

LEGAL DUTIES FOR ENVIRONMENTAL WATER PROVISIONS IN WESTERN AUSTRALIA

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Western Australia has not delivered on its promises to make environmental water provisions (EWPs), including to restore environmentally sustainable flows of water to waterways and wetlands. WA has prioritised water supply for consumptive use under pressure from a growing population. Urban areas draw a significant amount of water from outside urban regions to the detriment of the natural environment. This article reviews the implementation of EWPs under Western Australian law by testing the operation of the current legislation on a case study of the catchment of a Ramsar listed wetland in south-west Western Australia and suggests solutions to the legal deficiencies. We find that National and State policies on EWPs are not being complied with, including statutory recognition of legally secure EWPs and the return to environmentally sustainable levels of extraction. WA has not implemented transparent water allocation planning; instead, it has discarded early environmental impact assessment approval conditions in favour of confidential processes of water licensing to administer small summer releases. We argue that restoration aspirations are more likely to be achieved if there are clear justiciable duties on the Minister for Water to provide EWPs and propose how this may be done.

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I INTRODUCTION

Western Australia ('WA') has not delivered on its environmental water promises. More than twenty years ago, the WA Government committed to a national policy of formally determining allocations of water 'for the environment as a legitimate user of water'.¹ In 2006, the WA Government agreed to the redefined national water policy objectives in respect of formal allocations of water to the environment; namely, to:

- make statutory provision for environmental and other public benefits, and
- return all over-allocated and overused systems to environmentally sustainable levels of extraction.²

WA has not implemented either of these objectives, not even for high conservation value wetlands that are listed under the Convention on Wetlands of International Importance ('Ramsar Convention').³ WA has prioritised water supply for consumptive use under pressure from a growing (mostly urban) population.⁴ Urban areas draw a significant amount of water from outside urban regions to the detriment of the natural environment. With the impacts of climate change now being felt, especially in a drying south-west of the State,⁵ we argue that WA's water resources legislation needs to enact enforceable legal duties to restore all systems to environmentally sustainable levels of extraction. Fulfilling these duties could drive water use efficiency and innovation in supply for consumptive use.

From a broad practical perspective, how has this situation arisen and what response is required? In Australia, waterways and wetlands are mostly public resources, their beds and banks and flow of water vested in the Crown in the rights of the States. Public authorities under broad legislative powers regulate private rights in respect of water resources. The flow regimes of many of these waterways and wetlands have been altered for human use, which is 'the most pervasive and

¹ Council of Australian Governments ('CoAG'), 'Communiqué' (Hobart, 25 February 1994), Attachment A – Water resource policy [4(b)] <http://webarchive.nla.gov.au/gov/20130411135249/http://archive.coag.gov.au/coag_meeting_outcomes/1994-02-25/docs/attachment_a.cfm>.

² CoAG, 'Intergovernmental Agreement on a National Water Initiative' (2004) [23(iii)-(iv)] <<http://www.nwc.gov.au/nwi>> ('NWI'). See also, Alex Gardner, Richard Bartlett and Janice Gray, *Water Resources Law* (LexisNexis Butterworths, 2009) [16.20]-[16.22].

³ *Convention on Wetlands of International Importance especially as Waterfowl Habitat*, opened for signature 2 February 1971, 996 UNTS 245 (entered into force 21 December 1975); Australian Treaty Series No. 48 ('Ramsar Convention').

⁴ Department of Water, 'Water for Growth: Urban – Western Australia's water supply and demand outlook to 2050' (Government of Western Australia, June 2016) 9, 25 ('*Western Australia's water supply and demand outlook to 2050*').

⁵ Michael Bennett and Alex Gardner, 'Regulating Groundwater in a Drying Climate: Lessons from South West Australia' (2015) 33 *Journal of Energy and Natural Resources Law* 293.

deleterious' factor in waterway and wetland degradation.⁶ Such degradation is exacerbated by climate change through increased drying of water resources, but it 'will not be as severe as the impacts of river regulation'.⁷ The flow regimes require significant ecological restoration,⁸ but what does that mean for the natural and legal regimes?

There has been extensive discussion of what 'restoration' means in terms of identifying the benchmark level of degradation and the goal or level of restoration. The two main approaches to environmental water provisions are based on either hydrology or ecology.⁹ The hydrology-driven approach attempts to describe and reinstate the water regime prior to development, i.e. based on historic data.¹⁰ The ecology-driven approach, on the other hand, bases the allocations on the estimated environmental water requirements ('EWRs') of species, communities and ecosystem processes (herein referred to as 'rehabilitation').¹¹ A key advantage of this rehabilitation approach is that it is 'easily defensible in trade-off situations', such as those involving increasing demand under climate change, as it directly

⁶ Richard T. Kingsford, 'Conservation management of rivers and wetlands under climate change – a synthesis' (2011) 62 *Marine and Freshwater Research* 217, 221.

⁷ Ibid 218, citing Lester et al., 'Linking water-resource models to ecosystem-response models to guide water-resource planning – an example from the Murray-Darling Basin, Australia' (2011) 62 *Marine and Freshwater Research* 279.

⁸ See, eg, Samantha Capon et al., 'National Climate Change Adaptation Research Plan: Freshwater Ecosystems and Biodiversity – Consultation Draft for review' (National Climate Change Adaptation Research Facility (NCCARF), September 2016); Alistair Hobday et al., 'National Climate Change Adaptation Research Plan: Marine Biodiversity – Consultation Draft for review' (NCCARF, October 2016); Sarah Metcalf, Jeffrey Dambacher, Peter Rogers, Neil Loneragan, and Daniel Gaughan, 'Identifying key dynamics and ideal governance structures for successful ecological management' (2014) 37 *Environmental Science and Policy* 34, 35, citing, W Fletcher et al, Department of Fisheries, 'State of the Fisheries and Aquatic Resources Report 2010/11' (Government of Western Australia, 2011); State of the Environment 2011 Committee, 'Australia State of the Environment 2011' (Independent report to the Australian Government Minister for Sustainability, Environment, Water, Population and Communities, 2011) 195 (Figure 4.1), 205, 214, 222, 251; Kingsford, above n 6; Department of Water, 'Streamflow trends in south-west Western Australia' (Report no. HY32, Surface water hydrology series, Government of Western Australia, 2009) 18 (citations omitted) ('*Streamflow trends in south-west Western Australia*'); S.A. Halse, M.D. Scanton and J.S. Cocking, 'Australia-Wide Assessment of River Health' (Report Number 7, Department of Conservation and Land Management, Government of Western Australia, 2002) 20, 35, 43; State NRM Office 2007 (Unpublished Report prepared for NRM Senior Officers Group Government of Western Australia, January 2007) 28, 73; P. Kelsey et al., 'Hydrological and nutrient modelling of the Peel-Harvey catchment' (Report no. WST 33, Department of Water, Government of Western Australia, February 2011) 122; Peel-Harvey Catchment Council ('PHCC'), 'Adapting to climate change in the Peel region' (Peel Climate Change Adaptation Project Report, June 2010, Revised May 2012) 26-8.

⁹ Jenny Davis et al., 'Environmental Water Requirements to Maintain Wetlands of National and International Importance' (Environmental Flows Initiative Technical Report No. 1, Commonwealth of Australia, 2001) 24-25.

¹⁰ Ibid 24.

¹¹ Ibid 25. We know of a recent critique of the concept of EWRs and its application in Murray-Darling Basin planning: Samantha Capon and Timothy Capon, 'An Impossible Prescription: Why Science Cannot Determine Environmental Water Requirements for a Healthy Murray-Darling Basin', (2017) 3(3) *Water Economics and Policy* 1650037, DOI: 10.1142/S2382624X16500375. It is beyond the scope of this article to pursue that critique.

addresses the current ecological values and issues facing the water resource.¹² WA, in particular, faces this challenge of balancing increasing water demand with EWRs under a drying climate and has so far adhered to the ecology-driven approach. Roberts *et al.* consider it possible to restore some ‘smaller, discrete’ wetlands to their pre-development water regimes, whereas they consider such restoration impossible for large wetland systems downstream of consumptive demand for water in Australia.¹³ In these cases, they argue that rehabilitation rather than restoration is a more realistic goal.¹⁴ There are physical (hydrological) constraints to achieving restoration or rehabilitation in some areas in the form of declining water flow due to climate change but, in many cases, what is achievable or desirable depends on social and political resolution.¹⁵ For this reason, we adopt the term ‘ecological restoration’ to mean the environmental water provisions (‘EWRs’) that are determined by governmental resolution, whether that be for hydrological restoration or ecological rehabilitation (as described above).

EWRs may be defined as ‘the water regimes that are *provided* as a result of the water allocation decision-making process taking into account ecological, social and economic impacts’.¹⁶ In the surface water context, EWRs refer to the ‘specific volumetric allocations and/or releases from storages’.¹⁷ According to national water policy, the goal or purpose of EWRs is both to ‘sustain and where necessary *restore* ecological processes and biodiversity of water dependent ecosystems’ (emphasis added).¹⁸ The national policy also declares, in addition to the objectives identified above, the principle that EWRs should have ‘statutory recognition’ with the ‘same degree of security as water access entitlements for consumptive use and be fully accounted for’.¹⁹ According to Kingsford, ‘[I]legal recognition of environmental flows remains an important first step’ for the recovery of flow regimes to sustain downstream ecosystems in highly regulated river basins.²⁰

¹² Ibid 57-58.

¹³ Ibid 25; J. Roberts *et al.*, ‘Estimating the water requirements for plants of floodplain wetlands: A guide’ (Report No. 99/60, CSIRO Land and Water, 2000) 7. See also, Kingsford, above n 6, 218.

¹⁴ Roberts *et al.*, above n 13, 7.

¹⁵ Ibid.

¹⁶ Water and Rivers Commission, ‘Environmental Water Provisions Policy for Western Australia’ (Statewide Policy No. 5, 2000) 2 (‘*Environmental Water Provisions Policy for Western Australia*’).

¹⁷ Agriculture and Resource Management Council of Australia and New Zealand and the Australian and New Zealand Environment and Conservation Council, ‘National Principles for the Provision of Water For Ecosystems’ (Occasional Paper SWR No. 3, July 1996) 4
<<http://www.scew.gov.au/system/files/resources/378b7018-8f2a-8174-3928-2056b44bf9b0/files/anzec-pr-national-principles-provision-water-ecosystems-199607.pdf>> (‘*National Principles for the Provision of Water For Ecosystems*’).

¹⁸ Alex Gardner, ‘Environmental Water Allocations in Australia’ (2006) 23 *Environmental and Planning Law Journal* 208, 210, quoting the *National Principles for the Provision of Water For Ecosystems*, above n 17, iii.

¹⁹ CoAG, NWI, above n 2, [35(i)]

²⁰ Kingsford, above n 6, 218.

WA law does not comply with national water policy. A review of this law in 2006²¹ found that there was the lack of ‘a general statutory priority for the determination and implementation of [EWPs] over the allocation and abstraction of water for consumptive uses’.²² This is still true in 2016. Furthermore, there is a history of breaching such EWPs as are provided in order to supply water for human consumptive use.²³ Therefore, we argue that the enactment of binding *public legal duties* on relevant public and private parties to make, deliver and report on EWPs will create better prospects of achieving ecological restoration of waterways and wetlands.

Public legal duties create political expectations that can influence executive government action. If those legal duties are effectively expressed, then they will create justiciable obligations that can be enforced by proceedings for judicial review in a court of law. Judicial review typically offers one or more remedies as the outcome of finding that a public body or government officer has not acted according to law: (i) an order that quashes a decision that has been made;²⁴ (ii) an order that prohibits a decision being made or acted on; or (iii) an order that mandates government action. Our argument here addresses the third and most delicate of these remedies – orders that mandate executive government action. Such orders may take either of two forms:

- (a) An order that a decision about some application or function be made without the court saying what the outcome of that decision should be; and
- (b) An order that directs not only that a decision be made or function be performed but says also what should be the outcome of the decision or function.

An order in the second form is more contentious because courts are wary of directing public authorities about how they should perform their function lest they enter the political fray. A court will only give such an order if the legislation is very clear that a function should not only be performed, but that it should be performed in a particular manner to result in a specified outcome.²⁵ To use a simple example, an applicant for a driver’s licence generally has a right to the issue of the licence if the standard criteria are satisfied and the applicant suffers no disqualifying attributes.

²¹ Gardner (2006), above n 18, 208.

²² Ibid 235.

²³ Gardner (2006), above n 18, 225-9, 231-3. See also, Michael Bennett and Alex Gardner, ‘How do environmental conservation laws interact with environmental aspects of water laws?’ (2014) 31 *Environmental and Planning Law Journal* 3, 7-9.

²⁴ See, eg, *Coastal Waters Alliance of Western Australia (Inc) v Environmental Protection Authority* [1996] LGERA 136 and *Save Beeliar Wetlands (Inc) v Minister for Environment* [2015] WASC 482.

²⁵ See, eg, *Bridgetown/Greenbushes Friends of the Forest v Conservation and Land Management* (1997) 18 WAR 126.

As the WA Government is preparing water resources law reform,²⁶ it is timely to contemplate how to ensure EWPs for our waterways and wetlands in a way that meets national water policy and fulfils our Ramsar Convention obligations to maintain the ecological character of listed wetlands and restore the adverse effects of human activities.²⁷ It is also important to consider how the Commonwealth Government can exercise its authority to fulfil the Convention obligations, which we do in a separate article.²⁸

In this article, we review the implementation of EWPs under WA law by testing the operation of the current legislation on a case study in south-west WA and suggesting solutions to the legal deficiencies. Our case study is an analysis of the failure to provide EWPs to the Ramsar-listed Peel-Harvey Estuary and related waterways, in particular the dammed North Dandalup and Harvey Rivers.²⁹ As the fastest growing region in WA,³⁰ the Peel Region faces the distinct challenges of increasing water scarcity induced by the drying climate and an increasing demand for water supply.³¹ In the 1990s, surface water stored in south-west dams constituted at least 40% of urban water supply throughout the state.³² In contrast, surface water currently constitutes merely 7% of the state's water supply (September 2016).³³ This reflects the lower inflows rather than a reduction in diversions as such. Although we acknowledge the link between water quantity and quality management,³⁴ and the particular problems of water quality in the Peel-Harvey system,³⁵ this article can consider only the challenges for water quantity restoration.

