staff-time (approx. 1 Full-time-equivalent per annum) to act as secretariat for NWAC and the various advisory groups
- Reporting partner contributions (1-2 Full-time-equivalent per annum per jurisdiction, dependent on agency capacity to participate). Some funds will be made available from the BoM's discretionary grants programme to facilitate the participation of partner agencies.
- WADC/WADCO resources (approx. \$1 million p.a. for 2 years) to draft water accounting concepts and standards, direct and evaluate the testing of the standards, define the chart of accounts for the NWA, construct model accounts and disclosure notes for the pilot NWA, and provide guidance on the use of the above.
- WIRADA contributions (approx. 6 Full-time-equivalent per annum for the next four years) to undertake priority research and development activities in support of improving the accuracy and credibility of the NWA over time.

A more detailed budget will be presented in the implementation plan.

Table 3 Key Milestones in the NWA Roadmap: Timeline for the Pilot NWA

		PNWA Timeline											
		To Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09
Governance .Oversight .Reporting	>COAG WSG work programme on accelerating water accounting	>Report to COAG WSG	>Brief Minister's Office >NWAC Established	>NWAC M1	>NWAC M2			>NWAC M3 >Progress report to Minister Wong and COAG WSG		>NWAC M4	>Progress report to COAG WSG	>NWAC M5	>Report to Minister
Standards Development .water accounting .water use estimation .water use metering .water information definitions	>Water accounting conceptual framework and demonstration pilot projects	>Expert Panel on AWID M1 >Commence drafting of accounting standard (PAWAS) for PNWA	>WADC transitions to interim-WASB >Assurance framework options	>PAWAS complete >Assurance framework for PNWA released >Expert Panel on AWID M2	>Commence drafting of AWAS 1-9 >Commence testing of PAWAS			1st cut priority definitions	>WUEAG established	1st cut AWID complete			
Data .Collection .Modelling .Coordination	>Water regulations data deliveries		>Pilot of water balance framework complete >Review of modelling and estimation techniques complete	>Info exchange between reporting partners	>Finalise arrangements for collection of data and info for PNWA >Commence water balance work for selected reporting entities >Cat6 data templates released			>Cat6 data received	>Water balance method development complete				
Report .Planning .Production	>NWA Workshop to explore: objective, reporting scales, governance options	>Draft NWA Roadmap complete		>Finalise Reporting entities, time period for PNWA >Finalise Report pack for PNWA, incl CoA items and disclosures	>PNWA implementation plan complete >Commence preparation of sub-national accounts for PNWA					>Collection and consolidation of sub-national accounts for PNWA	>Draft PNWA		>National plan for water use estimation published >Publish PNWA
Resources .\$.Systems .Staff/skills	>Staff recruitment to BoM water accounting section >Capacity building in water accounting in some lead water agencies		>Modernisation fund guidelines released	>PNWA Reporting partners established >Water Accounting Section Head recruited	>NWA online publication options			>Funds available to reporting partners		>AWRIS Data QC framework established			>AWRIS Phase 1 Go-live
R&D	> WIRADA research project on improving water resource assessment and accounting	>Uncertainty framework options					>Uncertainty framework specified			>National gridded precipitation and ET methods developed (Beta version)			>Tech report on spatial modelling of diffuse groundwater recharge >Tech report mapping of small-scale water use

