

Revisiting Assumptions: Lawyers and the Environment

EcoCentric - Anthropomorphic¹

Environmental law, and thereby water law, is vigorously evolving in response to changing societal and economic factors². Contemporary environmental law is strongly influenced by the Principles enunciated in the Rio Declaration³ that guide, internationally, the achievement of sustainable development of land, including the key 'moral' principles of inter-generational equity, polluter *ought* to pay and, as knowledge is uncertain at present, precautionary principles.

*"In the space of a few short decades basic resources such as clean air and clean water that had hitherto been considered abundant, safe and inexhaustible are now under threat, not just in countries that have historically suffered from poverty, disease and substandard living conditions, but in the very heartland of nations that occupy the very top rungs of our civilisation in the context of economic development"*⁴.

The Rio Principles impose duties on those regulating scarce resources such as water to recognise the need to take account of human needs now and into the future and actively acknowledge the limitations of existing knowledge of dangers and risk prevention⁵. Lord Justice Scarman (as he then was), noted that, if the law and lawyers are to retain relevance to environmental protection, they must find some meaningful way to regulate harmful activities rather than leave it to some specialist administrative agency remote from legal control⁶.

The judiciary internationally has referred to the need to take account of the environment in judicial decision-making. Justice Preston of the New South Wales Land and Environment Court has explored ways in which the law can adopt an ecocentric approach and align with the laws of ecology⁷. Some note the danger of discrediting scientific evidence where it can, at best, only provide qualified answers to difficult predictions⁸. There is a critical need to guard against the risk that bad science becomes accepted as proven fact⁹ and avoid the assumption "that the scientific method implies exactness and certainty"¹⁰, something that scientific research can rarely deliver.

¹ Synthesis from Kelleher, Algie and Johnston, 2013, *Ethics and Environmental Law: Challenging Professional Boundaries*, Paper presented to the Australian and New Zealand Law and Ethics Conference, Flinders University, Adelaide.

² Bates, Gerry, *Environmental Law in Australia*, Lexis Nexis Butterworths, 8th edition, at 2.

³ Office of the Environment Department of Conservation and Natural Resources, 1993, *Notes from Rio: Highlights of the United Nations Conference on Environment and Development and the Global Forum June 1992*, Melbourne: OEDCNR

⁴ Michael I Jeffery QC, 2005, *Environmental Ethics And Sustainable Development: Ethical And Human Rights Issues In Implementing Indigenous Rights*, *Environmental Ethics and Sustainable Development*, Vol 2, pp 105-120

⁵ The United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, June 1992 produced four documents – the Rio Declaration (a statement of general principles), Agenda 21 (an action plan) and two Conventions – Climate Change (ratified by Australia in December 1992) and Biological Diversity (ratified by Australia this entered into force on 29 December 1993). A Statement of Principles on Forests was also agreed.

⁶ Scarman, 1974, *English Law: The New Dimension Part IV, The Challenge of the Environment*, Stevens, London.

⁷ Brian J Preston, 'The Environment and its Influence on the Law' (2008) 82 *Australian Law Journal* 180.

⁸ Stewart, 1993, *Environmental Risk Assessment: The Divergent Methodologies of Economists, Lawyers and Scientists*, *Environmental & Planning Law Journal*, Vol 10, 10-18 at 12.

⁹ Christie, *Toxic Tort Disputes: Proof of Causation and the Courts*, (1992) 9 *EPLJ* 302.

¹⁰ Christie, *Toxic Tort Disputes: Proof of Causation and the Courts*, (1992) 9 *EPLJ* 302 at 313.

Bates suggests additional obligations on individual lawyers:

“just ‘having’ law is not enough; everyone must be vigilant about implementation and enforcement issues, and about driving the policy agenda that leads to the creation of environmental laws”¹¹.

A strategy toward a more ecocentric approach to law and policy has been formulated by the Chief Justice of the New South Wales Land and Environment Court¹². The practice of environmental law demands a strong regard to the public interest, with environmental statutes reflecting a broad societal need to protect the public from harms that are not immediate or short term but far-reaching concerning the maintenance of humanity if not all life on earth.

Those setting regulatory change, along with those drafting such regulations, have a significant role in how society orders its relationship with the environment. They are essential players in receiving and filtering important information as to the functioning and quality of segments of the environment¹³. Regulatory change in a critical element of the environment, requires attention to the Earth Summits, Rio I¹⁴ and Rio+20¹⁵, Kyoto Protocol¹⁶, principles of environmentally sustainable development, Environmental Impact Assessments, carbon trading schemes, Clean Energy Regulation and climate change debate.