²⁶ Department of Water, Government of Western Australia, *Water reform* <<http://water.wa.gov.au/legislation/water>>.

²⁷ Jeanette Jensen and Alex Gardner, 'Is there an international legal duty to restore wetlands by environmental water allocations?' (2017) 1 *Chinese Journal of Environmental Law* (forthcoming). These obligations include providing adequate water to sustain wetlands as functioning ecosystems, including in response to adverse effects of anthropogenic climate change.

²⁸ Jeanette Jensen and Alex Gardner, 'Protecting Ramsar Wetlands from Urban Growth' (forthcoming).

²⁹ PHCC et al., 'Peel-Yalgorup System Ramsar Site Management Plan' (Government of Western Australia, 2009) 4 ('*Peel-Yalgorup System Ramsar Site Management Plan*'). The listing is made under the *Ramsar Convention*, above n 3.

³⁰ 'Fastest Growing Region in Western Australia' on Peel Development Commission, Government of Western Australia <<http://www.peel.wa.gov.au>>.

³¹ Department of Water, 'Water for Growth: Urban – Western Australia's water supply and demand outlook to 2050' (Government of Western Australia, June 2016) 9, 25 ('*Western Australia's water supply and demand outlook to 2050*').

³² *Ibid* 11.

³³ 'Sources' on Water Corporation, *Residential, Water supply & services* <<https://www.watercorporation.com.au/water-supply-and-services/rainfall-and-dams/sources>>. See also *Western Australia's water supply and demand outlook to 2050*, above n 31, 22 (Figure 9).

³⁴ Alex Gardner, 'Water Reform and the Federal System' in P Kildea et al. (eds), *Tomorrow's Federation: Reforming the Australian Government* (Federation Press, 2012) 269.

³⁵ Kelsey et al., above n 8.

We present our argument for State legal duties to make, deliver and report on EWPs by:

1. giving an overview of the current WA regulatory framework for EWPs to show the lack of legal duties to make EWPs;
2. describing and analysing the case study, asking whether EWPs were actually made and delivered in the absence of such duties; and
3. reflecting on the key points from the case study and recommending legislative reforms to create enforceable legal duties to make EWPs.

We conclude with comments that link this discussion of EWP duties in WA state law and the role of the Commonwealth in giving effect to the Ramsar Convention obligations in WA.

II THE CURRENT REGULATORY FRAMEWORK FOR EWPs IN WA

Water resources management is traditionally the responsibility of states due to their plenary powers of natural resources management.³⁶ The Commonwealth lacks the legislative powers to regulate water resources directly,³⁷ but may directly and indirectly affect water resources management by virtue of several of its legislative powers. The most relevant power for present purposes is that concerning external affairs, which authorises the Commonwealth Government to make international treaties and the Commonwealth Parliament to legislate to implement them.³⁸ The external affairs power supports a range of provisions in the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) ('EPBC Act'),³⁹ including the provisions that implement the Ramsar Convention.⁴⁰ As explored in another article, those provisions include neither a duty to restore or rehabilitate Ramsar-listed wetlands nor even a duty to make EWPs for them,⁴¹ even though such provisions are contained within the *Water Act 2007* (Cth) for the Murray-Darling Basin.⁴²

In WA, it is only national and state *policies* that advocate ecological restoration in the form of EWPs described above. We reiterate, the national policy goals for environmental water are to:

- make statutory provision for EWPs (for environmental and other public

³⁶ Gardner et al. (2009), above n 2, 81; Kate Stoeckel, Romany Webb, Luke Woodward, and Amy Hankinson, *Australian Water Law* (Lawbook, 2012) 5.

³⁷ See, eg, Gardner et al. (2009), above n 2, 81.

³⁸ Stoeckel et al., above n 36, 5; Gardner et al. (2009), above n 2, 81.

³⁹ Gardner et al. (2009), above n 2, 95.

⁴⁰ *Environment Protection and Biodiversity Conservation Act 1999* (Cth) ss 3(2)(f), 11, 16(1)-(2), 333(2), and pt 15 div 2.

⁴¹ See further Jeanette Jensen and Alex Gardner, 'Protecting Ramsar Wetlands from Urban Growth' (forthcoming).

⁴² Gardner et al. (2009), above n 2, Chapter 14.

- benefits),
- give EWP's the same legal security as water access entitlements, and
 - return all over-allocated and overused systems to environmentally sustainable levels of extraction.⁴³

The discussion that follows outlines the State policy and the State statutory framework for giving effect to that policy.

A *The State Policy Framework*

The basic premise of the policy principles for EWP's is that river regulation for consumptive use alters the flow regime of rivers and streams 'with the inevitable result that instream and wetland processes have been adversely affected'.⁴⁴ The policy goal is to limit those adverse effects. The current WA policy for EWP's was made in 2000 ('State Policy') by the Water and Rivers Commission ('WRC') and is now adopted by the successor agency, the Department of Water ('DoW').⁴⁵ The State Policy says, in accordance with the 1996 national policy,⁴⁶ that the 'overall goal in providing water for the environment is to sustain and where necessary restore processes and biodiversity of water dependent ecosystems'.⁴⁷ While that goal remains, the State Policy has not been updated to accord with the broader and stronger national policy principles for EWP's expressed in the 2004 national water policy.⁴⁸ For example, the State Policy does not reiterate the national principles for statutory recognition of EWAs with the same legal security as consumptive use entitlements.⁴⁹ Important State policy principles include:

1. EWRs constitute the basis of EWP's and so EWRs should be determined on the basis of best available scientific information;⁵⁰
2. Where such information is limited, interim EWRs and EWP's should be estimated adopting the 'precautionary principle',⁵¹ and then reviewed when monitoring and further research information becomes available;⁵²
3. 'Only water that is in excess of EWP's (by definition) may become available for consumptive use' and, thus, in 'some areas of high conservation value, it might be determined that all water should be allocated to ecological

⁴³ CoAG, NWI, above n 2, [23(iii)-(iv)] and [35(i)]. The propositions of [35(ii) and (iii)] are not addressed here.

⁴⁴ *National Principles for the Provision of Water For Ecosystems*, above n 17, 13 (Principle 1).

⁴⁵ The *Water Resources Legislation Amendment Act 2007* (WA) abolished the WRC and established the Department of Water instead, see ss 204-7.

⁴⁶ *National Principles for the Provision of Water For Ecosystems*, above n 17.

⁴⁷ *Environmental Water Provisions Policy for Western Australia*, above n 16, 3.

⁴⁸ CoAG, NWI, above n 2, especially [35], [41]-[44]. See also, Gardner (2006), above n 18, 212-214.

⁴⁹ *Environmental Water Provisions Policy for Western Australia*, above n 16.

⁵⁰ *Ibid* 4.

⁵¹ *Ibid* 3-4.

⁵² *Ibid* 8.

values, such as is proposed for the Shannon River’;⁵³

4. EWP’s may ‘be less than EWR’s where some ecological impact is accepted, provided key ecological values are protected’;⁵⁴
5. Social water requirements are subordinate to environmental requirements and will only form part of EWP’s, ‘where they do not unacceptably impact on significant ecological values’;⁵⁵
6. The allocation planning and licensing processes will allow for ‘regular review of allocations and EWP’s to consider the implications of improved knowledge of hydrology, ecology, climate variation and community values for water management issues’;⁵⁶
7. The DoW ‘will require effective management and monitoring to ensure EWP’s are being met and that environmental values are being protected’;⁵⁷ and
8. Finally, transparency is fundamental to the DoW’s approach to providing water for the environment.⁵⁸

The State Policy supplements a statutory planning and licensing process for making EWP’s, to which we now turn.

B Overview of State law for EWP’s

The Minister for Water and the DoW have assumed the general responsibilities of the former Commission, which include the functions or duties to conserve, protect, manage, and assess water resources.⁵⁹ While ‘water resources’ are defined,⁶⁰ none of the functional terms are defined in the *Water Agencies (Powers) Act 1984* (WA) (*‘WAP Act’*), which means that they have the ordinary meaning given to them. The ordinary definition of ‘conserve’ is to ‘protect (something of environmental or cultural importance) from harm or destruction’ and ‘prevent the wasteful overuse of (a resource)’; and ‘protect’ is to ‘keep safe from harm or injury’.⁶¹ It may be argued that restoration, or at least rehabilitation, is implicit in the term ‘conserve’ if degradation has occurred after imposing this duty, but it may also be argued that it is not. In performing these functions or duties, the Minister

⁵³ Ibid.

⁵⁴ Ibid 7.

⁵⁵ Ibid 4.

⁵⁶ Ibid 5.

⁵⁷ Ibid.

⁵⁸ Ibid.

⁵⁹ *Water Agencies (Powers) Act 1984* (WA) ss 3(1) (definition of ‘functions’), 9, 11; ‘Managing our waterways’ on Department of Water, Government of Western Australia, *Water topics, Waterways* <<http://www.water.wa.gov.au/water-topics/waterways/managing-our-waterways2>>.

⁶⁰ *Water Agencies (Powers) Act 1984* (WA) s 3(1) ‘water resources’ are defined to include, inter alia, waterways, wetlands, estuaries, and inlets as well as drainage, surface and surplus water.

⁶¹ Angus Stevenson (ed), *Oxford Dictionary of English* (Oxford University Press, 3rd ed, 2010) (definitions of ‘conserve’ and ‘protect’).

has the ‘power to do all things necessary or convenient to be done for or in connection with the performance of the Minister’s functions’.⁶² These functions and powers create no clear duties to restore or rehabilitate waterways and wetlands.

In any case, those functions and powers are additional to any functions and powers that the Minister has under other ‘relevant Acts’, which includes the *Rights in Water and Irrigation Act 1914* (WA) (*‘RiWI Act’*).⁶³ The *RiWI Act* addresses in more detail the statutory functions and powers with regard to regulating the flow of water, including restoration or rehabilitation of waterways and wetlands affected by water developments. The *Environmental Protection Act 1986* (WA) (*‘EP Act’*) is also important because it provides for environmental impact assessment (*‘EIA’*) of proposals that may have a significant impact on the environment, including proposals that may significantly affect the natural flow of water. These Acts are the focus of our analysis below. The analysis will not include the newly enacted *Biodiversity Conservation Act 2016* (WA) or the Peel-Harvey Catchment Management Bill 2014 (WA) as, disappointingly, neither of them mention environmental water or flow or anything directly about water quantity management.

In 2006, the regulatory framework for EWPs was assessed to ascertain whether there was a duty to make EWPs – in any locations, at any level, or at all, and in priority to the determination of allocations for consumptive uses.⁶⁴ That analysis focused on the *RiWI Act* and the *EP Act*,⁶⁵ as they were the only two acts that could directly regulate the flow of water in waterways and wetlands.⁶⁶ With regard to EWPs, these acts have not changed in the passing decade, so the outcome of the 2006 analysis is summarised briefly.

Focusing first on the *RiWI Act*, the answer is ‘no’. How can that be when, according to the State Policy, the *RiWI Act* ‘specifically provides for water for the environment’ through its objects and mechanisms?⁶⁷ The objects of the Act include ‘to provide for management of water resources, and in particular -

- (i) For their sustainable use and development to meet the needs of current and future users; and
- (ii) For the protection of their ecosystems and the environment in which water resources are situated, including by the regulation of activities detrimental

⁶² *Water Agencies (Powers) Act 1984* (WA) s 9(2).

⁶³ *Water Agencies (Powers) Act 1984* (WA) s 5(1)(c).

⁶⁴ Gardner (2006), above n 18 215.

⁶⁵ Ibid 220-34. Other potentially relevant statutes include the *Waterways Conservation Act 1976* (WA), *Conservation and Land Management Act 1984* (WA), *Wildlife Conservation Act 1950* (WA), and the *Planning and Development Act 2005* (WA), but none of these Acts provides specifically for the flow of water in wetlands and waterways.

⁶⁶ Bennett and Gardner (2014), above n 23, discuss the operation of this legislation for Ramsar listed wetlands.

⁶⁷ *Environmental Water Provisions Policy for Western Australia*, above n 16, 1-2.

to them'.⁶⁸

The legal effect of objects depends on statutory duties giving effect to them. The Minister is under a duty to 'seek to ensure' that the objects are achieved along with other persons 'to the extent that they have relevant functions under this Part [III]'.⁶⁹ Although the term 'seek to ensure' is stronger than the term 'have regard to', it does not constrain discretion in operative provisions to any significant extent. Those operative provisions create three key mechanisms to fulfil the objects with regard to EWPs:⁷⁰

- a. A statutory planning process requiring broad public consultation in plan development and ministerial approval before implementation of plans;
- b. The option to make protection of the environment a licence condition and to make directions for the same purpose; and
- c. The power to make local by-laws applicable to a particular water resource area with basic rules stipulating EWPs.⁷¹

The statutory planning process inserted in 2000 is the only express statutory mechanism for making EWPs. It has not been used, which is the outcome of leaving this mechanism entirely to ministerial discretion.⁷² Instead, the State has made only non-statutory plans for selected areas with variable EWPs as policy goals, which have very limited legal effect and certainly create no duty to implement the EWPs.⁷³ Regardless of the application of a non-statutory plan, the State can apply licence conditions for EWPs to major facilities like dams.⁷⁴ One could say that these licence conditions are made in fulfilment of the duty to seek to ensure that the objects are achieved, but there is no duty in the actual licensing provisions to impose such conditions. Finally, under the *RiWI Act*, the local by-laws power was proposed for use in 2006,⁷⁵ but there is no evidence that such by-laws have ever been made and we will consider this mechanism no further. The *RiWI Act* objects and mechanisms do not provide specific duties to make EWPs.

