Chapter 2

Regulatory framework for the Murray-Darling Basin and water metering and monitoring

2.1 The MDB has a complex history, with competing demands for water resources from various stakeholders, such as Basin states, irrigators and other agricultural groups, river communities, and environmental bodies. These competing demands therefore make it challenging to manage the appropriate allocation and use of water via legislation and other regulatory frameworks.

2.2 Historically, water management was controlled by the individual Basin states. However, the Basin Plan, which came into effect in 2012, allowed the Commonwealth to take a more prominent role in the management of the Basin's water resources.

2.3 This chapter details the various Commonwealth and state governance arrangements and legislative frameworks that regulate water management, compliance and enforcement across the MDB. The chapter also considers the metering and monitoring regulations and systems in place, with some examination of metering in both South Australia and NSW.

Legislation

2.4 The MDB is governed by a complex arrangement of interacting legislation at both the Commonwealth and state level.

2.5 It should be noted that it is the states that directly regulate water usage in the Basin, with no direct involvement of the Commonwealth in state matters such as licensing, regulation, and day-to-day water management.

Water Act 2007 (Commonwealth)

2.6 The *Water Act 2007* (Water Act) commenced on 3 September 2007, giving effect to the Government's National Plan for Water Security. This Plan provided an initial $10.05 billion for modernising Australia's irrigation infrastructure, addressing over-allocation of water in the Basin, reforming management of the Basin and investing in water information.[1]

2.7 The Water Act provides for a Basin-wide approach to setting supportable limits on water that can be taken from the Basin, while sustainably managing water resources.

2.8 The objects of the Act are to:

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1 Explanatory Memorandum, Water Bill 2007, p. 2.

- enable the Commonwealth, in conjunction with the Basin states, to manage Basin water resources;
- to give effect to relevant international agreements, to the extent those agreements are relevant to the use and management of the Basin's water resources, and provide special measures in accordance with those agreements to address threats to the water resources of the Basin;
- promote the use and management of Basin water resources 'in a way that optimises economic, social and environmental outcomes';
- without limiting the previous two points:
    - ensure the return to environmentally sustainable levels of extraction for water resources that are over-allocated or overused,
    - protect, restore and provide for the ecological values and ecosystem services of the Basin,
    - subject to the above two points, 'maximise the net economic returns to the Australian community from the use and management' of Basin water resources;
- improve water security for all users of Basin water resources;
- ensure the management of Basin water resources is in accordance with the broader management of natural resources in the Basin;
- achieve 'efficient and cost effective water management and administrative practices' for Basin water resources; and
- provide for the 'collection, collation, analysis and dissemination' of information on Australia's water resources and the use and management of water in Australia.[2]

Murray-Darling Basin Plan

2.9 The Basin Plan was adopted as a legislative instrument in November 2012 and provides for the integrated management of the water resources in the Basin. The Plan limits the amount of water that can be extracted or taken annually from the Basin for consumptive use, while leaving enough water for the environment. This amount is called the Sustainable Diversion Limit (SDL).[3]

Sustainable Diversion Limits

2.10 SDLs have been determined for each catchment and aquifer in the Basin. The Basin Plan 'determines the long term average amount of water that can be extracted

2 *Water Act 2007*, Part 1, s. 3, https://www.legislation.gov.au/Details/C2017C00151

3 Murray-Darling Basin Authority, *What's in the Basin Plan?*, https://www.mdba.gov.au/basin-plan/whats-basin-plan (accessed 19 January 2018).

each year from the Basin for urban, industrial and agricultural use', and this is reflected in the SDLs. DAWR advised the committee that:

> The Basin-wide SDL for surface water is 10,783 gigalitres, which represents a reduction of 2,750 gigalitres (GL) from pre-existing levels of diversion, with this SDL formally commencing from 1 July 2019.[4]

2.11 This 2750GL reduction is referred to as the water recovery target. The Basin Plan included a seven-year transition period to enable time for adjustment to the Plan and SDLs across the Basin, with opportunities to review and improve the Plan during this implementation phase. As of 1 July 2019, the SDLs will come into effect.[5]

Water Resource Plans

2.12 The SDL will be implemented through Basin state water resource plans (WRPs). The WRPs are developed under the existing water planning frameworks in Basin states, and are a key mechanism by which each state will implement the Basin Plan.

2.13 There are 36 WRP areas across the Basin, incorporating groundwater and surface water areas. The WRPs outline how water resources will be managed to be consistent with the Basin Plan, and help to align Basin-wide and state-based water resource management. The WRPs detail, among other things, annual limits on water take, how water will be managed during extreme events, environmental water, and strategies to achieve water quality standards.[6]

2.14 WRPs must be submitted to the MDBA for assessment, which then evaluates if the WRPs are consistent with the Basin Plan. The MDBA will then advise the Minister for Agriculture and Water Resources (Minister) if the WRP should be accredited, with the Minister making the final determination on accreditation. This process must be completed prior to 1 July 2019. Despite this deadline, there is currently only one accredited WRP (for Warrego-Paroo-Nebine). The MDBA has monitoring and compliance responsibilities for WRPs.[7]

Roles and responsibilities

2.15 There are many different actors and legislative instruments involved in the governance of the MDB. Each Basin state (Queensland, NSW, Victoria and South

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4 Department of Agriculture and Water Resources, *Submission 47*, p. 2.