Table 4 Key Milestones in the NWA Roadmap: Timeline for the 1st and 2nd NWAs

	1st NWA Timeline				2nd NWA Timeline			
	Jan-Mar 10	Apr-Jun 10	Ju-Sep 10	Oct-Dec 10	Jan-Mar 11	Apr-Jun 11	Ju-Sep 11	Oct-Dec 11
Governance .Oversight .Reporting	>NWAC M6	>NWAC M7	>NWAC M8	>NWAC M9	>NWAC Review			
Standards Development .water accounting .water use estimation .water use metering .water information definitions	>WUMAG established >Exposure drafts of AWAS1-9 complete	>WASB established for ongoing standard development						
Data .Collection .Modelling .Coordination		>Revised NWA data requirements released						
Report .Planning .Production	>Review of PNWA process, data ad reporting >Finalise reporting entities for 1st NWA	>Revised NWA methods and format released	>Commence preparation of sub-national accounts for 1st NWA (July)	>Draft 1st NWA (Oct) >Publish 1st NWA (Dec)	>Review of 1st NWA process, data and reporting		>Commence preparation of sub-national accounts for 2nd NWA (July)	>Draft 2nd NWA (Oct) >Publish 2nd NWA (Dec)
Resources .\$.Systems .Staff/skills								
R&D	>Benchmarked surface water models	>Detailed spec. of semi-distributed surface water model for assessments and accounts						

6 Evaluation and Continuous Improvement Process

The NWA will evolve and improve over time, beyond the production of the first comprehensive NWA in 2010. Key expectations are improving accuracy (as estimation and measurement techniques, and monitoring and reporting systems, improve) and improving resolution (as capacity increases).

To ensure future accounts benefit from the lessons learned in the production of the pilot and first NWA, each publication milestone will be followed by a review and evaluation process across each of the six Roadmap themes. There is likely a role for NWAC and supporting advisory groups to assist in various facets of the evaluation. There is also potential to use existing channels in this regard, such as the Jurisdictional Reference Group on Water Information established under the BoM Water Information Services Programme.

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Appendix A: NWAC Terms of Reference and Membership

NWAC Terms of Reference

1. To review the Roadmap for production of the pilot and first comprehensive National Water Account giving consideration to:
 - a. priority areas for reporting (e.g., high risk or high conservation value systems);
 - b. governance arrangements, reporting responsibilities and resourcing requirements;
 - c. proposed contents of the NWA, indicating how its scope and design will change over time as data inputs improve and the reporting abilities of participating entities develop; and
 - d. consider all standards for water information with respect to their utility for the production of the NWA.
2. Advise the BoM on all aspects of the NWA, noting that it will evolve significantly over time as improved standards, data and accounting methodologies become available.
3. Guide the collaborative development of the NWA, noting that the States, ABS and MDBA are each undertaking related water accounting activities.
4. Review all water accounting standards recommended by WASB and determine their utility for the NWA production process.
5. When established, review recommendations for water use estimation by the Water Use Estimation Advisory Group (WUEAG) and determine their utility for the NWA production process.
6. When established, review recommendations by the Water Take Metering Advisory Group (WTMAG) on the number and distribution of non-urban water use meters and determine their appropriateness for improving the quality of the NWA.
7. Provide advice on the potential users of the NWA.
8. Review and provide advice to BoM on drafts of the National Water Account and provide advice to BoM regarding necessary revisions
9. Report progress with the production of the National Water Account to the COAG Water Sub Group
10. Review the ongoing role of NWAC and its ToR in January 2010, following publication of the pilot NWA.

Membership (nominee/alternate)

Commonwealth

BoM	Louise Minty (Chair)
DEWHA	Russell James/Helen Foard
MDBA	Chris Biesaga/Greg Raisin
NWC	Matt Kendall/Craig McVeigh
ABS	Gemma Van Halderen/Kirsty Leslie
States	
WA	Lindsay Preece/Roy Stone
NT	Diana Leeder/Ian Smith
Qld	Graeme Milligan/Greg Long
NSW	Paul Pendlebury/Phil Moss
ACT	Stewart Chapman/no nomination
Vic	Adrian Spall/Roslynn McRoberts
Tas	David Nicholls/Bryce Graham

SA

John Barrett/no nomination

Water industry representatives

Urban water (WSAA)

Claude Piccinin/Peter Gee

Rural water (Irrigation Australia)

Clarke Ballard/Chris Bennett

Appendix B: JRGWI Mission Statement

VISION:

Australia is better equipped to manage water scarcity, water quality and flood risk through ready access to high quality water information at the national level.