The *EP Act* procedures for EIAs provide the facility for setting EWPs on approval of plans and of proposals to construct and licence large works for the

⁶⁸ *Rights in Water and Irrigation Act 1914* (WA) s 4(1).

⁶⁹ *Rights in Water and Irrigation Act 1914* (WA) s 4(3).

⁷⁰ *Environmental Water Provisions Policy for Western Australia*, above n 16, 2.

⁷¹ *Rights in Water and Irrigation Act 1914* (WA) ss 26L – 26N; Gardner (2006), above n 18, 221.

⁷² Gardner (2006), above n 18, 221.

⁷³ 'How we develop water allocation plans' on Department of Water, Government of Western Australia, *Planning for the future, Water allocation plans* <<http://www.water.wa.gov.au/planning-for-the-future/allocation-plans/developing-water-allocation-plans>>.

⁷⁴ *Rights in Water and Irrigation Act 1914* (WA) sch 1 cll 7 and 15, app to sch items 2, 9; Gardner (2006), above n 18, 221.

⁷⁵ Gardner (2006), above n 18, 221.

taking of water by the “ministerial statement” of conditions.⁷⁶ Again, this option is entirely the creature of Government discretion and imposes no duty to make EWPs.⁷⁷ The *EP Act* also authorises the making of environmental protection policies (‘EPPs’) that have the force of law.⁷⁸ The *Environmental Protection (Peel Inlet – Harvey Estuary) Policy Approval Order 1992* was aimed at addressing serious problems of nutrient pollution causing algal blooms that degraded the estuary. Notably, there is no mention of water flow in the setting of water quality objectives, or in the, largely, general land management measures.

In summary, the *RiWI Act* and the *EP Act* create no duties to make EWPs in any place or at any level. If a duty is imposed under a water licence or EIA ministerial condition, then it may be binding in theory, but practically difficult to enforce.⁷⁹ The detailed conditions of water licences are not publicly available and legal standing to enforce licence conditions is limited.⁸⁰ Further, the Supreme Court has shown itself reluctant to enforce EIA ministerial conditions.⁸¹ A water licence and EIA ministerial condition may also require monitoring and reporting, but the imposition of any such obligations are also at the discretion of the respective ministers.⁸²

What is the record of providing EWPs over the past decade in the absence of legal duties to make and implement them? We address this question in relation to the case study. We examine the extent to which the above mechanisms of water planning and licensing, and EIA ministerial conditions, have provided EWPs to limit the North Dandalup and Harvey Dams’ impact on the downstream environment, including the Peel-Harvey Estuary. In other words, we will test how EWPs have operated without clear duties to provide them.

⁷⁶ The ministerial statement of conditions records the ‘implementation agreement or decision’ on the approval, or not, of a proposal: 45(5) of *Environmental Protection Act 1986* (WA), see *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2012* (WA) cl 16. See also, Alex Gardner, ‘Water Resources Law Reform in Western Australia – Implementing the CoAG Water Reforms’ (2002) 19 *Environmental and Planning Law Journal* 6, 20; Gardner (2006), above n 18, 221.

⁷⁷ Gardner (2006), above n 18, 221.

⁷⁸ See, eg, *Environmental Protection (Peel Inlet – Harvey Estuary) Policy Approval Order 1992* cl 2(b).

⁷⁹ Gardner (2006), above n 18, 225-29; Jeanette Jensen and Alex Gardner, *Legal Duties for Restoration of Waterways & Wetlands: A Western Australian Analysis and Case Study* (Cooperative Research Centre for Water Sensitive Cities, Perth, Australia, 2016) 33-43

<<https://watersensitivecities.org.au/content/legal-duties-for-restoration-of-waterways-and-wetlands/>>.

⁸⁰ *Rights in Water and Irrigation Act 1914* (WA) s 5E(1)(a), (2)(a); Gardner (2006), above n 18, 225-26; Jensen and Gardner (2016), above n 79, 33-43.

⁸¹ See, eg, *Bridgetown/Greenbushes Friends of the Forest v Conservation and Land Management* (1997) 18 WAR 126, 128, 141-42 (Murray J); Gardner (2006), above n 18, 227-29.

⁸² Jensen and Gardner (2016), above n 79, 45-9

III THE CASE STUDY: WERE EWPS ACTUALLY MADE AND DELIVERED?

In this case study, we introduce hydrology and ecological values of the Peel-Harvey Estuary and then ask whether EWPs were actually made for the estuarine wetlands and the waterways that flow to them. We find that the regulatory instruments made under the *EP Act* and the *RiWI Act* do provide for some ‘riparian’ and ‘social’ EWPs, but not EWPs for the ecological restoration of the waterways and wetlands. We complete the case study by asking whether the riparian and social EWP releases were actually delivered.

A Introduction to the Peel-Harvey Estuary

The Peel-Harvey Estuary (‘the Estuary’) forms part of the Peel-Yalgorup System (‘PYS’), which was included on the list of Wetlands of International Importance under the Ramsar Convention in 1990.⁸³ The PYS is listed for, inter alia:

- its ecological value in south-west WA as the ‘largest and most diverse estuarine complex’;
- being one of very few locations in the world where living thrombolites occur in inland waters; and
- its importance for more than 20,000 waterbirds, including providing a drought refuge.⁸⁴

The PYS wetlands are representative of the Swan Coastal Plain wetlands, 80% of which have been lost to clearing and infilling for agricultural and urban development purposes.⁸⁵ In 2011, wetland vegetation on the Swan Coastal Plain was being lost or degraded at a rate of more than 300 hectares per year.⁸⁶ Apart from being significant per se, the environmental qualities of wetlands are significant to the wellbeing of humans. Wetlands may play a vital role in climate change mitigation by their capacity to sequester and store carbon,⁸⁷ and coastal

⁸³ *Peel-Yalgorup System Ramsar Site Management Plan*, above n 29, 4.

⁸⁴ *Ibid* 17 (Table 4).

⁸⁵ *Ibid* 4 (citations omitted).

⁸⁶ State of the Environment 2011 Committee, above n 8, 217. See also, J. Hall, P. Kretschmer, B. Quinton, and B. Marillier, ‘Murray hydrological studies: Surface water, groundwater & environmental water – Conceptual model report’ (Water Science Technical Series report no. 16, Department of Water, Government of Western Australia, 2010), 36 regarding degradation of wetlands in the Peel-Harvey catchment.

⁸⁷ See eg, *Peatlands, climate change and wise use: Implications for the Ramsar Convention*, Ramsar Resolution XII.11, 12th meeting of the COP (1-9 June 2015); D. Russi, P. ten Brink, A. Farmer, T. Badura, D. Coates, J. Förster, R. Kumar, and N. Davidson, *The Economics of Ecosystems and Biodiversity for Water and Wetlands* (IEEP, London and Brussels; Ramsar Secretariat, 2013); S. Crooks, D. Herr, J. Tamelander, D. Laffoley, and J. Vandever, *Mitigating Climate Change through Restoration*

wetlands have the greatest potential as ‘carbon sinks’.⁸⁸ Indeed, wetlands play an important role in Australia’s national response strategy to climate change.⁸⁹ Another important feature is their capacity to improve water quality by working as biological filters of nutrients.⁹⁰ However, this capacity is finite, which emphasises the need for unpolluted freshwater inflows.⁹¹ Finally, wetlands, particularly internationally significant wetlands, are also important economic assets for tourism.⁹²

The Estuary is located approximately 80 km south of Perth and consists of the circular Peel Inlet (approximately 10 km in diameter) and the long narrow Harvey Estuary (approximately 20 km x 2-3 km), which are connected by a narrow deep channel.⁹³ Despite being a marine embayment,⁹⁴ the Estuary is a surface water-dependent wetland,⁹⁵ as the oceanic exchange on an annual basis is a net outflow.⁹⁶ The Estuary is mainly recharged through direct rainfall (15%) and surface water runoff generated elsewhere in the catchment (85%).⁹⁷ Groundwater contributes less than 0.5% of total flows to the Estuary, but the Peel-Harvey waterways have large contributions from groundwater;⁹⁸ the North Dandalup River being an exception.⁹⁹

and Management of Coastal Wetlands and Near-shore Marine Ecosystems: Challenges and Opportunities (Environment Department Paper 121, World Bank, 2011).

⁸⁸ Department of Sustainability, Environment, Water, Population and Communities and the Wetlands and Waterbirds Taskforce, ‘The Role of Wetlands in the Carbon Cycle’ (Issues Paper, Australian Government, 2012) 2-7.

⁸⁹ *Ibid* 7.

⁹⁰ Water and Rivers Commission, ‘Living Wetlands: An Introduction to Wetlands’ (Water facts 16, Government of Western Australia, 2001) 3.

⁹¹ Government of Western Australia, Environmental Protection Authority (‘EPA’), ‘Water Quality Improvement Plan for the Rivers and Estuary of the Peel-Harvey System - Phosphorus Management’ (Government of Western Australia, November 2008) 38 (‘*Peel-Harvey Water Quality Improvement Plan*’).

⁹² See, eg, similarly, Deloitte Access Economics, *Economic contribution of the Great Barrier Reef* (Great Barrier Reef Marine Park Authority, 2013); Kathryn Gillies and Tim Quinn, *Tourism Investment Monitor 2014* (Tourism Research Australia, Australian Government, Austrade, 2014).

⁹³ J. Hale and R. Butcher, ‘Ecological character description for the Peel-Yalgorup Ramsar site’ (Report to the Department of Environment and Conservation and the PHCC, 2007) 43.

⁹⁴ *Peel-Yalgorup System Ramsar Site Management Plan*, above n 29, 11 (Table 2); Angela H. Arthington, *Environmental Flows – Saving Rivers in the Third Millennium* (University of California Press, 2012) 192. See also, ‘Directory of Important Wetlands in Australia – Information sheet’ on Department of the Environment, Australian Government, *Water, Wetlands, Australian Wetlands Database* (Last updated 2005) <<http://www.environment.gov.au/cgi-bin/wetlands/report.pl>>.

⁹⁵ Hale and Butcher, above n 93, 46.

⁹⁶ *Ibid* 45 (citation omitted).

⁹⁷ Hale and Butcher, above n 93, 45-46.

⁹⁸ *Ibid* 46; Kelsey et al., above n 8, 122.

⁹⁹ Hall et al., above n 86, 32. While the majority of this River on the Coastal Plain (downstream of the North Dandalup Dam) does receive groundwater discharges, they are not large, see Aquatic Research Laboratory, ‘Stream Fauna Studies – North Dandalup, Canning Reservoir, Lower Canning River, and Stinton Creek Catchments’ (Appendices to Reports ARL 009, 010, 011 and 012, Department of Zoology, The University of Western Australia, 1988) 51 (Figure 1) (‘*1988 Stream Fauna Studies*’); EPA, ‘Next Major Water Supply Source for Perth (post 1992) – Water Authority of Western Australia – Report and Recommendations of the Environmental Protection Authority’ (Bulletin 343, August 1988) app 4, 9 (‘*Next Major Water Supply Source for Perth (post 1992)*’).

The three major rivers that recharge the Estuary are the Murray, Serpentine, and Harvey, all with their source in the Darling Range ('the hills'), which are supplemented by seven rivers or main drain systems.¹⁰⁰ The Murray River is the biggest and most significant inflowing river, which discharges into the Peel Inlet.¹⁰¹ It has been estimated to contribute twice the flow of the Serpentine.¹⁰² The Dandalup River, which begins at the confluence of the North and South Dandalup Rivers, feeds the Murray shortly before it reaches the Inlet.¹⁰³ The Harvey River discharges into the Harvey Estuary and was estimated in 2007 to contribute approximately one third of total river inflows.¹⁰⁴ The Harvey, Serpentine, and the North and South Dandalup Rivers all contain major dams.¹⁰⁵ In fact, there are 15 dams in the Peel-Harvey catchment.¹⁰⁶ The case study focuses on the North Dandalup Dam to test the operation of the current regulatory framework, as it is the newest dam serving Perth¹⁰⁷ and because its condition and management have been the subject of recent public concern.¹⁰⁸ We also consider aspects of the operation of Harvey Dam, which supplies water for agricultural irrigation.¹⁰⁹

Modification of water flows by dams and weirs is a general threat to estuaries and wetlands.¹¹⁰ More specifically, large water-supply dams, farm dams, flow diversion, and groundwater pumping, among others, alter the amount, quality and timing of freshwater inflows to estuaries and wetlands.¹¹¹ Such modifications 'will have profound effects on estuarine conditions', including, inter alia, potentially causing saline water to intrude farther upstream, and/or 'alter the accessibility and

¹⁰⁰ The seven drains are associated with Logue, Bancell, Samson, Clarke, Weekes, Yalup and Drakes brooks. See, generally, *Peel-Harvey Water Quality Improvement Plan*, above n 91, 1; Keith Bradby, *Peel-Harvey – The Decline and Rescue of an Ecosystem* (Greening the Catchment Taskforce, 1997) 9; 'Directory of Important Wetlands in Australia – Information sheet' on Department of the Environment, Australian Government, *Water, Wetlands, Australian Wetlands Database* (Last updated 2005) <<http://www.environment.gov.au/cgi-bin/wetlands/report.pl>>; Peter M. Davies, Stuart E. Bunn, Angela Arthington, & S. Creagh, 'Environmental Water Requirements for Lowland River Systems on the Swan Coastal Plain' (Water and Rivers Commission, 1998) 83.

¹⁰¹ Hale and Butcher, above n 93, 46.

¹⁰² *Ibid.*

¹⁰³ *Ibid.* 46; Bradby, above n 100, 9.

¹⁰⁴ Hale and Butcher, above n 93, 46.

¹⁰⁵ *Ibid.*

¹⁰⁶ Kelsey et al, above n 8, 19.

¹⁰⁷ 'North Dandalup Dam' on Water Corporation, *Residential, Water supply & services* <<http://www.watercorporation.com.au/water-supply-and-services/visiting-our-dams/north-dandalup-dam>>.