5 Murray-Darling Basin Authority, *Basin Plan timeline*, https://www.mdba.gov.au/basin-plan/basin-plan-timeline

6 Murray-Darling Basin Authority, *Water resource plans*, https://www.mdba.gov.au/basin-plan-roll-out/water-resource-plans (accessed 19 January 2018).

7 Murray-Darling Basin Authority, *Water resource plans*, https://www.mdba.gov.au/basin-plan-roll-out/water-resource-plans (accessed 19 January 2018).

Australia) and the ACT[8] has its own water legislation, and the MDB as a whole is governed by the Water Act and the Basin Plan. Compliance and enforcement activities are distributed amongst various state and federal agencies.

2.16 The Water Act ascribed responsibilities to a number of Commonwealth agencies in developing, implementing and enforcing the Basin Plan. Each Basin state government also has a role to play in protecting state water resources and enforcing state legislation. Below is an overview of the role and responsibilities of the various governing bodies.

Commonwealth

Murray-Darling Basin Authority

2.17 The MDBA was established under the Water Act as an independent statutory authority. Its responsibilities include, among other things, to:

- prepare, implement and review the Basin Plan, including setting and altering SDLs;
- work with Basin states to develop and accredit WRPs;
- measure, monitor and record the quality and quantity of the Basin's water resources;
- support and conduct research and investigations into the Basin's water resources and dependent ecosystems;
- efficiently deliver water to users on behalf of partner governments; and
- support sub-committees (including the Basin Community Committee and the Basin Plan Implementation Committee) and give effect to the decisions of the Ministerial Council and the Basin Officials Committee in relation to the Basin governments' joint programs.[9]

2.18 With respect to compliance and enforcement of the Water Act and the Basin Plan, the MDBA has a number of responsibilities. The Water Act identifies the MDBA as the appropriate enforcement agency for a contravention of the provisions of the Act relating to the management of Basin water resources, including the Basin Plan and WRPs.[10]

2.19 The compliance activity undertaken by the MDBA complements the compliance activities of the Basin states. The powers of the MDBA in regard to compliance and enforcement are detailed in Part 8 (Enforcement) and Part 10 (MDBA special powers) of the Water Act.

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8 Any references in this report to 'Basin state' includes the Australian Capital Territory.

9 Murray-Darling Basin Authority, *Annual Report 2016-17*, pp. 7, 11; Senate Select Committee on the Murray-Darling Basin Plan, *Refreshing the Plan,* March 2016, p. 10.

10 *Water Act 2007*, s.136.

2.20 Under Part 8, the MDBA enforcement powers include—but are not limited to—the power to seek injunctions, declarations, court orders for pecuniary penalties, issue enforcement notices and infringement notices, and enter into enforceable undertakings. Under Part 10, the MDBA has special powers to enforce contraventions, including the power to appoint authorised officers to exercise relevant powers. Authorised officers have the power to enter land in certain circumstances, including for compliance purposes.[11]

Commonwealth Water Minister

2.21 In addition to making the final determination on the accreditation of WRPs, the Minister approves program funding allocations, and, pursuant to the Water Act, approves the Basin Plan. The Minister also evaluates the progress of implementation of the Basin Plan, and chairs the Murray-Darling Basin Ministerial Council.[12]

2.22 The Minister has enforcement powers with respect to contraventions of a provision of Part 7 of the Water Act, which relates to 'water information' functions.[13]

Department of Agriculture and Water Resources

2.23 The Department of Agriculture and Water Resources (DAWR) is responsible for recovering water through on- and off-farm infrastructure investment and water purchases (commonly referred to as 'buybacks'). It is also responsible for funding projects through the SDL adjustment mechanism.[14]

2.24 DAWR chairs the Basin Officials Committee (BOC). The BOC facilitates cooperation and coordination between the Australian Government, the Basin states and the MDBA in funding works and managing Basin water and other natural resources. It is responsible for providing advice to the Ministerial Council.[15]

2.25 The Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin (IGA) is an undertaking by the Commonwealth and Basin states to ensure that the Basin Plan is implemented in a cost effective manner to support the goals of the Plan. Under the IGA, it was agreed that the Commonwealth would provide financial support to the Basin States via the National Partnership Agreement on Implementing Water Reform in the Murray-Darling Basin (NPA). This NPA recognises the costs that states will incur in the implementation of the Basin

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11 *Water Act 2007*, ss. 136-170; ss. 216-239. The MDBA's compliance functions are discussed further in Chapter 4.

12 Murray-Darling Basin Authority, *Annual Report 2016-17*, p. 21; Senate Select Committee on the Murray-Darling Basin Plan, *Refreshing the Plan*, March 2016, p. 179.

13 *Water Act 2007*, s. 136.

14 Murray-Darling Basin Authority, *Basin Plan Annual Report 2015-16*, April 2017, p. 12.

15 Murray-Darling Basin Authority, *Basin Officials Committee*, https://www.mdba.gov.au/about-us/governance/basin-officials-committee (accessed 12 October 2017).

Plan, including through the development of WRPs, implementation of new compliance and reporting requirements, and amendment of water trading rules.[16]

2.26 The NPA sets out milestones for implementation of reforms and each state is required to report on their milestone progress through an annual statement of assurance. DAWR is responsible for the assessment of the states' progress against these milestones.[17]

Commonwealth Environmental Water Holder

2.27 The Commonwealth Environmental Water Holder (CEWH), established under the Water Act, manages the Commonwealth's environmental water holdings to 'protect and restore environmental assets' of the MDB and manage water in accordance with the Basin Plan.