OBJECTIVE:

Water information managers across Australia work co-operatively with the Bureau of Meteorology to ensure open access to quality water information that is consistent across jurisdictional boundaries.

Improving Water Information

Australia has one of the most variable climates in the world – its “droughts and flooding rains” – and this tendency towards the extreme is increasing due to climate change. Effective management of Australia’s water resources now and in future relies on access to high quality information about water at the national level. The Bureau of Meteorology (the Bureau) has been tasked and resourced through the *Improving Water Information Program* to work co-operatively with water information managers in all states and territories to provide access to national water information.

Improving Water Information is part of the Commonwealth Government’s \$12.9 billion water reform program, *Water for the Future*, and is one of the high level outcomes sought through COAG and the National Water Initiative (NWI). Through this cooperative venture, the Bureau is seeking answers to eight key questions:

1. How much water is available in different parts of the country today and how does this compare with the past?
2. Who is entitled to use water and how much is being used?
3. How much water is being allocated and how is the security of particular water entitlements changing?
4. How much water is being traded and to where?
5. How much water is the environment getting?
6. How much water is being intercepted by farm dams and land management changes?
7. How is flood risk changing in response to climactic and land management changes?
8. How is the quality of water in rivers and aquifers changing?

Benefits from National Water Information

A single point of access to nation-wide water information will produce benefits that fan out to a wide variety of users across government, industry and the community:

- (i) *Benefits for state and territory water information managers*
 - Access to value-added water information, through analysis and modelling of primary data by the Bureau
 - Initial support from the Bureau to extend and modernise their water monitoring networks
 - Opportunities to leverage the Bureau’s sophisticated water information web presence
 - Access to powerful new water availability forecasts
 - Support in meeting their responsibilities, under the National Water Initiative, to participate in annual water resource assessments and accounting
 - Free access to specialist investigations and specialist data sets
- (ii) *Benefits for policy makers, infrastructure investors, industry peak bodies, environmental groups*
 - Increased currency, coverage and utility of water information
 - Value added water information – a higher level of data integration, analysis and forecasting
 - Consistent information at a national level to resolve debates on the definition of important technical concepts
 - Consistent information at a national level to benchmark water management performance and draw comparisons between water resource managers
 - Enhanced community and business confidence in water management
 - Decreased likelihood of injudicious infrastructure investments
 - Improved flood estimation methods, enabling better design of flood-prone infrastructure

(iii) *Benefits for Australian public*

- Increased public safety in flood-affected areas due to improved flood warning and forecasting services
- Reduced risk of property damage by floods due to improved flood warning and forecasting services
- Without access to quality water information, the Australian public cannot fully participate in informed discussion and debate on water scarcity. Easy access to a single source of quality information will enhance understanding at the community level and help all Australians with an interest in water understand the country's water resources and how they are being managed
- At the recreational level, easy access to information on dam levels and river flows to assist the public in planning water recreation activities

Role of JRGWI

The Jurisdictional Reference Group on Water Information (JRGWI) is the primary vehicle for co-ordinating the Bureau's water information activities with those of the states and territories. Comprising representatives from the lead water agencies in each state and territory, JRGWI provides a forum for members to articulate water information priorities in their jurisdictions and provide feedback to the Bureau on its various water information products and services.