¹⁰⁸ Jessica Strutt, 'WA Water Department accused of "environmental vandalism" over North Dandalup river flows', *ABC News* (online), 17 June 2015 <<http://www.abc.net.au/news/2015-06-17/water-department-accused-of-environmental-vandalism/6554578>>.

¹⁰⁹ 'Harvey Dam' on Water Corporation, *Residential, Water supply & services*, <<https://www.watercorporation.com.au/water-supply/our-water-sources/dams/visiting-our-dams/harvey-dam>>; <<http://www.harveywater.com.au/default.asp>>.

¹¹⁰ Arthington, above n 94, 193; *The Report of the World Commission on Dams (WCD) and its relevance to the Ramsar Convention*, Ramsar Resolution VIII.2, 8th Meeting of the COP (18-26 November 2002) para 5.

¹¹¹ Arthington, above n 94, 195.

availability of important nursery habitats ... thereby influencing recruitment and subsequent abundance of estuarine species'.¹¹² Indeed, '[t]here is generally a close connection between water quantity and the spatial extent of wetland habitat'. More particularly, it is essential to understand the quantity of water, timing, duration and frequency of inundation of a wetland's water regime¹¹³ in order to define an adequate environmental flow regime.¹¹⁴

The reduction in flows brought about by the dams in the Peel-Harvey catchment is bound to have a continuing effect on the Peel-Harvey Estuary. The authors have, however, not been able to obtain any direct scientific information on the impact of reduced flows to the Estuary. The reason for this may be only the lack of publicly available baseline data, including of EWRs, and monitoring data for the Estuary.¹¹⁵ On the other hand, the impact of climate change clearly illustrates a dwindling flow scenario. The south-west of WA experienced the lowest rainfall on record since at least 1900 during the period 1 April 1997 to 31 March 2010.¹¹⁶ There was then a record drought in 2010.¹¹⁷ Rainfall in the Peel-Harvey catchment has declined by 15% since 1975 and has predicted a 20-30% decline by 2030.¹¹⁸ Studies have shown that 'for a given change in rainfall, there is generally a threefold change in streamflow'.¹¹⁹ Indeed, it was estimated in 2010 that mean annual streamflow will have decreased by 12-63% compared to 1990 in south-west WA.¹²⁰ Run-off in the hills catchments may already have declined by as much as 64% since 1975 and

¹¹² Ibid 196 (citations omitted).

¹¹³ Davis et al., above n 9, 24.

¹¹⁴ Arthington, above n 94, 197 (citations omitted).

¹¹⁵ See below, Section 2.2.1, 18-19; *Peel-Yalgorup System Ramsar Site Management Plan*, above n 29, 24-26 (Tables 8 and 9), 29.

¹¹⁶ State of the Environment 2011 Committee, above n 8, 222, 79.

¹¹⁷ 'Recent rainfall, drought and southern Australia's long-term rainfall decline' on Bureau of Meteorology, Australian Government, *Climate, Recent climate, Climate updates* (April 2015) <<http://www.bom.gov.au/climate/updates/articles/a010-southern-rainfall-decline.shtml>>; Climate Commission, *The Critical Decade: Western Australia climate change impacts* (August 2011) 3-4.

¹¹⁸ Peter Hick, 'Understanding, quantifying and demonstrating the likely local effects of climate change and variability in the Peel-Harvey Catchment' (Climate Change Report No. L2.G4, South West Catchments Council and Peel-Harvey Catchment Council, Mandurah, Western Australia, 2006) 19. See also, 'Thirty-six-monthly rainfall deciles for Western Australia' on Bureau of Meteorology, Australian Government, *Climate, Climate Maps, Rainfall Latest* <<http://www.bom.gov.au/jsp/awap/rain/index.jsp?colour=colour&time=latest&step=0&map=decile&period=36month&area=wa>>.

¹¹⁹ *Streamflow trends in south-west Western Australia*, above n 8, 6; Commonwealth Scientific and Industrial Research Organisation (CSIRO), 'Surface water yields in south-west Western Australia' (Report to the Australian Government, 2009) iv.

¹²⁰ Department of Water, 'The effects of climate change on streamflow in south-west Western Australia' (Report no. HY34, Surface water hydrology series, Government of Western Australia, 2010) vii (citations omitted). See also, State of the Environment 2011 Committee, above n 8, 251; 'Climate change impacts in Western Australia' on Department of the Environment and Energy, Australian Government, *Topics, Climate change, Climate science, Climate change impacts* <<https://www.environment.gov.au/climate-change/climate-science/impacts/wa>>.

some estimates indicate that it could cease altogether.¹²¹ According to Harvey Water, the operator of Harvey Dam, some of the local brooks that used to flow throughout the year now dry up in December and January; other local brooks, including the Harvey River in 2006, 2010 and 2015, only retain some summer flows because of releases from the dams.¹²² In 2011, a hydrological modelling of the Peel-Harvey catchment found that ‘stream restoration needs to be pursued’.¹²³

As noted by the Hon Justice Brian Preston: ‘The existence of the current baseline pressures that ecosystems, habitats and species face is evidence that the existing laws are inadequate’.¹²⁴ For this reason, ‘identification and reform of the limitations in the existing laws are needed in order to reduce the baseline pressures and prevent, control and mitigate new pressures’.¹²⁵

B *Were EWPs actually made?*

The construction of the North Dandalup Dam was given environmental approval in 1990¹²⁶ and completed in 1994. The Stirling-Harvey redevelopment scheme was approved in 1999 and saw the existing Harvey Weir upgraded to the (New) Harvey Dam by 2002.¹²⁷ At the time of the respective environmental approvals, public water authorities’ access to water resources was regulated by the water services legislation.¹²⁸ The metropolitan water services legislation provided that the then Water Authority:

[M]ay divert, intercept, and store *all* water coming from the streams, watercourses, and other sources within the boundaries of any such reserve or

¹²¹ Hick, above n 118, 19. See also, Department of Water, ‘Annual Report 2015’ (Government of Western Australia, September 2015) 24; Climate Commission, above n 117, 2-4; ‘Climate change impacts in Western Australia’ on Department of the Environment and Energy, Australian Government, *Topics, Climate change, Climate science, Climate change impacts* <<https://www.environment.gov.au/climate-change/climate-science/impacts/wa>>.

¹²² Email from Stephen Cook, Harvey Water to Jeanette Jensen and Alex Gardner, 25 July 2016. For example, Bancell brook now dries in summer, while Drakes and Logue brooks retain a flow from dam releases.

¹²³ Kelsey et al., above n 8, 122.

¹²⁴ Hon Justice Brian J. Preston, ‘Adapting to the impacts of climate change: The limits and opportunities of law in conserving biodiversity’ (2013) 30 *Environmental and Planning Law Journal* 375, 375.

¹²⁵ *Ibid* 376.

¹²⁶ Minister for the Environment, ‘Next major water supply source for Perth (Post 1992) – Stage 1’ (Ministerial Statement No 111, 3 October 1990) (*Ministerial Statement for the North Dandalup Dam*).

¹²⁷ Minister for the Environment, ‘Stirling-Harvey Redevelopment Scheme’ (Ministerial Statement No. 525, 29 October 1999) sch 2 (*Ministerial Statement for the Stirling-Harvey Redevelopment Scheme*); Gardner (2006), above n 18, 227.

¹²⁸ *Metropolitan Water Supply, Sewerage and Drainage Act 1909* (WA) (*MWSSD Act*) and the *Country Areas Water Supply Act 1947* (WA) (*CAWS Act*). The North Dandalup Pipehead Dam Catchment Area was proclaimed under the *MWSSD Act* in 1982, Department of Environment, ‘North Dandalup Pipehead Dam Catchment Area Drinking Water Source Protection Plan’ (Water Resource Protection Series Report No. WRP 54, Government of Western Australia, 2005) 1; *Next Major Water Supply Source for Perth (post 1992)*, above n 99, app 4, 6. See s 11 of the Act.

catchment area, and alter the course of any stream or watercourse, and may take any water found on or under such land (emphasis added).¹²⁹

There were then no statutory qualifications on this power of Water Authority to take all the water of a catchment, not even for the protection of riparian rights of landholders downstream of the dam. That changed in 2001; amendments to the *RiWI Act* introduced the requirement for the Water Corporation (the successor to the Water Authority) to obtain a water licence to take water and operate the dam in accordance with the requirements of the licence.¹³⁰ This means that, chronologically, the *EP Act* EIA provisions were the only means of assessing and determining EWPs when the North Dandalup and Harvey Dams were approved. The implementation of those EWPs seems to have been taken over by the DoW after the introduction of the *RiWI Act* licensing provisions.

1 *The EP Act EIA Regime*

EWPs were not set or required upon ministerial approval of the North Dandalup Dam. This was so even though the environment was recognised as a legitimate user of the water,¹³¹ and research by the Aquatic Research Laboratory (ARL) had recommended consideration of the adoption of a flow release regime.¹³² Nor did the ministerial statement of approval mention the PYS, although it was Ramsar listed approximately four months prior to approval.¹³³ Instead, the ministerial statement imposes on the proponent two basic legal duties relevant to environmental water flows:

1. To adhere to the proposal for the North Dandalup River as assessed by the EPA and *fulfil the commitments made in the Environmental Review and Management Programme ('ERMP')*, the most relevant here being commitments 7 & 8,¹³⁴ and
2. Prior to construction, to *prepare and implement an Environmental Management Programme*, also known as an Environmental Management Plan (EMP) *'to the satisfaction of the Minister for the Environment on*

¹²⁹ *MWSSD Act* s 14 and *CAWS Act* s 11. Compared to the common law regime, the water supply legislation did not have regard for environmental sustainability and natural flow, see, eg, Gardner et al. (2009), above n 2, 201.

¹³⁰ *MWSSD Act* s 14 and *CAWS Act* s 11 were made subject to s 5C of the *RiWI Act* by inserting the following subsection: 'A licensee shall not exercise the powers conferred by subsection (1) in relation to water to which section 5C of the *Rights in Water and Irrigation Act 1914* applies, except under a licence or right granted or conferred under Part III of that Act' (s 14(2)).

¹³¹ *Next Major Water Supply Source for Perth (post 1992)*, above n 99, app 4, 1.

¹³² Aquatic Research Laboratory, 'Stream Fauna Studies – North Dandalup, Canning Reservoir, Lower Canning River, and Stinton Creek Catchments' (Department of Zoology, The University of Western Australia, 1988).

¹³³ The PYS was listed on 7 June 1990, see Ramsar, 'The List of Wetlands of International Importance' <<http://www.ramsar.org/sites/default/files/documents/library/sitelist.pdf>>.

¹³⁴ *Ministerial Statement for the North Dandalup Dam*, above n 126, Condition 1.

advice of the Environmental Protection Authority and the Department of Conservation and Land Management [‘CALM’] (emphasis added),¹³⁵ which must include details of, inter alia, ‘the management of environmental impacts in the reservoir, dam and immediate downstream sections of the river and valley during and following the construction phase including the mitigation of impacts upon habitats’.¹³⁶

Commitment 7 imposes a duty on the Authority to determine a satisfactory arrangement for the domestic, stock and garden water requirements of the downstream landowners. Even though Commitment 7 recites the statutory proposition that the ‘Water Authority is not required by law to release any water stored behind the proposed dam’,¹³⁷ the Water Authority undertook to review ‘present’ use of the river flow and determine ‘a satisfactory arrangement for meeting the genuine and reasonable domestic, stock and garden watering requirements of the landowners’ in consultation with existing riparian owners due to ‘the possible adverse impact [of the dam] on riparian users’ of the North Dandalup River.¹³⁸ This may be construed to mean that the Water Authority undertook a duty to release water for these purposes. Commitment 7 goes on to say that: ‘If the arrangement arrived at is to release prescribed flows, the amount released would not exceed the natural stream flow into the reservoir at the time and no water would be released in periods when the natural stream flow ceased altogether’ (emphasis added).¹³⁹ The ‘if’ in this context may be construed to mean that a release regime may not be necessary following the interpretation of ‘satisfactory’, ‘genuine’, and ‘reasonable’. On the other hand, it may be argued that the ‘if’ means that there is no such duty, regardless, as it is the prerogative of the Authority. However that may be, while such releases may, to some extent, serve as EWPs, this is a side effect and not their main purpose.

Commitment 8 prescribes that the proponent will design and undertake ‘an ecological study and monitoring programme ... to assess stream flow-related requirements of local fish and other aquatic fauna ... and to detect changes in their populations which might be related to the operation of the dam’, and that such information will be used to plan future water supply projects and to manage river flows in ways most beneficial to aquatic fauna.¹⁴⁰ While this commitment does not directly provide EWPs either, it authorises and, arguably, requires the Authority to

¹³⁵ *Ministerial Statement for the North Dandalup Dam*, above n 126, Condition 2.

¹³⁶ *Ibid* Condition 2(3).

¹³⁷ *Ibid* Commitment 7, which reflects Section 14 of the *MWSSD Act*.

¹³⁸ *Ibid*.

¹³⁹ *Ibid*.

¹⁴⁰ *Ibid* Commitment 8.

provide them on the basis of the study and monitoring programme. In other words, the information should facilitate adaptive management in terms of providing EWPs.

These two commitments have been implemented in the EMP adopted by the Water Authority in 1991.¹⁴¹ Three issues emerge from the EMP: the provision of summer riparian releases from the North Dandalup Dam; the provision of flows from the Harvey Diversion Drain into the Harvey River to compensate for the reduced flows from the North Dandalup River into the Estuary; and the establishment of a monitoring program.