2.28 The Basin Plan requires that the CEWH 'perform its functions and exercise its powers in a way that is consistent with the Basin-wide environmental water strategy', while having regard to the 'Basin annual environmental watering priorities'.[18]

2.29 Commonwealth environmental water holdings are water acquired by the Australian Government through a combination of investments in water-saving infrastructure, water purchases (buybacks) and other water recovery programs. The Commonwealth environmental water holdings are a mix of entitlement types, including regulated, unregulated and groundwater licences with varying levels of security. Commonwealth environmental water entitlements are subject to the same allocation, carryover and other rules as equivalent entitlements held by other water users. They are also subject to the same fixed and variable tariffs as other equivalent entitlements across the Basin.[19]

State governments

2.30 Each Basin state government is responsible for implementing the Basin Plan within its jurisdiction, including through:

- developing projects for the SDL adjustment mechanism;
- implementing water trading rules;

16 Council of Australian Governments, *Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin*, June 2013, pp. 2 and 6.

17 Department of Agriculture and Water Resources, *National Partnership Agreement on Implementing Water Reform in the Murray-Darling Basin: milestone assessment reports*, October 2016, http://www.agriculture.gov.au/water/mdb/npa-water-reform-mdb-milestone-reports (accessed 11 December 2017).

18 Commonwealth Environmental Water Holder, *Submission 9*, p. 1.

19 Commonwealth Environmental Water Holder, *Response to the ACCC Review of Water Charges Rules Draft Advice*, November 2015, p. 1.

- coordinating the delivery of environmental water;
- monitoring and reporting;[20] and
- allocating water to licence holders.[21]

2.31 Basin states must also set and enforce the rules for water take. The most pressing issue for Basin states at the moment is the development of WRPs, which must be accredited before 1 July 2019. The MDBA advised that:

> Basin states prepare WRPs under their own legislation to be accredited under the Basin Plan so that an accredited WRP will align with, and give effect to, the requirements of the Water Act and the Basin Plan. Basin states will continue to be responsible for ensuring compliance with their own legislation—that is, states will continue to be responsible for preventing illegal take. The MDBA's role is principally to ensure compliance at the valley (or SDL resource unit) scale, through a new SDL accounting framework supported by an appropriate audit and assurance regime.[22]

2.32 The MDBA confirmed during Senate Estimates in 2017 that it would exercise its powers to not endorse a WRP, should the situation warrant it. The MDBA noted that 'compliance is clearly an issue' and this will be considered when WRPs were presented by the states for approval.[23]

2.33 In confirming that compliance with Basin state water licences was a matter for the relevant state government agency, the MDBA observed that the allegations made by Four Corners were a matter for NSW, and that 'none of the allegations relate to the actions of the MDBA'.[24]

NSW Barwon-Darling Water Sharing Plan

2.34 The Water Sharing Plan for the Barwon-Darling Unregulated and Alluvial Water Sources 2012 (Barwon-Darling WSP) was alluded to in the Four Corners program, with the program alleging that the water available for extraction by irrigators increased under that WSP. A number of submitters and witnesses to the inquiry held strong views on the Barwon-Darling WSP.

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20 Murray-Darling Basin Authority, *Annual Report 2015-16*, April 2017, p. 12.

21 Senate Select Committee on the Murray-Darling Basin Plan, *Refreshing the Plan*, March 2016, p. 179.

22 Murray-Darling Basin Authority, *Submission 26*, p. 2.

23 Mr Phillip Glyde, Murray-Darling Basin Authority, *Estimates Hansard*, 27 October 2017, p. 73.

24 Murray-Darling Basin Authority, *Submission 26*, p. 2.

2.35 The Barwon-Darling WSP commenced on 4 October 2012. The Barwon-Darling WSP covers the towns of Mungindi, Mogil Mogil, Collarenebri, Walgett, Brewarrina, Bourke, Louth, Tilpa and Wilcannia.[25]

2.36 In its submission to the committee, the MDBA provided comment on the Barwon-Darling WSP, and expressed concern that it could impact on environmental flows, thus lending support to some of the claims made by Four Corners and by others in evidence to the inquiry. The MDBA advised that this particular WSP:

> commenced a month prior to the Basin Plan coming into effect [in 2012]. Significant changes occurred between the draft plan and the final plan being released, including a change to the sharing components that resulted in fewer C Class (high flow) shares, and an increased number of A Class and B Class (low and medium flow) shares. The net effect of this was to allow extraction of water more often at the lower end of the flow regime. These and other changes, such as allowing trade of A class water, removing pump intake size limitations, and allowing storage of A class water, made by NSW to the WSP have the potential to impact on the integrity of environmental flow events and the magnitude of downstream flow.
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> Stakeholders have raised concerns about aspects of the current Barwon-Darling WSP and, in particular, whether it is consistent with the Basin Plan and whether the MDBA has any role in compliance for this WSP. Under the Water Act 2012 [sic] (Cth), the Barwon-Darling WSP is deemed to be an 'interim' water resource plan because it was made under NSW law prior to the Basin Plan being finalised. 'Interim' plans prevail over the Basin Plan to the extent of any inconsistency between the two.[26]

2.37 The MDBA stated that they were consulted by the NSW Government in 2011 in the preparation of the WSP but did not provide comment. As the Basin Plan was not in effect at that time, the MDBA contended that there was no legislative basis on which it could make comment. The MDBA were not consulted over late changes made to the draft WSP.[27]

2.38 The CEWH likewise made clear its significant concerns over the Barwon-Darling WSP, observing that changes to it allowed some irrigators to divert more water from low flow events.[28] Further, while Individual Daily Extraction Limits were provided for by the WSP, NSW had not implemented these limits. The CEWH stated that 'some flow events since 2012 have been significantly reduced by water extraction'. The CEWH noted that the 'effective and efficient use of Commonwealth

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25 NSW Department of Primary Industries, *Barwon-Darling Unregulated and Alluvial*, http://www.water.nsw.gov.au/water-management/water-sharing/plans_commenced/water-source/bdua (accessed 30 August 2017).