¹¹ Bates, Gerry, *Environmental Law in Australia*, Lexis Nexis Butterworths, 8th edition, at 20.

¹² Footnote 52.

¹³ J. William Futrell, 1994, Environmental ethics, legal ethics, and codes of professional responsibility, *Ethics and Environmental Law* Vol 27:825

¹⁴ Footnote 12

¹⁵ Rio +20, United Nations Conference on Sustainable Development <http://www.uncsd2012.org/>

¹⁶ Kyoto Protocol To The United Nations Framework Convention On Climate Change, United Nations, 1998, <http://unfccc.int/resource/docs/convkp/kpeng.pdf> accessed 27 November 2013

The Environment and its Influence on the Law

ATTACHMENT 2

by
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Chief Judge
Land and Environment Court of NSW

Keynote address to:

**Legal Aid New South Wales
Civil Law Conference
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Introduction

The environment has been said to include “all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings”.¹ This is a reference to the physical elements of the environment, both the abiotic or non-living elements such as the climatic, physiographic and edaphic elements as well as the biotic or living elements (other living things). From an ecological viewpoint, however, humans themselves are also part of the environment. We interact with our surroundings; the surroundings sustain, feed, clothe and inspire us but we also shape our surroundings. Desertification, loss of biological diversity and climate change stand testament to humans’ ability to shape the environment.

The environment also interacts with the law. The law is employed to regulate humans’ dealings with the environment. Fowler has suggested that environmental statutes can be seen to have both a positive or protective component and a negative or exploitative component.² The positive component is divided into first, rules for the protection of the environment from undue degradation by human activity, and secondly, rules for the conservation of natural, built or cultural items within the environment. The negative component is divided into, first, rules as to the disposition of natural resources and, secondly, rules which promote or facilitate development activity. The common law also has both positive and negative components. The law of torts, for example, has a positive component in that it protects certain classes of persons from unreasonable interference with their rights of person or property caused by other persons but such regulation is done in the recognition of the right of the other persons to exploit their land and its resources in a manner and to an extent that does not cause such unreasonable interference.

The interaction of law and the environment is, however, not unidirectional, that is to say, limited to the law shaping the environment. The environment has also shaped the law. The laws of today, to varying degrees, are a product of the environment.

This conference focuses on civil law. Let me illustrate ways in which the environment and disputes about it have influenced, and continue to influence, the development of civil law. I will focus on property law, the law of torts, administrative law, constitutional law and human rights and contract law.

Property law

Property law quintessentially involves the environment. Both statutory law and common law have as their central concern the regulation of humans’ interaction with the environment. As Sax notes, our traditional legal system is organised to permit the expropriation to certain persons of the resources of the earth:

“The resources of the earth are largely organised to encourage decentralised, atomistic, self-interested decision making. Indeed the very essence of the legal structure of resource ownership is the division of the earth into segments created by the drawing of arbitrary lines, to isolate these segments one from another (the fence being the dominant symbol of our system) and then leave it to each owner within his own fenced enclave to exploit the resource to his maximum benefit.”³

Under the traditional concept of real property rights, the land (including waters other than communal waters (*res communes*)) is divided by arbitrary lines to create

¹ s 4(1) of the *Environmental Planning and Assessment Act 1979* (NSW).

² R J Fowler, “Environmental law and its administration in Australia”, (1984) 1 EPLJ 10 at 18.

³ J L Sax, “The law of a liveable planet”, in R J Fowler (ed), *National Environmental Law Association of Australia (NELA) and the Law Association for Asia and the Pacific (LAWASIA) Proceedings of the International Conference on Environmental Law*, Sydney, 14-18 June 1989, p 8

allotments. Each allotment is composed of the land and things so attached thereto as to be part of the land. This includes the minerals in the soil, the rocks and the plants growing on the land. Ownership of the allotment of land carries with it the right to use the land and exploit its resources. Ownership of land also provides an opportunity to graze tame animals on the land and to expropriate to the owner wild animals that enter the land.

This notion of real property rights derives from Roman law and was embraced by the early English common law.⁴ Over time, however, this traditional notion has been altered.

Perhaps the first alteration was the exclusion of game animals from the category of wild animals. Wild animals traditionally were *res nullius* until such time as they were captured or tamed and reduced to somebody's possession thereby becoming *res alicuius*. However, game was seen to be of particular value as a source of food and sport. The nobility wished to exclude others from expropriating to themselves game animals. According to Blackstone, to avoid disturbances and quarrels amongst individuals contending about the acquisition of this species of property by first occupancy, ownership of game was vested in the sovereign of the state or its authorised representatives, usually lords of manors.⁵

This device of vesting property in animals in the sovereign was employed in Australia. In a number of States, fauna or certain classes of fauna, were declared by statute to be the property of the Crown in right of the State unless and until the fauna was lawfully taken. A current illustration is in s 97(2) of the *National Parks and Wildlife Act 1974* (NSW).