The EMP provides for a summer riparian release regime to fulfil the **Commitment 7 duty** to determine a satisfactory arrangement for landowners.¹⁴² The proponent undertook 'to make annual releases through the dam in summer months from December to March', which would be 'in quantities typical of summer flows over the last 15 years and ... additional to any overflows during winter months'.¹⁴³ The regime would see releases of 215 ML in December, 82 ML in January, 15 ML in February, and 14 ML in March, which in total comes to 326 ML.¹⁴⁴ Although the 1991 EMP recognised that it is 'important to manage the system so that further degradation does not occur, and that habitat for existing aquatic species is enhanced',¹⁴⁵ the flow and ecosystem health of the North Dandalup River were not addressed in determining the riparian release regime because the dam's adverse impact on the stream environment was considered to be 'relatively small' due to 'the already degraded nature of the River on the Swan Coastal Plain [downstream of the Dam]' and the 'intermediate levels of disturbance due to the impact of the pipehead dam'.¹⁴⁶ In contrast, the ARL study conducted during the EIA in 1988 found that the nature of the North Dandalup River was worthy of conservation, that winter flow in the North Dandalup River would be reduced in all years except those in which the dam would overflow continuously,¹⁴⁷ and so recommended the consideration of a release regime that would mimic the seasonality of the natural flow regime.¹⁴⁸ Notwithstanding that recommendation, the EMP's summer release regime gained the approval of the Minister for the Environment and relevant agencies. It would constitute merely 2.3% of the projected annual flow reduction from the river.

¹⁴¹ Water Resources Directorate, 'North Dandalup Dam Environmental Management Plan' (Report No WP 112, Water Authority of Western Australia, August 1991) ('*North Dandalup Dam Environmental Management Plan*'). We have no evidence of the Minister's approval of this Plan.

¹⁴² *Ibid* 29.

¹⁴³ *Ibid*.

¹⁴⁴ *Ibid* 30 (underlining emphasis added).

¹⁴⁵ *North Dandalup Dam Environmental Management Plan*, above n 141, 35 [11.1].

¹⁴⁶ *Ibid*.

¹⁴⁷ *Next Major Water Supply Source for Perth (post 1992)*, above n 99, app 4, 9.

¹⁴⁸ ARL, 'North Dandalup – Stream Fauna Study: Results and Recommendations 1985-1987' (Report 9, Department of Zoology, The University of Western Australia, 1988) 58 (Table 6) ('*North Dandalup Stream Fauna Study*').

A key reason for agreeing to prescribe only the summer release regime was the new deal to provide for compensating flows from the Harvey River to the Estuary. In contrast to the ministerial statement of approval, the EMP defines a release regime that was also intended to ‘ensure that on average there is no net reduction in water flows to the Peel-Harvey Estuary’.¹⁴⁹ As the dam was estimated to reduce mean annual river flows to the Peel Inlet by about 14,000 ML/year,¹⁵⁰ and because the dam was only expected to ‘fill to near overflowing once every two or three years’,¹⁵¹ the riparian release regime was far from sufficient to ensure no reduction in flows to the Estuary. For this reason, the Water Authority also undertook to release 13,000 ML/year on average from the Harvey Diversion Drain ‘back into the Harvey River and consequently to the Estuary’.¹⁵² These EMP undertakings concerning the Estuary were a ‘result of representations to the Minister for Water Resources regarding the perceived impact that the North Dandalup project would have on the Peel-Harvey Estuary’.¹⁵³ However, the EMP explains that the undertaking for the Harvey Diversion Drain release should be referred as a separate proposal for EIA and subject to the approval of the Minister for Environment.¹⁵⁴ As explained below, this EMP undertaking was partly delivered in 1994, but there is no evidence that it has been assessed and approved. It has been discarded.

The EMP also gives effect to the **Commitment 8 duty** to design and undertake an ecological study and monitoring programme, which is implemented through two sections of the EMP.¹⁵⁵ The first sets out the environmental data concerning aquatic fauna in terms of the general impact of dams, the existing quality of the North Dandalup River, and the specific predicted impacts of the North Dandalup Dam.¹⁵⁶ It is recognised that dam construction, generally, contributes to a decline in species diversity and abundance caused by lower and less variable flows.¹⁵⁷ The likely or anticipated specific impacts of the dam include an amplification of these impacts and a shift in the ecological community to be more representative of still or low flow environments, the extent of which depends on, *inter alia*, the release regime of the dam.¹⁵⁸ This is the accepted risk of dam construction and, of the four options or areas considered for development, the North

¹⁴⁹ *North Dandalup Dam Environmental Management Plan*, above n 141, 29 [8.1]; Minister for Water Resources (Press Statement, 29 August 1990).

¹⁵⁰ *Next Major Water Supply Source for Perth (post 1992)*, above n 99, app 4, 9.

¹⁵¹ *North Dandalup Dam Environmental Management Plan*, above n 141, 12 [3.3].

¹⁵² *Ibid* 29-30.

¹⁵³ *Ibid* 29.

¹⁵⁴ *Ibid* 30.

¹⁵⁵ *North Dandalup Dam Environmental Management Plan*, above n 141, 7 [2.12].

¹⁵⁶ *Ibid* 15-9 [3.6].

¹⁵⁷ *Ibid* 15 [3.6.1].

¹⁵⁸ *Ibid* 18 [3.6.3].

Dandalup Dam proposal was estimated to have the ‘least significant impact on the natural environment’.¹⁵⁹

The second relevant EMP section contains the actual environmental monitoring programme to manage such impacts.¹⁶⁰ Thus, the purpose of the programme is ‘to determine any changes which might take place during the development and operation of the project’.¹⁶¹ The ARL quality description of the North Dandalup River provides the baseline data for (future) biological monitoring of the dam’s impact.¹⁶² The ARL study also enables ‘the detection of long-term changes in community structure associated with climatic change’.¹⁶³ The obligations of the proponent in this regard are to ‘keep the EPA informed of the progress of these studies, and ... consult with it prior to the implementation of any strategy’,¹⁶⁴ to compare monitoring observations of scheme operation with baseline descriptions of the vegetation,¹⁶⁵ and to implement a vertebrate fauna monitoring programme that would ‘assess the impacts on amphibians, birds, reptiles, small and medium size mammals’.¹⁶⁶ At the time, the proponent was also developing a monitoring system, which was likely to include ‘monitoring of stream velocities on a regular basis’ to enable it ‘to determine the amount a [sic] water that should be released from the reservoir throughout the year’.¹⁶⁷ Notably, the Water Authority committed to discuss with the EPA and other appropriate authorities before modifying the programme on the basis of monitoring results.¹⁶⁸

Finally, the proponent made a general undertaking to report to the EPA on ‘progress with implementing the various aspects of the EMP ... on an annual basis, with a post construction report to be completed, including data, following the first six months of operation’.¹⁶⁹ If one considers this promise with Ministerial Condition 2 stating that the EMP must provide for the management of ‘environmental impacts in the reservoir, dam and immediate downstream sections of the river and valley during and following the construction phase’, it is uncertain that the EMP was setting up a regime for ongoing monitoring, reporting and adaptive management to minimise the Dam’s long term impact on the North Dandalup River and in turn the Peel-Harvey Estuary. The Department of Water

¹⁵⁹ *Next Major Water Supply Source for Perth (post 1992)*, above n 99, 6, 54.

¹⁶⁰ *North Dandalup Dam Environmental Management Plan*, above n 141, 35-8 [11].

¹⁶¹ *Ibid* 38.

¹⁶² *Ibid* 16-7. See, eg, *North Dandalup Stream Fauna Study*, above n 148, 6.

¹⁶³ ARL, ‘Stream Fauna Studies’ (Report 15, The University of Western Australia, June 1989) 21 (‘1989 Stream Fauna Studies’).

¹⁶⁴ *North Dandalup Dam Environmental Management Plan*, above n 141, 36 [11.1].

¹⁶⁵ *Ibid* 37 [11.2].

¹⁶⁶ *Ibid* [11.3].

¹⁶⁷ *Ibid* 36 [11.1].

¹⁶⁸ *Ibid* 38 [11.6].

¹⁶⁹ *Ibid*.

does not currently report under the Ministerial Statement for the North Dandalup Dam and was unable to say whether such reporting occurred in the past.¹⁷⁰

One outcome of the EMP monitoring regime appears to be the defining of EWRs for the riverine environment downstream of the North Dandalup Dam in 1998, four years after it started operating.¹⁷¹ The 1988-89 EIA for the North Dandalup Dam studied the environmental condition and, to some extent, the hydrology of the catchment, but it did not determine the EWRs of the North Dandalup River or the Estuary.¹⁷² It simply recommended consideration of the adoption of a 'compensation' flow release regime from the dam to cause the least environmental impact.¹⁷³ The reason for not determining the Estuary's EWRs in this connection seems to be that the Dam was only expected to reduce total flows to the Peel Inlet by 2.6%, which loss would be compensated by "releases" from the Harvey River Diversion Drain to the Harvey River and Estuary.¹⁷⁴ In 1998, the EWRs of the North Dandalup River were determined during the process of determining environmental flow regimes for the New Harvey Dam ('Harvey Dam'). Still, only the EWRs of the two Rivers were determined, not of the Peel-Harvey Estuary. Instead, the environmental objective for the Estuary was simply to maintain current inflows.¹⁷⁵

The 1998 study proposed a flow allocation regime for the North Dandalup Dam with a total annual volume of releases of 7,024 ML, which would see significantly higher releases during winter, and the colder months in general, than those of summer months.¹⁷⁶ In fact, August-October were found to be 'critical months for reproduction and movement of native fish of the lower North Dandalup system' and the estimated minimum daily flow requirement during these months was 23.84 ML.¹⁷⁷ The flows of this 1998 proposed regime were, generally, regarded as 'minimum requirements', as is evident from the percentile values being generally 'well below the 50th percentile',¹⁷⁸ which means that they are well below 50% (or the median) of flow observations. The 1998 proposal was never adopted formally as an EWP, which left only the 1991 EMP summer release regime, totalling 326 ML and merely 4.6% of the proposed 1998 regime.

¹⁷⁰ Email from Renee Rowling, Department of Water of Western Australia, to Alex Gardner, 1 March 2017.

¹⁷¹ Davies et al., above n 100, Chapter 5.

¹⁷² *1989 Stream Fauna Studies*, above n 163, 19.

¹⁷³ *North Dandalup Stream Fauna Study*, above n 148, 61-2.

¹⁷⁴ *Next Major Water Supply Source for Perth (post 1992)*, above n 99, app 4, 9; *North Dandalup Dam Environmental Management Plan*, above n 141, 29 [8.1].

¹⁷⁵ Davies et al., above n 100, 83, 93, 102; *North Dandalup Dam Environmental Management Plan*, above n 141, 29 [8.1].

¹⁷⁶ Davies et al., above n 100, 79 (Table 4.12).

¹⁷⁷ *Ibid* 74-76.

¹⁷⁸ *Ibid* 80.

The volumes of releases from the North Dandalup Dam are now (2016) even lower and the consumptive use diversions of water from the Harvey River much higher. The 1991 EMP (and the ministerial approval statement) seems to have been overtaken by 1999 statement of ministerial approval of the Stirling-Harvey redevelopment scheme and the 2001 water law reforms. The approval authorised the construction of the Harvey Dam to store 60 GL for irrigation and the diversion of an additional 34 GL/year from the Stirling Dam (within the Harvey River Basin) to the Perth Metropolitan Water Supply Scheme. Although the EWRs of the North Dandalup River were determined in the assessment for this scheme, the ministerial approval made no EWP for the waterways or the Estuary. Instead, it is a condition that the proponent '[e]nsure the release [from Harvey Dam] of aesthetic flows to the Tourism Precinct [about three kilometres below the Dam] are in accordance with the requirements of the WRC' in order to maintain amenity within the precinct.¹⁷⁹ The proponent also committed to '[p]repare and implement an investigations program to verify the *adequacy of the environmental water provisions* downstream from the proposed new dam wall' (emphasis added).¹⁸⁰ It is not clear whether the 'adequacy' of the EWPs refers only to amenity goals. There is no mention of the North Dandalup 1991 EMP undertaking to provide compensation flows from the Harvey River Diversion Drain to the Harvey River.¹⁸¹

Why were no EWPs made for the Harvey River below the Tourism Precinct and for the Estuary? The following points come from 1998 assessment study and the 1998 *Proposed Harvey Basin Surface Water Allocation Plan* ('proposed Plan'),¹⁸² which found that EWPs were not required for three main reasons. First, thus far clearing and draining of land had caused an overall increase in flows in the lower rivers of the Harvey catchment (and, therefore, to the Harvey Estuary) compared to pre-European conditions.¹⁸³ Secondly, streamflow upstream of the Dam was not considered to contribute to key water-dependent ecosystems of the Harvey River, as 'almost all overflow from the Harvey Weir is diverted down the Harvey Diversion Drain to the Indian Ocean'.¹⁸⁴ This disregards the undertaking of the North Dandalup Dam EMP, as this exact flow was meant to provide compensatory releases to the Estuary. Thirdly, the study recommended that a

¹⁷⁹ *Ministerial Statement for the Stirling-Harvey Redevelopment Scheme*, above n 127, sch 2 (P33).

¹⁸⁰ *Ibid* sch 2 (P15).

¹⁸¹ *Ibid* sch 2; Gardner (2006), above n 18, 227.

¹⁸² Water and Rivers Commission, 'Proposed Harvey Basin Surface Water Allocation Plan' (WRAP Report No. 14, Government of Western Australia, 1998) i ('*Proposed Harvey Basin Surface Water Allocation Plan*'). While there is no evidence of its formal approval, according to personal correspondence between Alex Gardner and Mr. Roy Stone, Department of Environment, this Plan was formally approved by the Board of the Water and Rivers Commission: see, Alex Gardner and Vivian Chung, 'The Law and Policy of Environmental Water Allocations in Western Australia' (Draft of Paper for presentation to the EDO Water Law Conference, 8 July 2005) 13 (footnote 71).

¹⁸³ Davies et al., above n 100, 88.

¹⁸⁴ *Proposed Harvey Basin Surface Water Allocation Plan*, above n 182, ii.