26 Murray-Darling Basin Authority, *Submission 26*, p. 4.

27 Murray-Darling Basin Authority, *Submission 26*, p. 4.

28 This view was disputed by Barwon-Darling Water; see *Submission 50*, pp. 14-15.

environmental water' is dependent on the appropriateness of Basin state WRPs and other water use regulations.[29]

Views on the Barwon-Darling WSP

2.39 A number of submitters suggested that the Barwon-Darling WSP did not sufficiently protect environmental water, identifying pump sizes and extraction limits as primary concerns.

2.40 These concerns were well summarised by Mr Lachlan Gall of PAWD, who argued that excessive water extraction resulting from the Barwon-Darling WSP had a 'devastating impact on the reliability of the Darling River below Bourke'. Mr Gall stated that:

> The 2012 Barwon-Darling water sharing plan has failed to meet its own objectives in terms of equitable resource sharing between all stakeholders. Several operating rules were introduced that resulted in significant windfalls for irrigators. The operating rules of particular concern were the removal of pump-size limits, the approval to extract 300 per cent of an entitlement per annum and the failure to implement daily extraction limits. The association recommends that prompt action is taken to reverse these provisions in the Barwon-Darling water sharing plan.[30]

2.41 Cotton Australia, however, defended the Barwon-Darling WSP, stating that its rules of access had been developed with an acknowledgement that the Barwon-Darling was an unregulated river, and therefore was managed differently to regulated systems. Cotton Australia argued that under the WSP all licence holders had a volumetric limit on take which they could not exceed, and viewed this volumetric limit as preserving environmental flows.[31]

2.42 The NIC likewise suggested that the size or capacity of a pump did not change the overall amount a licence holder was entitled to extract. The NIC was of the view that the size of the pump was unlikely to make much difference to overall take, concluding that 'it is the overall amount that should be regulated not the equipment used to extract it'.[32]

Sustainable diversion limit adjustment mechanism

2.43 The Basin Plan allows the SDL to be adjusted. This could occur if Basin Plan environmental outcomes were reached with less water, resulting in more water

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29 Commonwealth Environmental Water Holder, *Submission 9*, pp. 3-4.

30 Mr Lachlan Gall, Pastoralists' Association of West Darling, *Committee Hansard*, 1 November 2017, p. 31.

31 Cotton Australia, *Submission 17*, p. 9.

32 National Irrigators' Council, *Submission 31*, pp. 14-15. See also Barwon-Darling Water, *Submission 50*, p. 15.

remaining in the system for other uses (such as irrigation). Likewise, more efficient farming practices could result in more water being available for the environment.[33] The adjustment mechanism in the Basin Plan allows for the recovery target to be amended up or down, prior to 2019, but by no more than five per cent.[34]

2.44 Activities under the SDL adjustment mechanism fall into one of two categories, being either a supply or an efficiency measure.

2.45 Supply measures are 'works, river operations or rule changes that enable the use of less water but still achieve the Plan's environmental outcomes', such as reconfiguring lakes or storage systems to reduce evaporation. Supply measures would allow a reduction in the 2750GL recovery target, 'thereby reducing the social and economic impact of water recovery to achieve the Basin Plan's SDL'.[35]

2.46 Efficiency measures recover and provide more water for the environment but only if there are no negative social and economic impacts in doing so, and the measures would allow for environmental water savings without adverse impact on production. Efficiency measures, such as improvements to on-farm irrigation, would allow for the 2750GL recovery target to be increased without reducing the Basin's productive capacity.[36]

2.47 The adjustment mechanism is intended to provide greater flexibility in setting the final water recovery figure. At the time of making its submission to the committee, DAWR advised that some of the adjustment mechanisms included:

- reducing the Southern Basin water recovery target by up to 650GL through supply measure offsets, such as environmental works on floodplains;
- allowing the recovery of an additional 450GL to achieve enhanced environmental outcomes with neutral or improved socio-economic outcomes through efficiency measures; and
- constraints measures that support better environmental outcomes by easing or removing constraints on the capacity to deliver environmental water.[37]

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33 Murray-Darling Basin Authority, *Sustainable Diversion Limit Adjustment Mechanism*, https://www.mdba.gov.au/basin-plan-roll-out/sustainable-diversion-limits (accessed 19 January 2018).

34 Department of Agriculture and Water Resources, *Sustainable Diversion Limit (SDL) adjustment mechanism*, 9 October 2017, http://www.agriculture.gov.au/water/mdb/policy/sdl-adjustment-mechanism (accessed 19 January 2018).

35 Department of the Environment and Energy, *Fact sheet: Sustainable Diversion Limit (SDL) adjustment mechanism*, http://www.environment.gov.au/water/publications/mdb/factsheet-sustainable-diversion-limit-sdl-adjustment-mechanism (accessed 23 January 2018).