Bonyhady notes that legislation in New South Wales and Western Australia creating Crown title to wild animals was uncontroversial. In Western Australia it was considered necessary in order to enable the Crown to declare a royalty on the taking of all native game.⁶ In New South Wales, Crown ownership was the government's response to a decision in the District Court, that when someone captured a wild animal or bird in the closed season, he became the legal owner of it (following the common law position) and hence could not be prosecuted for wrongful possession of protected birds and animals. To overcome this decision, Parliament enacted the *Birds and Animals Protection (Amendment) Act 1922* (NSW) so that all protected birds and animals were the property of the Crown until taken or killed in accordance with the *Birds and Animals Protection Act*. In Queensland, amendments to the *Animals and Birds Act* in 1924 were intended "less to protect native fauna than to enhance State revenue from the fur trade and to free trappers from the indignity of having to 'bow and scrape' before station holders to get permission to enter their land".⁷

More recently, the concern to protect endangered species of fauna, has resulted in endangered species legislation which prohibits the harming of endangered fauna and their habitat.⁸

⁴ See B J Preston, "From commodity to community: the emancipation of wildlife" in S Thomas (ed), *Conference papers of the National Environmental Law Association of Australia (NELA) and the Law Association for Asia and the Pacific (LAWASIA) Second International Conference, 4-7 August 1991*, Bangkok, Thailand, pp 95-98. As to the classification of things under Roman Law, see *Justinian's Institutes*, Book II, s 2.1 (at pp 55-61 in the translation by P Birks and G McLeod, Duckworth, London, 1987)

⁵ Blackstone, *Commentaries on the Law of England*, Book II, 1829, pp 14-15

⁶ See s 6 of the *Game Act Amendment Act 1913* (WA)

⁷ T Bonyhady, "Property rights" in T Bonyhady (ed), *Environmental Protection and Legal Change*, Federation Press, 1992, pp 61-62

⁸ See for example ss 118A – 118D of the *National Parks and Wildlife Act 1974* (NSW) and the *Threatened Species Conservation Act 1997* (NSW) and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth)

In Australia, another alteration to the traditional concept of real property rights occurred by vesting in the Crown certain components of the land that at common law would have attached to and been part of the land and hence the property of the land owner. One example is that the bundle of rights that a property owner acquired, from the original Crown grants and subsequently, had reserved from it many mineral resources. Beginning with New South Wales in 1884, all jurisdictions adopted a general severance policy, separating the mineral rights from the rest of the land, by providing that future land grants should contain a reservation of all minerals.⁹ A second example, although perhaps not of concern to non-aboriginal owners of land, but of significant concern to Aboriginal persons, is that Aboriginal objects in, on or under land were deemed by statute to be the property of the Crown.¹⁰

Collectively, these shifts in ownership of wild animals, mineral resources and Aboriginal objects in Australia had the effect of reducing land ownership almost to a surface ownership, with all other rights being vested in the Crown.

Statutory law has effected an even greater alteration to the traditional concept of real property rights by constraining significantly a land owner's right to use the land and its natural resources as he or she thinks fit¹¹. The common regulatory technique employed is for a statute to prohibit the doing of some act but to establish a regulatory mechanism whereby that prohibition can be relaxed by the owner of the land applying for and obtaining a form of statutory approval to do the act, often on terms or conditions. This is the regulatory approach for the subdivision and development of land,¹² the exploitation of mineral resources,¹³ the use of water resources,¹⁴ the exploitation of timber and plant resources,¹⁵ and affecting threatened species, populations and ecological communities and their habitats.¹⁶ Such regulatory restrictions do not, as a usual rule, create a right of compensation for the land owner affected.¹⁷

The consequence is that there is, in practice, little a land owner can undertake on the land without being subject to some form of statutory regulation, including obtaining some form of statutory approval.

Let me turn to another way in which the environment and disputes about it are affecting property law.