‘compensation sub-catchment [be] quarantined from resource development’,¹⁸⁵ including a number of un- and semi-regulated tributaries of the Harvey River,¹⁸⁶ ‘until environmental water provisions are established for these streams’.¹⁸⁷ The study also recognised that releases might become necessary.¹⁸⁸ The then state water resource regulator, the WRC, believed ‘that 95% of the mean annual flow of semi-regulated and unregulated streams (other than Wellesley Creek) should be provided to the environment’¹⁸⁹ and that ‘release strategies from existing storages should be developed to maximise the benefits of future restoration’.¹⁹⁰ The proposed Plan also stated that EWRs and EWPs should be reviewed ‘as information becomes available from monitoring and research’.¹⁹¹ Further, a consultant’s report to the Water Corporation in 2000 cited the uncertainty around the effect of the ‘increased salinity resulting from the [Dawesville] cut’ on the estuarine water quality and the lower reaches of the Harvey River, but it still suggested that ‘increased winter flows from the Harvey River could have the potential to partly ameliorate [those] effects’.¹⁹²

Ultimately, the state agencies and ministers favoured water resources development and deferred making the necessary hard choices for EWPs in reliance on dim past perceptions and distant future forecasts. The proposed Plan seems to have adopted as the environmental objective for the Estuary the EWRs of the estuarine wetlands in the catchment; namely, to maintain ‘existing salinity and water levels’.¹⁹³ It estimated that the drying climate would ‘reduce overall source yields or consumptive use allocations by about 10-15% per year’ based on the 1975-95 rainfall sequence.¹⁹⁴ However, a reduction in streamflow was considered likely to be acceptable ‘provided that flows were not reduced below pre-European settlement levels’.¹⁹⁵

In the decade that followed, the compensation sub-catchment for the Harvey Dam was not quarantined from water resource development.¹⁹⁶ The *Proposed*

¹⁸⁵ Davies et al., above n 100, 102.

¹⁸⁶ Ibid. The tributaries included the Weekes, Clarke, Logue, Bancell and Samson brooks.

¹⁸⁷ *Proposed Harvey Basin Surface Water Allocation Plan*, above n 182, iii.

¹⁸⁸ Davies et al., above n 100, 103.

¹⁸⁹ *Proposed Harvey Basin Surface Water Allocation Plan*, above n 182, iii.

¹⁹⁰ Ibid; EPA, ‘Harvey Basin Surface Water Allocation Plan – Water and Rivers Commission – Advice to the Minister for the Environment from the Environmental Protection Authority under Section 16 (e) of the Environmental Protection Act 1986’ (Bulletin 910, November 1998) (withdrawn) 15.

¹⁹¹ *Proposed Harvey Basin Surface Water Allocation Plan*, above n 182, 38.

¹⁹² Email from Renée Rowling and Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner, 3 March 2017, referring to a report by Streamtech for the Water Corporation in 2000 on the Adequacy of EWPs for the Harvey River downstream from the New Harvey Dam site.

¹⁹³ *Proposed Harvey Basin Surface Water Allocation Plan*, above n 182, 40 (Table 9), 41.

¹⁹⁴ Ibid 33.

¹⁹⁵ Ibid 41.

¹⁹⁶ The Samson Brook pipehead weir from 1962 was upgraded to a dam in 2003, expanding storage capacity from ‘negligible’ to 300 ML, see Water and Rivers Commission, ‘Samson Brook Catchment Area Water Source Protection Plan: Waroona and Hamel Town Water Supply and Integrated Water Supply Scheme’ (Water Resource Protection Series No. WRP 50, 2002) 3.

Harvey Basin Surface Water Allocation Plan was not approved by the Minister;¹⁹⁷ no other water resource plans (statutory or non-statutory) have been made for the Peel-Harvey surface water catchments; and the EIA ministerial approvals have languished. As the climate dried dramatically, the process of making and delivering EWPs receded to the confidential controls of the *RiWI Act* licence regime.

2 *The RiWI Act Licence Regime*

In the absence of any approved *RiWI Act* statutory plans or non-statutory water resource plans, we turn to the *RiWI Act* licensing regime for the North Dandalup and Harvey Dams.

The current water licence for the **North Dandalup Dam**, the term of which is 16 November 2012 to 30 June 2017,¹⁹⁸ does not directly mention any EWP. However, the licence is conditional upon the licensee's compliance with 'the commitments or requirements of the operating strategy as prepared by the licensee and approved by the Department of Water ... [in November 2012], including any modifications ... approved during the term of the licence'.¹⁹⁹ In fact, the operating strategy is the Water Resource Management Operation Strategy 2012-2017 ('WRMOS') for the Integrated Water Supply Scheme ('IWSS'), with annual amendment addenda. The IWSS supplies Perth, Mandurah, the Goldfields and Agricultural Areas, and some South West towns. The IWSS water sources are regulated by more than 30 groundwater licences and 15 surface water licences, and is also integrated with supply from seawater desalination and groundwater replenishment using recycled wastewater. The scheme is integrated by a network of pipes that allows desalinated water to be stored in hills dams and coastal groundwater to be supplied to inland agricultural areas. The total estimated supply for 2012-13 was 302GL with a baseline groundwater component of 120GL and an estimated annual growth of 3.5GL/year. While the 'water year' runs from 1 July to 30 June, there is monthly and annual reporting with key water supply decisions scheduled for October after assessment of winter recharge. There are EWPs for some groundwater and some surface water sources.

The WRMOS is a complex description of a complex scheme, utilised mainly as a flexible internal operating guide applied by annual agreement with the DoW for the principal purpose of maintaining security of supply to Water Corporation customers in compliance with licence conditions, including the 'entitlements' to maximum annual take of water from each source. The groundwater licence

¹⁹⁷ Above n 182.

¹⁹⁸ Department of Water, Water Register, 'Licence to take water' (Instrument No. SWL56735(10) from 16 November 2012 to 30 June 2017) held by the Water Corporation. Obtained via email from Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner and Jeanette Jensen, 27 November 2015.

¹⁹⁹ *Ibid.*

entitlements are adjusted by an annual licensing process and, of course, the supply from surface water sources depends on winter recharge. The take from these natural sources is clearly being adjusted over the 2012-17 term of the WRMOS as the desalination and groundwater replenishment assets have been developed, but this is not explained in detail. The document is ‘confidential’, but it has been kindly supplied by the Water Corporation to assist this research.²⁰⁰

The WRMOS describes the North Dandalup Dam as a ‘large storage reservoir’ and ‘a major Metropolitan base load source’ with a capacity of 74.85GL/year and annual entitlement of 22.2GL/year.²⁰¹ The WRMOS distinguishes between surface water riparian releases and surface water EWPs.²⁰² The North Dandalup Dam is included in the dams named for riparian releases but not for EWPs.²⁰³ The riparian releases are essentially designed to meet the interests of downstream riparian landholders over summer and, while they may also serve certain ecological values, they are not primarily designed to achieve EWP purposes.

The WRMOS provides distinct regimes of releases for ‘standard’ and ‘low rainfall’ years, though the detailed character of the releases varies for the different dams. The WRMOS made in 2012 set the ‘standard’ / ‘low rainfall’ marker at greater or less than 670 mm of rainfall between 1 May and 30 August, but in 2014 that marker was reduced for a number of dams (including North Dandalup) to 622 mm. In standard years, 1 ML/day is released from 15 November to 20 December, then releases increase to 2 ML/day with the possibility of increasing to 3 ML/day for a short period depending on the weather.²⁰⁴ This regime runs until 60 mm cumulative rainfall has been received after 1 April, but releases may be recommenced upon a phone call from the landholders’ representative.²⁰⁵ Discarding the potential increase to 3 ML/day and assuming that releases continue until 1 April, this amounts to a total of 239 ML.²⁰⁶ In low rainfall years, the release volumes are half the standard.²⁰⁷

It is apparent that this WRMOS release regime is different from the EMP

²⁰⁰ Water Corporation, ‘Integrated Water Supply Scheme – Water Resources Management Operation Strategy’ (July 2012 – June 2017) (‘WRMOS’). Obtained via email by Vanessa Moscovis, Water Corporation, to Jeanette Jensen, 3 September 2015. See also, ‘What is the Integrated Water Supply Scheme?’ on Water Corporation, *FAQs, Water supply and services* <<https://www.watercorporation.com.au/home/faqs/water-supply-and-services/what-is-the-integrated-water-supply-scheme>>.

²⁰¹ WRMOS, above n 200, sections 1.2.6, 1.3.1.

²⁰² WRMOS, above n 200, sections 6.2, 6.3. Appendix 4 of the WRMOS summarises the riparian and EWP releases to be made, including the triggers for commencing and ceasing those releases, and their volumes. Notably, the WRMOS does not use the language of the State Policy, which includes riparian releases or releases for social values under the term ‘EWPs’, see *Environmental Water Provisions Policy for Western Australia*, above n 16, 7.

²⁰³ WRMOS, above n 200, 17-18.

²⁰⁴ *Ibid* 40 (app 4).

²⁰⁵ *Ibid*.

²⁰⁶ ((16+19 days) x 1 ML) + ((12+31+28+31 days) x 2 ML) = 239 ML.

²⁰⁷ *Ibid* 41.

release regime. The volume of releases is spread more evenly over the months November to March and the minimum total summer releases would be less than under the EMP: 239 ML compared to 326 ML. According to the DoW, the 1999 and 2001 IWSS WRMOSs prescribed similar release regimes in both timing and volume.²⁰⁸ It appears that the WRMOS has overtaken the 1991 EMP provisions as the basis of making riparian releases from North Dandalup Dam. More so than the EMP, the WRMOS release regime seems designed to meet riparian landholders' interests in water supply rather than mimicking the natural drying through summer. We are not aware of any *EP Act* authorisation to reduce the total volume of the summer releases, though the change in the distribution of the flows may be permitted by the EMP provision that '[w]hile the total volume of releases is regarded as relatively fixed ... there would be some scope to vary the distribution between the months and also within the months'.²⁰⁹

Could the reduced total releases be important? The North Dandalup Dam releases were originally designed to flow as far as the summer groundwater discharges to the North Dandalup River and facilitate flows from there to the Estuary.²¹⁰ According to the DoW, the environmental objective for releases was 'to ensure that high value pools were maintained and that river connectivity continued as far downstream as possible to provide drought refuge for fish and crayfish'.²¹¹ However, the groundwater discharges have been receding downstream²¹² and the environmental objectives were severely tested in the winter of 2015, a very dry season. In June 2015, the North Dandalup River did not flow, which angered North Dandalup farmers into accusing the DoW of environmental vandalism.²¹³ It should be noted, however, that inflows to the dam did not commence until July that year, which means that the lack of flow reflected the natural regime.²¹⁴ The environmental objective has since been limited to maintaining the high value pools downstream of the dam,²¹⁵ and the DoW has put in place late autumn releases to maintain pools as refuges for aquatic biota until streamflow commences following

²⁰⁸ Email from Renée Rowling and Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner, 3 March 2017.

²⁰⁹ *North Dandalup Dam Environmental Management Plan*, above n 141, 30 [8.2].

²¹⁰ Telephone correspondence with Katherine Bennett, Department of Water, Government of Western Australia (16 February 2016).

²¹¹ Email from Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner and Jeanette Jensen, 27 November 2015. See Appendix below.

²¹² Telephone correspondence with Katherine Bennett, Department of Water, Government of Western Australia (16 February 2016).

²¹³ Strutt, above n 108.

²¹⁴ Email from Renée Rowling and Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner, 3 March 2017.

²¹⁵ Meeting with Ben Drew and Katherine Bennet from the Department of Water at the Department of Water on Thursday 26 May 2016.

rainfall,²¹⁶ which we suspect may also please the farmers. The DoW considers that further releases would not be a ‘wise use of water’.²¹⁷ According to the DoW, EWPs to meet the hydrological and ecological values of the Estuary were considered when determining the release regime for North Dandalup Dam, but they were not made as ‘the objectives would never have been achieved’.²¹⁸ Further:

The current release regime balances what is practical in a drying climate given declining inflows and the volume of water that would be required to reach the estuary. The releases support multiple objectives including providing water for Perth’s public water supply, some downstream use and ecological value as well as helping to protect the river below the dam from declining groundwater inputs across the coastal plain.²¹⁹

The authors are not qualified to comment on the scientific substance of this explanation. With respect, our critique is more concerned with the logic of the explanation and the process of the decision-making. There should have been formal adoption of EWPs even if their objectives would be well short of meeting the EWRs. Further, the DoW is referring to multiple competing objectives to be considered in determining the level of releases, which is constrained by provision for public water supply not made in support of it. Most importantly, these decisions have been made through confidential licensing processes rather than by transparent water planning processes with clear political accountability, which would be a better process to meet the challenges of a drying climate.

The **Harvey Dam** is one of four dams in the Harvey River catchment. It is owned and operated by the Water Corporation but the water is taken for agricultural irrigation by Harvey Water, an irrigation co-operative, under a current (March 2013-June 2018) licence²²⁰ for a maximum 56 GL/year. Before 2006, the water licence itself contained a condition: ‘The licensee will distribute water in a way that maintains traditional patterns of flow within watercourses ... until such time as an

²¹⁶ Email from Renée Rowling and Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner, 3 March 2017. We did not receive any further information as to when this was decided or implemented, how much water the releases consist of, or whether the WRMOS has been/will be updated to reflect this.

²¹⁷ Meeting with Ben Drew and Renee Rowling from the Department of Water at the University of Western Australia on Monday 30 November 2015; Email from Renée Rowling and Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner, 3 March 2017.

²¹⁸ Email from Renée Rowling and Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner, 3 March 2017.

²¹⁹ Email from Renée Rowling and Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner, 3 March 2017.