36 Department of the Environment and Energy, *Fact sheet: Sustainable Diversion Limit (SDL) adjustment mechanism.*

37 Department of Agriculture and Water Resources, *Submission 47*, p. 2.

2.48 Basin states have since been able to identify a number of projects that would make the delivery of water 'more efficient and flexible', and the MDBA subsequently determined that 605GL of water would be available for communities through the SDL adjustment mechanism, if the projects were implemented.[38]

2.49 Since DAWR providing its advice to the inquiry, the SDL adjustment mechanism has been utilised to reduce some water recovery targets. In January 2018, the Basin-wide water recovery target was formally reduced by 605GL. In July 2018, and following from a review of the northern Basin, the recovery target for the northern Basin was reduced from 390GL per year to 320GL per year.[39] The MDBA determined, via the Northern Basin Review, that the same environmental benefits could be achieved without having to use as much water.[40]

2.50 Some concerns were raised in evidence about the SDL adjustments, as they relate to water theft. For example, Mr Grant Rigney of MLDRIN urged that SDL adjustments not proceed until the extent of water theft was known, and all inquiries and investigations into the allegations of water theft were concluded. Mr Rigney argued that the level of alleged theft could have ramifications for the 5 per cent up or down adjustment allowed to the SDL.[41]

Water metering and monitoring

2.51 To implement effective water compliance and enforcement regimes, it is vital that appropriate water metering and monitoring systems are in place. In theory, such systems provide the water market with transparency and allow breaches of the water rules to be addressed. Given the allegations of water theft made throughout 2017, it is clear that improvements are needed in metering and monitoring, particularly in NSW.

Background

2.52 The National Water Initiative (NWI), agreed to by the Council of Australian Governments (COAG) in 2004, was considered 'the national blueprint for water reform', under which Basin states committed to—among other things—introduce registers of water rights and standards for water accounting. In the same year, the National Water Commission (NWC) was established, with responsibility for

38 Murray-Darling Basin Authority, *Sustainable Diversion Limit Adjustment Mechanism*, https://www.mdba.gov.au/basin-plan-roll-out/sustainable-diversion-limits (accessed 19 January 2018).

39 Murray-Darling Basin Authority, *Water recovery*, https://www.mdba.gov.au/basin-plan-roll-out/water-recovery (accessed 31 October 2018).

40 Mr Phillip Glyde, Murray-Darling Basin Authority, *Estimates Hansard*, 27 October 2017, p. 63.

41 Mr Grant Rigney, Murray Lower Darling Rivers Indigenous Nations, *Committee Hansard*, 2 November 2017, pp. 10-11.

monitoring, auditing and assessing the national progress of the NWI; however, the NWC was abolished in 2014 and its functions transferred to other agencies.[42]

2.53 As part of the NWI, the Basin states agreed to develop a national meter specification, and national standards for meter installation and the data collection systems associated with those meters. Further, there was agreement to apply national reporting guidelines on 'metered water use and associated compliance and enforcement actions'. The NWI provided that:

> The Parties agree 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.[43]

2.54 Further to the aims of the NWI, in 2010 the National Framework for Non-Urban Water Metering was established, to provide a nationally consistent basis for water metering. The National Framework provided for meter construction, installation and maintenance; the use of certified installers, maintainers and validators, and the requirements for compliance, auditing and reporting. It required all non-urban meters to comply with the national standards by 1 July 2020.[44]

2.55 DAWR advised that the National Framework applies to meters owned by entitlement holders, water service providers and jurisdictional governments, and 'used for trade and/or related resource management activities'. Further, compliance with agreed national standards was a responsibility for individual jurisdictions. DAWR continued that:

> Progress to date has included the development of new metering standards, development of a certification course and the development of some jurisdictional implementation plans. The Australian Government has also supported the establishment, accreditation and upgrading of two meter testing facilities in Australia, however meter suppliers and manufacturers have been slow to present meters for testing due to lack demand in the field.[45]

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42 Department of Agriculture and Water Resources, *National Water Initiative*, 10 August 2017, http://www.agriculture.gov.au/water/policy/nwi (accessed 6 November 2018).

43 Department of Agriculture and Water Resources, Intergovernmental Agreement on a National Water Initiative, pp. 18-19, http://www.agriculture.gov.au/SiteCollectionDocuments/water/Intergovernmental-Agreement-on-a-national-water-initiative.pdf (accessed 6 November 2018).

44 Department of Agriculture and Water Resources, *National Framework for Non-urban Water Metering*, http://www.agriculture.gov.au/water/policy/nwi/nonurban-water-metering-framework (accessed 6 November 2018).

45 Department of Agriculture and Water Resources, *Submission 47*, p. 4.

2.56 Despite compliance responsibility resting with individual jurisdictions, some Commonwealth funding has been provided for water meter installation, where water savings have been demonstrated.[46]

2.57 The MDBA noted that it was important to make the distinction between water meters—which measure the volume of flows—and telemetry, which transmits metering data in real time to state regulatory authorities. The MDBA continued that not all meters are fitted with telemetry, and those that are not must be manually read on location. Information on whether individual entitlements are metered or fitted with telemetry is held by the relevant state authorities. To this end, the MDBA advised that:

> The recent Basin-wide Compliance Review considered this issue and included a recommendation for Basin states to require that all meters be easily identifiable by a unique reference number, and that information about entitlements, annual allocations, licence conditions, meter readings and account balances be made publically accessible.[47]

Jurisdictional approaches to metering and compliance

2.58 The committee was interested to understand the differences in metering and monitoring between Basin states. To that end, the committee was particularly interested in the different approaches taken by South Australia and NSW.