The common law and statutory law of relevance to real property mostly impose duties of a negative nature, that is to say, duties that a land owner not do certain acts. However, affirmative duties on land owners do exist and they may become more common. Land owners may be under positive obligations to conserve land and

⁹ T Bonyhady, note 7, p 74. See also C W O'Hare, "A history of mining law in Australia", (1971) 45 ALJ 281 at 285-287 and A J Bradbook, S V MacCallum and A P Moore, *Australian Real Property Law*, 4th ed, Lawbook Co, 2007, pp 654-658

¹⁰ s 83(1) of the *National Parks and Wildlife Act 1974* (NSW)

¹¹ R J Lazarus, "Changing conceptions of property and sovereignty in natural resources: Questioning the public trust doctrine" (1986) 71 Iowa L Rev 631 at 693-698 and A J Bradbook et al, note 9, pp 29-31

¹² See Part IV of the *Environmental Planning and Assessment Act 1979* (NSW) and *Lloyd v Robinson* (1962) 107 CLR 142 and *Western Australian Planning Commission v Temwood Holdings Pty Limited* (2004) 221 CLR 30

¹³ *Mining Act 1992* (NSW)

¹⁴ *Water Management Act 2000* (NSW). See generally as to statutory regulation of water resources, D E Fisher, *Water Law*, LBC Information Services, 2000

¹⁵ *Native Vegetation Act 2003* (NSW), *Environmental Planning and Assessment Act 1979* and the environmental planning instruments and tree preservation orders made there under, and the *National Parks and Wildlife Act 1974* (NSW)

¹⁶ *National Parks and Wildlife Act 1974* (NSW), *Threatened Species Conservation Act 1997* (NSW) and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth)

¹⁷ T Bonyhady, note 7, pp 49-56 and K Gray, "Can environmental regulation amount to taking of common law property rights?", a paper presented to the Beyond Environmental Law Conference, Sydney, 16 & 17 February 2007

things attached to it. A land owner may be required, in relation to a heritage item on the land, to undertake a minimum standard of maintenance and repair to avoid demolition of the heritage item by neglect.¹⁸ A land owner may enter into a private property agreement, whereby the land owner undertakes to conserve the land and things attached to it. Examples are heritage agreements in relation to heritage items on land,¹⁹ conservation agreements in relation to native flora and fauna²⁰ and property vegetation plans.²¹ An owner of land may also be under an affirmative duty to control noxious weeds or prescribed alien species of fauna.²²

Affirmative duties will also arise where the land is the subject of a carbon credit or a biodiversity credit.²³ The owner of the land sells a credit for the growing vegetation on the land either to an emitter of greenhouse gas (such as a coal-fired power station) for the benefit the vegetation affords as a sink for the sequestration of carbon or to a person who causes the loss of biological diversity in the course of development of other land. The owner, having sold the credit, will be obliged to maintain the vegetation on the land.

Finally, affirmative duties may arise by consent authorities, in granting development consent, imposing conditions requiring the preservation or improvement of the environment on the land the subject of the development or, indeed, the carrying out of works on adjoining land.²⁴

An increasing recognition of the first law of ecology – that everything is connected to everything else²⁵ - and that the earth's ecosystem is, in a sense, a spaceship,²⁶ may necessitate the imposition of more sweeping affirmative duties on land owners. Professor Sax argues that "property owners must bear affirmative obligations to use their property in the service of a habitable planet".²⁷ Sax argues that there needs to be a fundamental reorientation of the role of land and our use of it:

"We increasingly will have to employ land and other natural resources to maintain and restore the natural functioning of natural systems.

More forest land will have to be left as forest, both to play a role in climate and as habitat. More water will have to be left instream to maintain marine ecosystems. More coastal wetland will have to be left as zones of biological productivity. We already recognise that there is no right to use air and water as waste sinks, and no right to contaminate the underground with toxic residue. In short there will be - there is being - imposed a servitude on our resources, a first call on them to play a role in maintaining a habitable and congenial planet. Though fundamental changes are called for, this is not a grim warning of tribulations to come. The innovativeness that has been used so boldly over the last two centuries to subdue natural systems should be equally available to utilise those systems more efficiently and less

¹⁸ See s 118 of the *Heritage Act 1977* (NSW) and Part 3 of the *Heritage Regulations 2005*

¹⁹ Part 3B of the *Heritage Act 1977* (NSW)

²⁰ Division 12 of Part 4 of the *National Parks and Wildlife Act 1974* and s 126A of the *Threatened Species Conservation Act 1995* (NSW)

²¹ Part 4 of the *Native Vegetation Act 2003* (NSW) and see also heritage agreements under ss 23 and 23A of the *Native Vegetation Act 1991* (SA)

²² s 12 of the *Noxious Weeds Act 1993* (NSW) and s 182 of the *Natural Resources Management Act 2004* (SA)

²³ See for example Part 7A of the *Threatened Species Conservation Act 1995* (NSW) which provides for biodiversity credits

²⁴ See s 80 and s 80A(1)(f) of the *Environmental Planning and Assessment Act 1979* (NSW)

²⁵ See B Commoner, *The Closing Circle – Confronting the Environmental Crisis*, Jonathan Cape, 1972, p 33

²⁶ K E Boulding, "The Economics of the Coming Spaceship Earth" in *Environmental Equality in a Growing Economy*, reproduced in G de Bell (ed), *The Environmental Handbook*, Ballantine Books, 1970, p 96

²⁷ J Sax in R J Fowler (ed), note 3, p 11

disruptively. We already know from pioneering work done in energy conservation that there is no necessary correlation between productivity and energy resources expended. We know how to use far less water, and to reuse what we have. There is no reason to doubt that much can be done with far less demand on resources, and with less disruption of resource systems.