²²⁰ Department of Water, Water Register, ‘Surface Water Licence 98950’ held by South West Irrigation Management Co-operative, which trades as Harvey Water. The licence covers water taken from Harvey Dam, Logue Brook Dam and Wokalup Pipehead Dam, plus some releases from the upstream Stirling Dam. The licence allocation is 55.5 GL/year for commercial irrigation; 0.5 GL/year for industrial and commercial purposes; 0.9 GL/year for distribution losses, and both metered and unmetered livestock and non-potable domestic uses. Obtained via email from the Harvey Water General Manager to Alex Gardner, 30 January 2017.

updated approach is approved by the Department'.²²¹ The current licence requires compliance with a separate temporary operating strategy adopted in 2013, the Harvey-Waroona Irrigation – Water Resource Management Operating Strategy ('HWI WRMOS'), which was to be replaced by July 2014.²²² The HWI WRMOS includes an EWP but it consists mainly of social water requirements to maintain 'an aesthetically attractive flow' over the summer period through the Harvey tourist precinct about three kilometres below the Dam.²²³

The terms of the HWI WRMOS EWP are uncertain in volume and effect. In response to complaints from the local community, the original EWP of 25 L/sec through the Harvey River tourist precinct was increased to 62.5 L/s ('additional flow provisions').²²⁴ This was done mainly to maintain social rather than ecological values. That EWP flow is to be 'partitioned between Harvey Diversion Drain and the Harvey River (Main Drain) downstream of the diversion drain', which is about 500 metres downstream of the tourist precinct.²²⁵ The HWI WRMOS recognises that this EWP flow is 'insufficient to stop vegetation encroachment or weed invasion along the watercourse ... [m]uch higher release rates (made outside the irrigation season) would be required'.²²⁶ There are no releases outside the summer irrigation season that might maintain EWPs.²²⁷ The DoW considers higher releases to be an inefficient use of water and 'believes appropriate river restoration and maintenance programs would be effective in meeting community expectations for this reach of the river [below the dam]'.²²⁸ There was also the belief, expressed in the HWI WRMOS, that 'any runoff below the Harvey Dam' could contribute to achieving the flow requirements' of the EWP releases.²²⁹

However, according to the HWI WRMOS itself, the intended EWP flows were not being achieved because of a lack of infrastructure to divert the 'additional' releases into the Harvey River from the Diversion Drain. As an alternative, a pipeline was constructed in 2010 to direct water from an irrigation pipeline into the Harvey River below the Diversion Drain; so this flow occurs only during the summer irrigation season and does not flow through the tourist precinct. Further,

²²¹ Email from the Harvey Water Operations Manager to Alex Gardner, 24 January 2017.

²²² 'Harvey-Waroona Irrigation – Water Resource Management Operating Strategy' (2013) 8 ('HWI WRMOS'). The relevant pages that define the EWP were obtained via email from Stephen Cook, Harvey Water Operations Manager, to Jeanette Jensen, 30 May 2016. Although the previous (2006) water licence contained an EWP, the current (2013-18) Harvey Dam water licence contains no direct requirement to release EWPs; rather, water management, including environmental flows, are governed by the HWI WRMOS: email from Stephen Cook, 23 January 2017.

²²³ HWI WRMOS, above n 222, 13.

²²⁴ HWI WRMOS, above n 222, 13.

²²⁵ *Ibid.* The point of partition is about 500m downstream of the tourist precinct, as shown on Google Maps.

²²⁶ *Ibid.* 14.

²²⁷ *Ibid.*

²²⁸ *Ibid.*

²²⁹ *Ibid.*

the lack of any gauging stations meant that actual flows were not known.²³⁰ While the HWI WRMOS reflects the outcome of the ecological studies from 1998,²³¹ the irrigation pipeline flow directed to the Harvey River in no way matches the Water Authority's 1991 EMP undertaking to compensate the reduced North Dandalup Dam flows by releasing 13,000 ML/year from the Diversion Drain to the Harvey River. It is unclear whether the lack of infrastructure may have affected the capacity of the Water Corporation or Harvey Water to fulfil that 1991 EMP undertaking.

The HWI WRMOS adopted in 2013 was temporary and to be replaced by July 2014 after reviews of certain issues by Harvey Water and the DoW. Harvey Water was to review EWP releases from the Harvey Dam.²³² The DoW promised to re-evaluate, on the basis of drying climate projections, water source yields and environmental provisions with a view to revision of water entitlements that have diminishing levels of allocation reliability.²³³ These reviews are continuing as part of a broader Surface Water Review of releases from all dams, including from the North Dandalup Dam.²³⁴ Harvey Water acknowledges that its rolling five year average allocation is now at 62% of its entitlement (compared to 100% in 1996) and that the 2013 temporary release regime is still operating, subject to adjustments made in consultation with the DoW as part of the annual allocations to irrigation shareholders.²³⁵ Ultimately, the authors cannot interpret the HWI WRMOS to require winter releases. Yet, a 2016 publication by Harvey Water asserts such releases:

Harvey Water is required to release water year round ... We release a base level of water from the ... Harvey Dam which we negotiated with the DoW. These releases used to be topped up by fish breeding flows to permit fish to move upstream and bank overflows to help the fringing vegetation survive. We were successful in having these winter releases made more flexible in the WRMOS due to the exceptionally low inflows to the dams.²³⁶

In summary, the water licences for the North Dandalup Dam and Harvey Dam do not contain specific conditions for EWPs. Rather, the licences contain conditions

²³⁰ Ibid. Also, email from Katherine Bennett, Department of Water, Government of Western Australia, to Jeanette Jensen, cc Stephen Cook, Harvey Water, 8 June 2016.

²³¹ HWI WRMOS, above n 222, 13.

²³² HWI WRMOS, above n 222, 14.

²³³ Ibid 8.

²³⁴ Email from Renee Rowling, Department of Water of Western Australia, to Alex Gardner, 1 March 2017.

²³⁵ HWI WRMOS, above n 222, 8. The annual allocation process treats all the water resources licensed to Harvey Water as one pool: email from Stephen Cook, Harvey Water Operations Manager, to Alex Gardner, 24 January 2017, and from the General Manger, 30 January 2017.

²³⁶ Harvey Water, *The Harvey Water "Furphy"* (vol. 13, 3rd ed, July 2016). On 28 February 2017, the DoW provided monitoring data for Harvey Dam releases that showed only summer releases were expected and, with limited exceptions for the early winter months of May- July, the releases by Harvey Water are in the summer.

that require implementation of the respective operating strategies containing water release regimes. Although there are environmental objectives for such releases, the regimes reflect mainly social (riparian and tourist precinct) needs rather than broader environmental values. In the face of a drying climate, some adjustments have been made to enhance the releases for the social (riparian and tourist) values, but the provisions for broader environmental values for the rivers have, if anything, been reduced – the informal environmental purposes of the riparian releases from the North Dandalup Dam have been reduced and the proposed review of EWP releases from Harvey Dam appear, from Harvey Water statements, to have resulted in reductions of informal EWP winter releases. The 1991 North Dandalup EMP undertaking to make significant compensating flow diversions to the Harvey River and Estuary appears to have been omitted from the HWI WRMOS. There is no evidence that the Harvey Water irrigation entitlement has been reduced, though annual allocations have been. All of these decisions have been made by confidential water licensing processes and instruments without formal public consultation and without any apparent EIA process.

C Were the Riparian and EWP Releases actually delivered?

We lack information on monitoring and reporting on fulfilment of the EIA ministerial statements of approval for the North Dandalup and Harvey Dams. We have limited information about fulfilment of the terms of the water licence operating strategies for the North Dandalup and Harvey Dams. The Water Corporation's North Dandalup water licence conditions require annual and three yearly reporting to DoW on dam monitoring data and an analysis of impacts from abstraction,²³⁷ and we expect a similar condition applies to the Harvey Water licence. This type of report is generally not public, but the DoW kindly provided monitoring data of releases from the North Dandalup Dam over the decade 2006-07 to 2015-16 (see Appendix)²³⁸ and monitoring data for releases by Harvey Water from Harvey Dam and from the irrigation pipeline below the Diversion Drain in the period 2013-14 to 2015-16.²³⁹ The data and information that we have illustrates six important points.

First, the EWPs of the 1991 North Dandalup EMP appear to have been overtaken by the reduced release regimes of the North Dandalup and Harvey water licences and their respective operating strategies. In particular, the operating strategies have not implemented the North Dandalup EMP undertaking to

²³⁷ Interestingly, the WRMOS Table 5.2 'surface water monitoring requirements' is blank, see above n 200.

²³⁸ Email from Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner and Jeanette Jensen, 2 November 2015. See Appendix below.

²³⁹ The Department of Water kindly provided the Harvey Water monitoring data on 28 February 2017.

compensate for the reduced North Dandalup River flows to the Estuary with diversions from the Harvey Diversion Drain to the Harvey River. There does not seem to be a ministerial decision on this under the *EP Act*.

Secondly, the summer release regime of the North Dandalup WRMOS has largely been complied with. During the period July 2006 to June 2016, the average summer (December-March) releases were 68.2 ML/month and in total 272.9 ML.²⁴⁰ It bears repeating that the volumes of WRMOS summer releases delivered follow a more even pattern over summer than the EMP release regime and that the total volume of summer releases is 16.3% less than the 1991 EMP.²⁴¹ On the other hand, the average of actual releases has been slightly higher than the 239 ML standard minima of the WRMOS release regime. The temporary release regime for Harvey Dam under the HWI WRMOS has also largely been complied with.

Thirdly, 2006-2016 releases from North Dandalup Dam averaged 21.2% of inflow.²⁴² This number is skewed by the very dry years of 2010-11 and 2015-16 where releases were 126.4% and 43.7% of inflow, respectively.²⁴³ The other eight years' releases were on average less than 6% of inflow.²⁴⁴ We do not have Harvey Dam data on the proportion of the volume of releases to inflow; however, the combined volume of expected releases (959 ML/year or .959 GL/year) is less than 2% of the licensed annual extraction of 56 GL/year. According to general scientific studies, an instantaneous stream flow regime of less than 10% of the average flow results in 'catastrophic degradation to fish and wildlife resources and harms both the aquatic and riparian environments'.²⁴⁵ 10% of the average flow 'is a minimum instantaneous flow recommended to sustain *short-term* survival habitat for most aquatic life forms' (emphasis added).²⁴⁶ This information has been misconstrued to mean that 10% of the average flow is an acceptable minimum.²⁴⁷ Long-term, 10% of the average flow will significantly reduce channel widths, depths, and velocities; degrade aquatic habitat; 'islands will no longer function as wildlife nesting, denning, nursery, and refuge habitat'; fish will be crowded into the deepest pools;

²⁴⁰ This conclusion is arrived at by adding the four monthly averages for the ten-year period and dividing by four. It can be seen that the releases for February 2011 and February and March 2013 were below what would be the monthly minima of 2 ML/day x the number of days for those months.

²⁴¹ 272.9 ML/(326 ML/100%) = 83.7%.

²⁴² Email from Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner and Jeanette Jensen, 2 November 2015 (see Appendix below).

²⁴³ *Ibid.*

²⁴⁴ *Ibid.*

²⁴⁵ Donald Leroy Tennant, 'Instream Flow Regimes for Fish, Wildlife, Recreation, and Related Environmental Resources' (1976) 1 *Fisheries* 6, 10.

²⁴⁶ *Ibid.* 9; James M. Loar and Michael J. Sale, 'Analysis of Environmental Issues Related to Small-Scale Hydroelectric Development. V. Instream Flow Needs for Fishery Resources' (Prepared for U.S. Department of Energy, Assistant Secretary for Conservation and Renewable Energy Division of Hydroelectric Resource Development. Publication No. 1829, Environmental Sciences Division, 1981) 52-3.

²⁴⁷ E.g., Christopher Gippel, 'The international transfer of environmental flow methods' (Speech delivered at the International Rivers Symposium, New Delhi, 12-14 September 2016).

and natural beauty and stream aesthetics will be badly degraded.²⁴⁸ The recommended base flow to sustain ‘good survival conditions for most aquatic life forms and general recreation’ is 30% of the average flow,²⁴⁹ while the ideal environmental flow releases from dams and other diversion structures are 60% of the average flow, which will ‘provide excellent to outstanding habitat for most aquatic life forms during their primary periods of growth and for the majority of recreational uses’.²⁵⁰

Fourthly, the actual releases for both the North Dandalup Dam and the Harvey Dam have inverted the natural seasonal distribution of river flows.²⁵¹ Even with the cessation of winter flows from 2011, the average of monthly releases from April–November (2006–16) was 28 ML,²⁵² i.e. less than half of the average monthly summer releases (68.2 ML). While one may think that releasing more water during a formerly dry period would be beneficial, ‘it generally has a range of adverse effects on aquatic and riparian species and ecosystem function’.²⁵³ Indeed, the EIA identified the dam’s likely impact of ‘unseasonal fluctuations in regulated flow regime’ as a problem.²⁵⁴ The EWPs of the two water licence regimes do not reflect the environmental water requirements for either of the rivers or the estuaries. Hence, although the policy commitment to the environment has not been kept, the commitment to North Dandalup riparian landowners has largely been met despite the fact that the relevant ministerial condition stated that ‘the amount released would not exceed the natural stream flow into the reservoir at the time and no water would be released in periods when the natural stream flow ceased altogether’. Summer stream flows would have ceased years ago.

Fifthly, the drying climate has led to a significant reduction in releases from the North Dandalup Dam over the past decade. Winter releases, including September, were made between July 2006 and June 2011, but then ceased altogether.²⁵⁵ As the EMP and the WRMOS included only summer releases, the origin and purposes of the winter releases are not clear. The record low 2010 winter inflows to IWSS dams, including the North Dandalup Dam were merely 11% of

²⁴⁸ Tennant, above n 245, 9.

²⁴⁹ Ibid 6, 9.

²⁵⁰ Ibid 9.

²⁵¹ Email from Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner and Jeanette Jensen, 2 November 2015 (see Appendix below); *1988 Stream Fauna Studies*, above n 99, 53 (Figure 3); Arthington, above n 94, 86. Harvey Dam monitoring data was provided by an email from Renee Rowling, Department of Water, Government of Western Australia, 28 February 2017.

²⁵² Email from Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner and Jeanette Jensen, 2 November 2015 (see Appendix below).

²⁵³ Arthington, above n 94, 86.(citations omitted).

²⁵⁴ *North Dandalup Stream Fauna Study*, above n 148, 58 (Table 6).