South Australia

2.59 The committee was advised that in South Australia, all licensed water extraction is metered and monitored, with some exemptions for areas such as low-risk dams, and small extractions for stock and domestic use.[48] Mr Mike Fuller, of DEWNR, advised that:

> In South Australia the meter fleet is privately owned; it's not government owned. So you get a variety of technologies of use. But, essentially, they are all flow recording meters. Some of them are electromagnetic and some of them are mechanical, but essentially all of the major licensed extractions are metered, and we go through a process of accounting water use against each licence each year. So there's a water account for each property, if you like.[49]

2.60 DEWNR supplied further information regarding the water reporting and metering technology in place in that jurisdiction:

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46 Department of Agriculture and Water Resources, *Submission 47*, p. 4.

47 Murray-Darling Basin Authority, answers to questions on notice, 27 October 2017 (received 20 December 2017).

48 The Victorian Government provided a submission detailing its compliance and enforcement framework; see *Submission 45*, pp. 1-2.

49 Mr Mike Fuller, Department of Environment, Water and Natural Resources, *Committee Hansard*, 2 November 2017, p. 5.

> The Department of Environment, Water and Natural Resources is using online technology to allow water licence holders to submit an online meter reading at any time. Should a customer submit a meter reading and provide contact details, an automatic water usage advice statement is supplied (like a bank statement for a water account). This functionality allows water users to more closely monitor their water usage against the available allocation as well as make business decisions more readily.
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> The Department is currently exploring the potential benefits of utilising satellite technology (such as the internet of things or virtual water meter technology) to enhance compliance monitoring programmes, as well as gain insight into crop/industry based irrigation practices.[50]

2.61 With regard to compliance, Mr Fuller advised that on the River Murray in South Australia, meter readings are required quarterly, with any anomalies followed up on by the department. However, as a condition of their licence, licensees are required to immediately report broken meters. This can be completed online 'fairly easily and fairly readily'. Mr Fuller stated that:

> If we determine that somebody knew that they had a meter that wasn't functioning and continued to take without reporting it, that would become a compliance action.
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> …I've got a team of technical compliance [officers]. In this state we have technical and compliance officers who administer the rules of water allocation plans, but they're also out there actively monitoring compliance activities. Then, if they find activities and it needs to be escalated, we have a team of investigators within the organisation who then…take the higher level investigations of these issues.[51]

2.62 Compliance action in South Australia is funded partly by a levy, but mostly through a state government appropriation.[52]

2.63 The committee was advised of the various ways in which complaints could be made in South Australia to DEWNR, regarding potential breaches of water use rules and licences. Mr Fuller stated that complaints could be made through a water compliance website (anonymously or otherwise), via interactions with DEWNR water licensing and compliance staff, or through correspondence to the department. Staff then follow up on these allegations within 24 to 48 hours. How the department responds depends on the type of allegation:

> If it is an allegation of illegal or unlicensed extraction, an officer in most cases can go out and make a determination if there is anything there that is

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50 Department of Environment, Water and Natural Resources, answers to questions on notice, 2 November 2017 (received 23 February 2018).

51 Mr Mike Fuller, Department of Environment, Water and Natural Resources, *Committee Hansard*, 2 November 2017, pp. 5-6.

52 Mr Mike Fuller, Department of Environment, Water and Natural Resources, *Committee Hansard*, 2 November 2017, p. 5.

> not supposed to be there to take that water. It could be a dam that has been illegally constructed, a pump that has been illegally put in place, or some other diversion. That is fairly obvious and if we can get out there soon enough we have normally been able to determine pretty quickly whether that this fact or just innuendo.
>
> Sometimes it may be around meter tampering, which can be a little bit more difficult. That may be an activity that occurs and then is taken away and it all looks normal when you arrive there. In those sorts of cases there are other mechanisms we use to estimate the water use to see whether what is recorded on the meter is reasonable. We have about four or five other mechanisms that are actually gazetted mechanisms for estimating water use. They are used on occasions where we have a suspicion about what is being recorded on a water monitoring device and we may use those other mechanisms to estimate whether we think that is real or is based on the type of crop for the type of activity that is being undertaken on that property.[53]

2.64 DEWNR undertakes random and scheduled compliance inspections on licensees, while also conducting random audits across the state over a 12-month period. These audits aim for a 10 per cent sample of meter reads, of the 2000 to 3000 meters along the river.[54]

2.65 With regard to transparency, DEWNR advised that it maintains a publicly accessible Water Licence and Permit Register, allowing member of the public to view information on a water licence, such as the water allocation and water source. This Register does not include water usage information. DEWNR also reports publicly each year on its compliance actions taken the year prior, and its compliance focus during the current water year.[55]

2.66 Ms Caren Martin of SAMI advised the committee that water theft by irrigators in South Australia was rare, due to effectively developed compliance and enforcement regimes. Ms Martin stated that in South Australia:

> Our metering systems are more advanced. We've been investing in them longer. Our irrigation systems are mostly pump and suction delivered, so the gravity problems of metering are not the same. It comes through a pipe. Yes, modern technology is definitely employed here by a vast majority—if not 90 per cent, 100 per cent of the irrigators. If not, they are brought to account by the departments.[56]

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53 Mr Mike Fuller, Department of Environment, Water and Natural Resources, *Committee Hansard*, 2 November 2017, p. 6.