We shall have to move that way, for only when the demands of the abovementioned public servitude of habitability has been met will resources be available for private benefits. To fulfil the demands of that servitude, each owner will have to bear an affirmative responsibility, to act as a trustee insofar as the fate of the earth is entrusted to him. Each inhabitant will effectively have a right in all such property sufficient to ensure servitude is enforced. Every opportunity for private gain will have to yield to the exigencies of a life-sustaining planet".²⁸

Sax's call for private gain to yield to the exigencies of a life-sustaining planet is encapsulated in the concept of ecologically sustainable development. The Australian National Strategy of Ecologically Sustainable Development defines the concept as "development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends". The call for ecologically sustainable development is today universal. It has been made at international and national levels. Australia is committed to it.²⁹ The implementation of ecologically sustainable development will, no doubt, increase the affirmative duties on land owners and continue to alter the traditional theory of real property.

Another development in the law of real property, stemming from environmental concerns, has been the revival of the doctrine of the public trust. The concept of the public trust has its roots in Roman law and is based on the idea that certain resources such as the air and waterways are held in trust by the government for the benefit and use of the general public. The essence of the public trust is that the government, as trustee, is under a fiduciary duty to deal with the trust property, being the common natural resources, in a manner that is in the interest of the general public. Hence, the government cannot alienate the trust property unless the public benefit that would result outweighs the loss of the public use or "social wealth" derived from the land.³⁰

The trust doctrine has been interpreted by the courts so as to strike a balance between the maintenance of the most beneficial use of natural resources by the public and the essential development of those resources.³¹

The public trust doctrine has, to differing extents, become part of the law of all countries with a common law heritage.³² While traditionally applied primarily to waterways and rivers, the doctrine has been extended to protect other natural resources from private use and harm. Courts have invoked the doctrine in, to name a few countries with a common law heritage, the United States³³, India,³⁴ Pakistan,³⁵ Sri Lanka,³⁶ and Kenya.³⁷ It has also been referred to in Australia.³⁸

²⁸ In R Fowler (ed), note 3, pp 13-14

²⁹ See for a comprehensive analysis of the concept of ecologically sustainable development, B J Preston, "The role of the judiciary in promoting sustainable development: the experience of Asia and the Pacific" (2005), 9 (2&3) APJEL 109

³⁰ J L Sax, "The public trust doctrine in natural resource law: effective judicial intervention" (1970) 68 Mich L Rev 471; J L Sax, *Defending the Environment*, Vintage Books, 1970, p 60 and J L Sax, "Liberating the Public Trust Doctrine from its Historical Shackles" (1980) 14 U C Davis L Review 185

³¹ G Bates, *Environmental Law in Australia*, 6th ed, LexisNexis Butterworths, 2006, p 48

³² For a discussion of the public trust concept in a number of common law countries including Australia see B J Preston, note 29 at 203-210

³³ See for example *National Audubon Society v Department of Water and Power of the City of Los Angeles* (1983) 658 P 2d 709 and *State v Public Service Commission* 275 Wis 112, 81 NW 2d 71

³⁴ *M C Mehta v Kamal Nath* (1997) 1 SCC 388 and *TN Godavarman Thirumulpad v Union of India* CDJ 2005 SC 713 (Supreme Court of India, Y K Sabarwal J)

Acceptance of the public trust doctrine means that any individual would have standing as a beneficiary to enforce the trust against the government as trustee and would result in greater accountability of government action affecting the subject of the trust.³⁹ Professor Rodgers suggests that “Public trust law is perhaps the strongest contemporary expression of the idea that the legal rights of nature and of future generations are enforceable against contemporary users”.⁴⁰

Law of Torts

Many of the causes of action in tort developed to protect the rights of property owners from unreasonable interference such as by pollution of the air, water and land. Trespass and private nuisance are ready examples. The doctrine of strict liability in *Rylands v Fletcher*⁴¹ is another example. The doctrine was not to be abandoned in Australia until the High Court’s decision in *Burnie Port Authority v General Jones Pty Limited*.⁴² The doctrine held that a person who uses his land in a non-natural way, such as where he, for his own purposes, brings on his land and collected and kept there anything likely to do mischief if it escaped, must keep it in at his peril. The person was *prima facie* answerable for all the damage which was the natural consequence of its escape unless he excused himself by showing that the escape was due to the aggrieved person’s fault, or was the consequence of *vis major* or act of God.