²⁵⁵ Email from Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner and Jeanette Jensen, 2 November 2015 (see Appendix below).

the previous 10 years' average.²⁵⁶ This resulted in the 2010-11 releases from the North Dandalup Dam being set to 50% of previous years – it was found too detrimental to reduce releases further.²⁵⁷ Even so, releases that year were 126.4% of the inflows to the dam, but that included winter releases. In the following four years without winter releases, total annual releases averaged less than 5%. In 2015-16, the dry 2015 winter season sees estimated releases jump again to 44% of inflows. Certainly, the drying climate has made meeting the riparian flows and EWPs much more difficult. Water licence annual allocations to consumptive use have also, inevitably, declined, though it is not clear that licence entitlements have been reduced. These challenges have not been addressed by a focused and transparent decision-making process under either the *EP Act* EIA provisions or by water resources planning. The management response under the water licence operating strategies has been to prioritise water for consumptive use and social values, including water for riparian users, and disregard water for non-social environmental values.

Sixthly, the credibility of EWP accounting depends on the publication of EWP conditions and monitoring data. Across the entire period of the case study, there has been no transparent and legally binding determination of EWPs for waterway and wetland environmental values (including Ramsar values) of the Peel-Harvey catchment. Instead, the release regimes that have been determined have proven malleable to confidential negotiations rather than legally binding. Further, there is no transparent accounting of the releases that are made. Our analysis of the releases from Harvey Dam is limited to statements in the confidential HWI WRMOS and some public statements of Harvey Water. Even when adopted in 2013, the HWI WRMOS stated that the intended release regime could not be delivered because of inadequate infrastructure and could not be verified because there were no gauging stations. Furthermore, the EWPs appear to operate under an ostensibly interim HWI WRMOS with no public evidence of the outcome of the proposed revision. There is no clear indication in the HWI WRMOS of a winter releases regime and no adoption of the North Dandalup Dam EMP undertaking to redirect up to 13,000 ML per year from the Diversion Drain to the Harvey River (Main Drain) for flows to the Estuary. Indeed, the only record found of that undertaking being implemented is a 1994 media release stating that, in the winter of 1994, 7,000 ML was diverted from the Harvey River Diversion Drain back into the Harvey River to offset an equivalent reduction from the North Dandalup Dam.²⁵⁸ The Harvey Dam overflowed in 2013 and 2014 (not a regular occurrence), yet there is no evidence

²⁵⁶ Email from Ben Drew, Department of Water, Government of Western Australia, to Alex Gardner and Jeanette Jensen, 27 November 2015.

²⁵⁷ *Ibid.*

²⁵⁸ Paul Omodei, 'Diversion of water to Harvey River offsets reduction through new dam' (Media Statement, 1 November 1994).

that these flows were directed to the Harvey River and Estuary.²⁵⁹ General statements in a Harvey Water newsletter are no substitute for the publication of official monitoring data.

IV KEY POINTS IN REFLECTIONS ON THE REGULATORY FRAMEWORK AND REFORMS

What are the key points from the above analysis and what could be the legal response?

First, as found in 2006, there is no legal duty to provide EWPs, to make them at a certain level, or to make them in priority to the allocation and delivery of water to consumptive purposes.²⁶⁰ Nor is there a duty to restore or rehabilitate degraded waterways and wetlands affected by water development projects. The duties on the Minister for Water and the DoW to conserve, protect, manage and assess water resources are, as mentioned above, very general duties that give the responsible authorities extensive discretion, which is difficult for courts to review except where it may be shown that the Minister has abdicated performance of a function. Even then, it would be difficult to fashion an effective remedy to produce an EWP outcome. The *RiWI Act* and *EP Act* provisions likewise confer broad discretions that lack a duty of ecological restoration.

The case study clearly shows the effect of the current state framework that lacks statutory duties to make, deliver and report EWPs. National and State policies on EWPs are not being complied with, including statutory recognition of legally secure EWPs, the precautionary principle, the principles that only water in excess of EWPs may become available for consumptive use, that social water requirements are subordinate to environmental requirements, that the DoW will require effective monitoring and management to ensure adequate EWPs, regular review of allocations and EWPs to consider improved knowledge of hydrology, ecology, and climate variation, and the fundamental principle of transparency. The need for EWPs for environmental purposes was recognised in the ecological studies of both dams undertaken for regulatory purposes. Yet, there are no effective EWPs defined in the regulatory instruments and there are no EWPs being delivered for environmental values of the rivers and the Ramsar-listed wetlands downstream of the two dams. In short, the current EWP regulatory framework has failed.

The state law needs to implement the three central national policy goals; there needs to be (i) statutory provision for (ii) legally secure EWPs, and (iii) statutory

²⁵⁹ Gardner (2006), above n 18, 227; Kelsey et al., above n 8, 38. To the knowledge of the authors, Harvey Dam has overflowed three times in the past decade, see, Water Corporation of WA, 'Harvey Dam peaks' (Media release, 9 November 2005); Water Corporation of WA, 'Harvey Dam is overflowing for the second time in two years' (Media release, 1 October 2014).

²⁶⁰ Gardner (2006), above n 18, 215.

duties to return over-allocated and overused systems to environmentally sustainable levels of extraction. We acknowledge the political difficulty of achieving these goals, especially in a drying climate. Fulfilment of these national policy goals is made more difficult because the national policy does not give good guidance on how to address the impacts of a drying climate. Clearly, we need to devise innovative responses to the increasing water demand and decreasing water resources, as already advocated by the DoW.²⁶¹ The current investment in developing alternative water sources needs strengthening.²⁶² The impetus for increasing such investment can be driven by implementing an effective regulatory framework for EWRs that precludes governments and agencies from compromising environmental values for short-term socio-economic purposes. That framework must include an objective of ecological restoration and duties on the Minister for Water to implement a transparent and authoritative statutory water resources planning regime that:

- determines in binding plans for all developed water sources, on a catchment wide basis, EWRs and EWRs to achieve the objective, taking into account priorities for high conservation value wetlands (especially Ramsar-listed wetlands) and the impacts of climate change projections; and
- specifies the time frame for implementing the EWRs, including by adjustment of water entitlements to achieve ecological restoration.

Each of these duties involves particular challenges for legal definition and enforcement in ways that courts can review and remedy with the customary respect for the limits of judicial review. Equally, the legislation will need to specify time limits for the performance of these key duties so that executive government cannot avoid the task. Determining the EWRs is an essential component of the ecology-driven approach to rehabilitation by EWRs, which is the favoured approach by WA and, quite possibly, the more realistic approach in a drying climate. Knowing the EWRs is a prerequisite for determining EWRs and the seeming lack of this EWR knowledge regarding the Estuary would have contributed to a failure to provide EWRs. Yet ecological studies can be costly in time and human resources,²⁶³ just as

²⁶¹ *Western Australia's water supply and demand outlook to 2050*, above n 31.

²⁶² Michael Bennett, Alex Gardner and K. Vincent, 'Regulatory Renovation for managed aquifer recharge of alternative water sources – a Western Australian perspective' (2014) 24 *Water Law* 5; Meluka Bancroft and Alex Gardner, 'Opportunities and obligations for residential developers to undertake wastewater recycling and stormwater capture: A Western Australian perspective' (2015) 32 *Environmental and Planning Law Journal* 372.

²⁶³ In 2008-09, the average cost of a surface water assessment was \$76,735, and four to five assessments were conducted for allocation planning per year and, approximately, 12 for licensing, see Department of Water, 'Annual report 2008-2009' (Government of Western Australia, September 2009) 12, 16-7; Quantum Management Consulting & Assurance, 'Department of Water's Processes – Report for the

reaching political agreement on the level of EWP can be fraught with political risks that delay decisions. So, the legislation will need to provide default propositions as precautionary alternatives amenable to judicial determination.

It is recommended that the Parliament set default EWPs that will apply within a specified time (e.g. within three years for high conservation waterways and wetlands and five years for others) after the enactment comes into force. The default EWPs could take account of the conservation priority of the relevant waterways and wetlands; for example, allocating to Ramsar wetlands 50% of the average flow for the past ten years, with adjustment for climate change projections. The default EWP for named lower conservation priority wetlands could be 30% based on a similar calculation. Furthermore, the operative provisions of the default EWP could be prescribed by a schedule to the Act that would come into effect with the default EWP and require adjustment of water entitlements within ten years, for example. Such default operative provisions would need to address the sensitive political issues of compensation for those entitlement holders who suffer a reduction of entitlements for ecological restoration. The default EWPs would apply unless or until the Minister adopted, pursuant to statutory process, a water plan for the water source. While this recommendation may seem ambitious, there is now significant water planning experience in Australia and it is practical to charge the parliament with coming to appropriate model provisions that would have only interim operation pending scientific determination of EWRs and political agreement on EWPs.

Finally, water resources law needs reform for effective consideration of future water resources development proposals. As there are no water allocation plans, statutory or non-statutory, for the Peel-Harvey catchment,²⁶⁴ and no public record of water licence conditions (including operating strategies) and monitoring data, the environmental basis of the existing North Dandalup and Harvey release regimes are not subject to public scrutiny. The DoW's position that further releases from those dams for environmental purposes would not be a wise use of water has not been tested with the public. The DoW should, henceforth, be legally obliged to determine public EWRs of waterways and wetlands impacted by new water development projects and the Minister should be bound to determine EWPs before issuing a licence. The *EP Act* EIA procedures can assist with these tasks because such proposals should be referred for assessment. However, the EIA process should not be relied on to repair the omissions of inadequate water resources law.

Economic Regulation Authority Inquiry into water resource management and planning charges' (Final Report, 12 March 2010) 53-4.

²⁶⁴ 'Kwinana Peel Region' on Department of Water, *Planning for the future, Water allocation plans* <<http://www.water.wa.gov.au/planning-for-the-future/allocation-plans/kwinanapeel-region>>.

The deficiencies of the *EP Act* also need to be addressed. In *Save Beelihar Wetlands (Inc) v Minister for Environment* ('*Roe 8 case*'), the WA Court of Appeal found that EPA non-statutory policies (procedures and guidelines) were simply 'permissive relevant considerations'.²⁶⁵ The EIA process needs better guidance than this, especially after the procedures and guidelines were reformed in late 2016.²⁶⁶ As the *EP Act* recognises that non-statutory procedures and guidelines may be made (i.e. instruments for which there is no specific statutory provision for a process to make and apply them), it would be better to have an express statutory declaration that such procedures and guidelines are, or may be designated by the EPA as, mandatory relevant considerations. Further, as the case study shows, there is a need for members of the public to be able to seek a review of a ministerial statement of approval and for the Minister, on EPA advice, to be able to revoke all or part of a ministerial statement that has been breached or has no current application, possibly triggering a new assessment for an ongoing project.

V CONCLUSION

The current WA regulatory framework for EWPs and ecological restoration has failed in the Peel-Harvey Estuary waterways and wetlands, especially by failing to provide flows from those rivers that are dammed for consumptive use. There are no clear, statutory duties to make, deliver and report on EWPs. This law is contrary to national and state policy, as well as the Ramsar Convention obligations. To fulfil those policies and the international obligations, the WA water resources law reform could state an objective of ecological restoration and impose clear justiciable duties on the Minister for Water to implement a transparent and authoritative statutory water resources planning regime that:

- determines in binding plans for all developed water sources, on a catchment wide basis, EWRs and EWPs to achieve the objective, taking into account priorities for high conservation value wetlands and climate change projections;
- specifies a time frame for implementing the EWPs, including by adjustment to water entitlements, and
- provides a default statutory schedule of EWPs that the Minister must implement if the Minister fails to approve water plans within a specified period of a few years, subject to displacement by later approval of a plan.

²⁶⁵ *Jacob v Save Beelihar Wetlands (Inc)* [2016] WASCA 126, [61].

²⁶⁶ 'Guidelines and Procedures' on EPA <<http://epa.wa.gov.au/guidelines-and-procedures>>. The revised non-statutory policy framework was launched on 13 December 2016.

The proposed reforms are politically ambitious, but we cannot continue to defer important decisions simply because they are difficult. Should the State fail to enact reforms that achieve ecological restoration of waterways and wetlands, then attention should turn to the role of the Commonwealth in ensuring the implementation of national water policy goals and international obligations, as it has done in the Murray-Darling Basin.

<i>APPENDIX: Releases (ML) from North Dandalup Dam</i>														
Year	Monthly total												Total	Percentage of inflow (%)
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun		
2006–2007	67.5	28.4	–	14.0	51.9	53.5	89.7	84.3	91.5	89.8	94.2	83.6	784.4	11.5
2007–2008	71.5	20.4	–	–	21.4	69.4	59.8	68.3	72.9	64.7	9.9	–	458.3	3.6
2008–2009	–	–	2.6	22.1	51.0	52.7	79.2	90.6	81.8	75.0	82.8	84.1	621.9	7.4
2009–2010	87.8	3.3	–	16.9	32.8	50.6	87.1	77.2	84.8	84.2	87.4	55.1	667.2	3.9
2010–2011	48.5	39.1	37.6	36.1	36.2	48.7	63.2	53.3	69.2	60.5	54.8	1.9	549.1	126.4
2011–2012	–	–	–	–	16.5	42.9	70.4	86.3	77.6	74.8	10.3	–	378.8	3.6
2012–2013	–	–	–	–	12.2	22.6	64.3	41.3	51.2	45.9	24.1	–	261.6	3.5
2013–2014	–	–	–	–	35.1	75.1	80.7	67.5	78.4	70.3	57.6	–	464.7	5.5
2014–2015	–	–	–	–	12.6	50.1	78.1	84.2	85.0	74.5	27.5	–	412.0	2.9
2015–2016	–	–	–	25.0	39.5	51.5	70.5	61.5	62	58	37.5	–	405.5	43.7*
Average	27.5	9.1	4.0	11.4	30.9	51.7	74.3	71.5	75.4	69.8	48.6	22.5	500.4	21.2
Average monthly total 2006–2016:													41.7	
Average yearly total 2011–2016:													384.5	
Average monthly total 2011–2016:													32	

Information kindly provided by the Department of Water.
* This number is based on estimates of releases rather than on actual releases, which the table shows.