54 Mr Mike Fuller, Department of Environment, Water and Natural Resources, *Committee Hansard*, 2 November 2017, pp. 6-7.

55 Department of Environment, Water and Natural Resources, answers to questions on notice, 2 November 2017 (received 23 February 2018).

56 Ms Caren Martin, South Australia Murray Irrigators, *Committee Hansard*, 2 November 2017, p. 24.

2.67 Mr Paul Shanks of SAMI provided further information on the irrigation techniques being used in South Australia, including drip irrigation, soil moisture measurement, the specific application of water for specific products, the cultivation of dry-grown products and the use of water only in drought years. Mr Shanks noted that these steps ensure that water is being surrendered for the environment.[57]

New South Wales

2.68 In 2010, the then NSW Office of Water put forward a business case titled 'NSW Sustaining the Basin Program: NSW Metering Project'. The project aimed to improve the quality and coverage of the metering of rural water users in NSW. The business case observed that in the regulated river systems of the NSW MDB, there were 7500 pumps extracting water, and up to 4000 meters would be installed in the area. In the unregulated systems, there were thought to be 5000 pumps, with only 300 equipped with meters. The project sought to install up to 2500 meters on unregulated rivers.[58]

2.69 The Commonwealth provided approximately $31.5 million in funding for the NSW Southern Metering project, administered by the NSW Government between 2012 and 2017. The project aimed to 'improve the quality and coverage of the metering of rural water users in the NSW Murray-Darling Basin and provide access to real data on water extraction'.[59]

2.70 The committee was unable to determine whether the project put forward by the 2010 business case, and the NSW Southern Metering project funded by the Commonwealth, were the same programs. Despite this, during Senate Estimates in October 2017, some concerns were raised that the Commonwealth funding which had been provided to NSW for the installation of the water meters, was allocated for the installation of meters in areas of the least water use, or focused on the southern, rather than northern Basin.

2.71 In response to questions on notice, DAWR did confirm that as of July 2014, the NSW metering project 'had not met water, project delivery or participation expectations'. As a result:

> The department considered that the failure to deliver milestone requirements was more than sufficient to invoke the project termination process outlined in the NSW Water Management Partnership Agreement and held discussions with NSW Department of Primary Industries – Water

57 Mr Paul Shanks, South Australia Murray Irrigators, *Committee Hansard*, 2 November 2017, p. 25.

58 NSW Government Office of Water, *NSW Sustaining the Program: NSW Metering Project Business Case*, June 2010, p. iii; http://www.water.nsw.gov.au/__data/assets/pdf_file/0008/549278/recovery_sustain_basin_bc_meters_now_11june10.pdf (accessed 8 November 2018).

59 Department of Agriculture and Water Resources, response to questions on notice, 27 October 2017 (received 20 December 2017).

> (DPI Water) to consider ways to ensure the project would deliver contracted obligations. NSW DPI Water advised that it should reduce the scope to focus initially on rolling-out meters in southern valleys.[60]

2.72 The project saw 710 meters installed and 10.65GL of surface and groundwater recovered from the Murray, Murrumbidgee and Lower Darling catchments.[61]

2.73 DAWR did note that the northern and southern Basins had very different characteristics, with the northern Basin containing more flood plains, and the southern Basin more 'highly modified and managed' in comparison.[62]

2.74 Mr Paul Morris of DAWR acknowledged that the southern Basin was much more regulated than the northern Basin, with the northern Basin going through a 'transition to becoming more regulated'. Mr Morris continued that:

> the metering arrangements have been much more sophisticated and well developed in the south, and that happens to be where probably there is a larger predomination of the relatively smaller properties; and in the north, where…there is quite a large number of large properties, that's the area that in the past has been more unregulated.[63]

2.75 DAWR provided further information on the progress of its water monitoring programs. Ms Mary Colreavy of DAWR advised that:

> some very significant programs that we've rolled out in the southern connected basin, the Murray and Murrumbidgee valleys, have involved a wide range of installations of both meters and other installation that is all connected to telemetry. Coleambally is already fully automated. Murray will be by the end of the current round of works that they're undertaking, which will be in the next few months, and Murrumbidgee is also largely fully automated.[64]

2.76 The committee notes that significant attention appears to have been given to metering in the southern areas of the NSW MDB. There also appears to be a stark contrast between the approaches of South Australia and NSW to water metering and compliance.

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60 Department of Agriculture and Water Resources, response to questions on notice, 27 October 2017 (received 20 December 2017).

61 Department of Agriculture and Water Resources, response to questions on notice, 27 October 2017 (received 20 December 2017).

62 Mr Malcolm Thompson, Department of Agriculture and Water Resources, *Estimates Hansard*, 27 October 2017, p. 58.

63 Mr Paul Morris, Department of Agriculture and Water Resources, *Estimates Hansard*, 27 October 2017, p. 57.

64 Ms Mary Colreavy, Department of Agriculture and Water Resources, *Estimates Hansard*, 27 October 2017, pp. 58-59.

Views on water metering in Basin states

2.77 There was a wide range of views put forward throughout the inquiry as to the effectiveness of the Basin Plan and the mechanisms put in place—via water metering and monitoring—to determine compliance with the various agreements and legislative frameworks administered by the Basin states.