The law of negligence today is perhaps the most frequently invoked cause of action in tort. The tort of negligence involves failing, in particular circumstances, to exercise the care which a reasonable person should have exercised in the circumstances and thereby causing harm to another person or property. Fundamental to negligence is that the wrongdoer owe to the aggrieved person a duty of care to prevent causing damage to that person or their property. How does one determine whether there is such a duty? In *Donoghue v Stevenson*,⁴³ Lord Atkin provided the following test to assist in resolving the problem:

“Who is my neighbour? receives a restricted reply. You must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbour. Who, then, in law, is my neighbour? The answer seems to be – persons who are so closely and directly affected by my act that I ought reasonably to have them in contemplation as being so affected when I am directing my mind to the acts or omissions which are called into question.”⁴⁴

³⁵ *In Re: Human Rights Case (Environmental Pollution in Balochistan)*, PLD 1994 SC 102 (Supreme Court of Pakistan, Saleem Akhtar J)

³⁶ *Bulankulanma v Secretary, Ministry of Industrial Development* (Eppawela case) SC Application No 884/99, Supreme Court of Sri Lanka (Amerasinghe J with whom Wadugodapitya J and Gunasekera J agreed) (2 June 2000) reproduced in *UNEP Compendium of Judicial Decisions on Matters Related to Environment*, Vol II, National Decisions, July 2001, p 54 at pp 57-59

³⁷ *Waweru v Republic of Kenya*, (2006) 1 KLR (E&L) 677 at 689-690, 692 (High Court of Kenya)

³⁸ *Re Sydney Harbour Collieries Co* (1895) Land Appeal Court Reports 243 at 251-252 and *Willoughby City Council v Minister Administering the National Parks and Wildlife Act* (1992) 78 LGERA 19. See also T Bonyhady, “A Usable Past – The Public Trust in Australia” (1995) 12 EPLJ 329 and G D Meyers, “Divining Common Law Standards for Environmental Protection: Application of the Public Trust Doctrine in the Context of Reforming NEPA and the Commonwealth Environmental Protection Act” (1994) 11 EPLJ 289

³⁹ Justice J Toohey and A D’Arcy, “Environmental Law – its place in the system” in R J Fowler (ed), note 3, p 83

⁴⁰ W H Rodgers, “Bringing people back: Toward a comprehensive theory of taking in natural resource law” (1982) 10 Ecology L Q 205 at 239-240

⁴¹ (1868) LR 3 HL 330

⁴² (1994) 179 CLR 520

⁴³ [1932] AC 562

⁴⁴ [1932] AC 562 at 580

What will be required to satisfy the neighbour test will vary over time with an expansion in knowledge. For example, where once a particular action might not have been understood to have a cause and effect relationship with a particular harm, increased knowledge may now establish that such a cause and effect relationship exists. The last half century is replete with illustrations of pollutants which once were not thought to have adverse health or environmental effects but which later were found to have such effects. Examples are the bio-accumulative effects of pollutants such as methyl-mercury (which caused such devastating effects in Minamata Bay in Japan)⁴⁵ and DDT (about which Rachel Carson wrote in *Silent Spring*).⁴⁶

A current and topical illustration is global climate change. Increasingly, a causal relationship is being found between actions which result in the emission of green house gases and global climate change. Recent cases where a causal relationship has been found are *Gray v The Minister for Planning*,⁴⁷ and *Massachusetts v Environment Protection Agency*.⁴⁸

The expansion of knowledge has also resulted in an expansion in the horizon of harm and the size of membership of the classes of persons affected. Cashman summarises these effects in the context of toxic tort litigation:

“More recently, increasing concern has risen out of the possible effects of exposure to various toxic chemicals in food, air, water, cosmetics and pharmaceuticals and the discovery that activities such as chemical manufacturing, waste disposal, production of nuclear power and the transport of hazardous materials are extremely hazardous and potentially injurious to the health of a significant number of people. In many instances, toxic time bombs began to explode or at least tick louder. As Huber notes, the moment came ‘for personal injury law in its restless and unending expansion to invade the formerly sleepy kingdom of nuisance law’. On Huber’s analysis, this has led to three generations of cases over a relatively short period.