JRGWI

2009

JRGWI Membership

Member	Organisation	State/Territory
Mr John Ruprecht	Department of Water	Western Australia
Mr Greg May	Department of Water	Western Australia
Dr Martin Read	Department of Primary Industries and Water	Tasmania
Mr Greg Carson	Hydro Tasmania	Tasmania
Mr Tim Goodes	Department of Water, Land and Biodiversity Conservation	South Australia
Mr Paul Pendlebury	Department of Water and Energy	New South Wales
Mr Adrian Spall	Department Sustainability and Environment	Victoria
Mr Brett Miller	Department Sustainability and Environment	Victoria
Mr Graeme Milligan	Department of Environment and Resource Management	Queensland
Mr Steve Jacoby	Department of Natural Resources and Water	Queensland
Dr Diana Leeder	Department of Natural Resources, Environment, the Arts and Sport	Northern Territory
Mr David Butt	Department of Territory and Municipal Services	Australian Capital Territory
Mr Greg Long	Department of Natural Resources and Water	Queensland
Dr Fraser MacLeod	Murray Darling Basin Authority	Australian Capital Territory
Mr John Barrett	Department for Transport, Energy and Infrastructure	South Australia
Mr Ray Boyton	Department of Water and Energy	New South Wales
Ms Sharon Davis	Murray Darling Basin Commission	Australian Capital Territory
Mr Simon Cruikshank	Department of Natural Resources, Environment and the Arts	Northern Territory

Appendix C: Water Accounting Development Committee Terms of Reference and Membership

1. The Water Accounting Development Committee (WADC) will be established to develop water accounting, coordinate standards development, and assist jurisdictions with system development where necessary. It will also provide advice to the National Water Initiative Committee (NWI Committee) on the implementation of the relevant National Water Initiative (NWI) Water Resource Accounting commitments.
2. The NWI Committee will be responsible for:
 - a. Approving specific terms of reference for the WADC;
 - b. Nominating and appointing members to the WADC;
 - c. Nominating and appointing an independent Chairman;
 - d. Coordination of water accounting development with other NWI activities;
 - e. Evaluating and endorsing the outcomes of water accounting development;
 - f. Identifying and directing the WADC on any related policy and implementation issues; and
 - g. Reporting on the water accounting development outcomes to the Natural Resource Management Ministerial Council.
3. The WADC will be responsible for:
 - a. Providing water accounting policy direction;
 - b. Establishing of a national guideline and standard setting process;
 - c. Overseeing and coordinating all water accounting development activities, including:
 - i. completion of a detailed user information requirements;
 - ii. development of a water accounting conceptual framework;
 - iii. development of a national chart of accounts;
 - iv. water accounting guidelines and standards development;
 - v. capacity building for water accounting as a discipline; and
 - vi. establishing Technical Working Groups, where relevant.
 - d. Reporting to the NWI Committee on water accounting development as required; and
 - e. Recommending long term governance arrangements for water accounting beyond the life of the WADC and the NWI;
4. A paid, part-time independent Chairman of the WADC will be appointed by the NWI Committee with an initial period of two years.
5. The WADC will require broad representation from the spectrum of stakeholders including industry, academia, environmental groups, financial institutions, financial accounting profession, and Australian state and territory governments.
6. The WADC will be supported by a dedicated office.

Current Membership of the Water Accounting Development Committee

Member	Role / Organisation	Area of Expertise
Mike Smith (Chair)	Director, National Water Initiative Department Water, Land and Biodiversity Conservation	NWIC member; water policy
Prof Jayne Godfrey	Deputy Dean of Research Monash University	Academic; financial accounting; standard setting (financial accounting)
Peter Day	High-level financial consultant and company Director	water industry; water research, policy and management
Tom Vanderbyl	Manager of Strategic Water Management Sunwater Australia	water industry
Dennis Flett	Water resources engineering consultant	water industry; water engineering
Dr Louise Minty (observer)	Branch Head Water Analysis and Reporting Bureau of Meteorology	water research; water policy



Australian Government

Bureau of Meteorology

Supported by the *Commonwealth Water Act 2007*, and funding under the Commonwealth's *Water for the Future* program, the Bureau of Meteorology has a new national water information role.

For more information

Visit our website at www.bom.gov.au/water

Send an email request to waterinfo@bom.gov.au



Water Information
DATA › INFORMATION › INSIGHT