2.78 The Wentworth Group made clear its concerns with metering and compliance across the Basin, stating that it was 'inconceivable that we do not know how much water is being extracted from surface and groundwater systems for consumptive use', particularly given the technology available and the extent of public investment. The Group was of the view that metering of all water extractions was 'fundamental for equitable and sustainable management of water' in the MDB.[65]

2.79 The AFA likewise put forward its strong support for proper water metering, arguing that it was:

> unsound and negligent business practice to invest billions of dollars of taxpayer funds in water management of the MDB and not have a system in place to measure the time, place and amount of the extracted volume of the water resource.[66]

2.80 The National Farmers' Federation (NFF) was of the view that water users expect 'fair, responsive, strong, risk based and transparent' regulatory approaches to water management. The NFF observed that it was an active participant in the development of national metering standards, and that Australian irrigators were using very technical and accurate meters in most locations. However, the NFF did caution that meter technology used in the southern Basin, may not be compatible with the conditions of the northern Basin.[67]

2.81 BDW commented that the recent decline in the confidence of compliance systems coincided with the reduction of meter readers in the field. Despite the benefits of telemetry, BDW felt that 'nothing can replace boots and eyes on the ground'. BDW noted that having meter readers in the field was a 'visible sign of government presence, and represented a vital element of any quality compliance system', being monitoring and surveillance.[68]

2.82 The Mayor of Paroo Shire Council, Mr Lindsay Godfrey, argued that current technology should enable an appropriate compliance regime that provides confidence through the whole system. This would ensure that 'when you're buying back water in a certain area and you're trying to rebuild the river, you know that that water is actually going to get to where it's supposed to'. However, Mr Godfrey was of the view that it

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65 Wentworth Group of Concerned Scientists, *Submission 33*, pp. 2, 3.

66 Australian Floodplain Association, *Submission 44*, p. 4.

67 National Farmers' Federation, *Submission 42*, pp. 5-6.

68 Barwon-Darling Water, *Submission 50*, p. 11.

would be difficult for irrigators to bear the cost of any further compliance measures. He stated that:

> To put an extra charge on the irrigators for the compliance measures would be a very difficult bill, especially for a lot of the smaller irrigators to carry. I think the cost of compliance would have to be borne by the federal government because across the board state governments would have different ideas on compliance and there wouldn't be a constant process that would be transparent to everyone.[69]

National Water Commission

2.83 The NWC, abolished in 2014, appeared to hold a number of oversight responsibilities that may have gone some way to addressing—or indeed stopping—the mismanagement of the Basin's water resources, and may have played a role in monitoring and auditing water meter coverage. There were numerous calls by submitters for the NWC, or a body similar to it, to be reinstated.

2.84 Dr Adam Loch and colleagues voiced their concerns over the abolishment of the NWC, noting that the independent statutory body provided assurance, monitoring and reporting on the progress of the NWI goals, and progressed national approaches to managing, pricing and trading water. It was observed that the NWC played an important role in the allocation of funding, with:

> the capacity to recommend that a state not receive its annual payments from the Commonwealth if they were found to be lagging or non-compliant with water reform objectives. They were free to comment publicly on these issues, and did so a number of times—although the Commonwealth ultimately never withheld payments on the basis of an NWC finding. This 'naming and shaming' earned the NWC plenty of political enemies across the national landscape; but also earned them the respect of many in the wider water sector, as well as international admiration for Australia's strong and independent water reform institutions.[70]

2.85 Dr Loch and colleagues observed that the NWC was abolished on the basis that doing so would save $20 million over the forward estimates at the time, and that the objectives of the NWI had been achieved. However, as the authors noted, 'given the recent accusations and identified problems in NSW this claim seems premature at best, and political foolishness at worst'. Additionally, the $20 million in savings 'may pale in comparison' to the cost of the independent inquiries recently undertaken into water theft and compliance, and the cost of implementing compliance frameworks in Basin states.[71]

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69 Mr Lindsay Godfrey, Paroo Shire Council, *Committee Hansard*, 2 November 2017, pp. 16-17.

70 Dr Adam Loch, Dr Erin O'Donnell, Dr David Adamson and Dr Avril Horne, *Submission 12*, p. 9.

71 Dr Adam Loch, Dr Erin O'Donnell, Dr David Adamson and Dr Avril Horne, *Submission 12*, p. 10.

2.86 The Australian Conservation Foundation (ACF) expressed its dismay over the abolition of the NWC. The ACF was of the view that while the NWC did not have strong compliance powers, its abolishment had contributed to a decline in the audit and oversight of national water reform.[72]

2.87 Mr Rigney of MLDRIN called for an independent federal body to undertake annual audits of compliance processes in Basin states and as a means of doing so, Mr Rigney suggested the reinvigoration of the NWC.[73]

2.88 This view was also put forward by Ms Elizabeth Tregenza of the River Lakes and Coorong Action Group Inc, who supported the establishment of an independent compliance organisation, similar to the NWC.[74]

72 Australian Conservation Foundation, *Submission 37*, [p. 5].

73 Mr Grant Rigney and Mr Rene Woods, Murray Lower Darling Rivers Indigenous Nations, *Committee Hansard*, 2 November 2017, p. 9.

74 Ms Elizabeth Tregenza, River Lakes and Coorong Action Group Inc., *Committee Hansard*, 2 November 2017, p. 22.