The first generation of cases were product liability actions arising out of exposure to therapeutic drugs and devices, such as thalidomide, diethylstilbestrol (DES), and high doses of x-ray therapy. The second generation of cases arose in the workplace where occupational exposures to substances such as asbestos were often at a high level over a long period of time. The third generation of cases has arisen out of familiar substances such as asbestos, dioxin and radiation which have spread over huge territories including school buildings (asbestos insulation), towns (dioxin road spraying) and entire states or regions (fallout from nuclear tests).

As traditional notions of bilateral litigation have been transformed into complex, large scale group or class action litigation, there has been an exponential growth in the number and size of cases arising out of exposure to radiation, hazardous chemicals and waste, asbestos and dioxins. For example, the *Love Canal* case in the United States which was ‘only’ a \$20,000,000 action led to a state of emergency being declared by President Carter and the introduction of new Federal (Superfund) legislation. The *Agent Orange* case, which included Australian Vietnam Veterans amongst the potential claimants, was commenced in January 1979 against seven chemical companies and the United States government. It was eventually settled by the chemical companies for \$180 million”.⁴⁹

⁴⁵ See B J Preston, “Environmental law 1927-2007: Retrospect and Prospect”, (2007) 81 ALJ 616 at 623

⁴⁶ B J Preston, note 45, p 624

⁴⁷ (2006) 152 LGERA 258.

⁴⁸ (2007) 127 S Ct 1438; 167 L Ed 2d 248

⁴⁹ P Cashman, “Torts” in T Bonyhady (ed), note 7, pp 130-131

The environment could influence tort law in another, more innovative way. Professor Stone has proposed that the concept of “neighbour” could be extended to include not merely persons, but also nature. Stone notes that currently natural objects do not count in their own right. Damages awarded as a result of the pollution of a river are not necessarily applied to reinstate the river to its former unpolluted state. There is nothing to stop a riparian owner from “selling out” the river by agreeing not to enforce rights in exchange for monetary compensation. The river, of course, cannot protect itself. Stone’s solution is that legal rights should be extended to inanimate natural objects such as rivers, forests and trees. Stone points out that natural objects should not be denied standing merely because they are unable to vocalise their claims since corporations, states, infants, persons of unsound mind and so on are in a similar position. The answer is simply to appoint a legal spokesperson.⁵⁰

Such a spokesperson could include the Attorney-General but there are obviously limitations to the degree of dedication to the championing of issues, particularly controversial issues, due to the political nature of his or her office. Another solution would be to appoint a body such as the Environmental Defender’s Office to act for the natural objects. The Environmental Defender’s Office is an independent, public interest legal aid centre operating in New South Wales and elsewhere in Australia specialising in matters of public interest in the environmental and planning law field.

Stone’s proposal has aroused some academic interest⁵¹ and limited judicial acknowledgment in Australia and the United States of America.⁵² However, it is yet to be implemented.

A synergy can also be seen to exist between tort law and ecologically sustainable development. Tort law enables the addressing of environmental damage. Tort law requires the wrongdoer to make payment for environmentally degrading activities, thereby incorporating the negative externalities directly into the costs of conducting the polluting or degrading activity.⁵³ Ecologically sustainable development has the same effect. One principle of ecologically sustainable development is the internalisation of external environmental costs. One way of achieving the internalisation of external environmental costs is by application of the polluter pays principle. The polluter pays principle requires that the polluter take responsibility for the external costs arising from his or her pollution. Internalisation is complete when the polluter takes responsibility for all of the costs arising from pollution but is incomplete when part of the costs is shifted to the community as a whole. The polluter pays principle has received statutory recognition.⁵⁴ It is also being employed by courts in common law countries in tort law. Examples are to be found particularly in India⁵⁵ and in Kenya.⁵⁶

⁵⁰ C Stone, “Should trees have standing: Toward legal rights for natural objects”, (1972) 45 S Cal L Rev 450; See also C Stone, “Should Trees Have Standing? Revisited: How Far Will Law and Morals Reach? A Pluralist Perspective” (1985) 59 S Cal L Rev 1; C Stone, *Earth and Other Ethics – The Case For Moral Pluralism*, Harper & Row Publishers, New York, 1987; R Nash, *The Rights of Nature – A History of Environmental Ethics*, Primavera Press, 1990, pp 128-136

⁵¹ See for example, L H Tribe, “Ways Not to Think About Plastic Trees: New Foundations for Environmental Law” (1974) 83 Yale L J 1315 at 1343, 1345; D S Favre, “Wildlife Rights: The Ever-Widening Circle” (1979) 9 *Environmental Law* 279; D S Favre “Judicial Recognition of the Interests of Animals – A New Tort” (2005) Mich St L Rev 333. For a contrary view, see M Sagoff “On Preserving the Natural Environment” (1974) 84 Yale L J 205 and P S Elder “Legal Rights for Nature: The Wrong Answer to the Right(s) Question” (1984) 22 Osgoode Hall L J 285

⁵² See in Australia, Justice J Toohey and A D’Arcy, “Environmental Law – its place in the system” in R J Fowler (ed), note 3, p 76 and in USA, Justice William Douglas in *Sierra Club v Morton, Secretary of the Interior* (1972) 405 US 727 at 741-752

⁵³ M Anderson, “Transnational corporations and environmental damage: is tort law the answer?”, (2002) 41 Washburn L J 399 at 408

⁵⁴ See for example s 6(2)(d)(i) of the *Protection of the Environment Administration Act 1991* (NSW)

⁵⁵ *Indian Council for Enviro-Legal Action v Union of India* AIR 1996 SC 1446, (1996) 2 SCC 212, *Vellore Citizens Welfare Forum v Union of India* AIR 1996 SC 2715, (1996) 5 SCC647, *M C Mehta v Union of India* (1997) 2 SCC 411, Supreme Court of India (Kuldip Singh J), WP 3727/1985 (19 December 1996) (known as the Calcutta Tanneries Case), *M C Mehta v Union of India* AIR 1997 SC 734 WP 13381/1984

Administrative law

Administrative law has its origins in the common law but also increasingly nowadays is to be found in statutory law (the *Administrative Decisions (Judicial Review) Act* (Cth) is the best known example). Environmental cases have been at the forefront of development of administrative law⁵⁷. Examples are in relation to standing,⁵⁸ consideration of relevant matters⁵⁹ and jurisdictional fact.⁶⁰ The pervasive effects of climate change are also having an effect on administrative law. Climate change litigation against government decision making is becoming more common⁶¹. Examples are to be found in Victoria, *Australian Conservation Foundation v Latrobe City Council*,⁶² in New South Wales, *Gray v Minister for Planning*⁶³ and *Drake-Brockman v Minister for Planning*,⁶⁴ in New Zealand, *Greenpeace New Zealand v North Land Regional Council and Mighty River Power*,⁶⁵ and in the United States, *Massachusetts v Environment Protection Agency*.⁶⁶

Environmental disputes have also prompted the courts to re-evaluate procedural law governing administrative law challenges. The Land and Environment Court has been at the forefront of reforming procedural law to enable access to justice in public interest environmental cases.⁶⁷ The Court has, in public interest environmental litigation, liberally construed standing requirements and not automatically required an undertaking for damages for interlocutory injunctions, or required security for costs, or ordered costs against an unsuccessful public interest plaintiff.

The twin needs for the environment to have a champion – a defender – and for access to environmental justice spurred the establishment of a specialist environmental, public interest legal centre, the Environmental Defender's Office. The Office was initially established in 1984 in New South Wales and subsequently similar offices have been established in all States and Territories of Australia. The

(13 December 1996) (known as the Taj Trapezium case) and *Research Foundation for Science Technology and Natural Resources Policy v Union of India* Supreme Court of India (Y K Sabharwal J and S H Kapadia) WP 657/1995 (5 January 2005)

⁵⁶ *Waweru v Republic of Kenya*, (2006) 1 KLR (E&L) 677 at 688, 689 (High Court of Kenya)

⁵⁷ For a discussion of administrative law in an environmental context, see B J Preston, "Judicial Review in environmental cases", (1993) 10 Aust Bar Rev 147, B J Preston, "Judicial Review of Illegality and Irrationality of Administrative Decisions in Australia", (2006) 28 Aust Bar Rev 17 and B J Preston, "Administrative Law in an Environmental Context", (2007) 15 A J Admin L (forthcoming)

⁵⁸ *Australian Conservation Foundation v Commonwealth* (1980) 146 CLR 493, *Fraser Island Defenders Organisation Ltd v Hervey Bay Town Council* [1983] 2 QdR 72, (1982) 51 LGRA 94, *Australian Conservation Foundation v Forestry Commission of Tasmania* (1988) 19 FCR 127, 76 LGRA 369, *Australian Conservation Foundation v Minister for Resources* (1989) 76 LGRA 200, *North Coast Environment Council Inc v Minister for Resources* (1994) 55 FCR 492, 85 LGRA 270, *Tasmania Conservation Trust Inc v Minister for Resources* (1995) 55 FCR 516, 85 LGRA 296, *North Coast Conservation Council v Executive Director, Queensland Parks and Wildlife Service* [2000] QSC 172 (14 June 2000)

⁵⁹ *Parramatta City Council v Hale* (1982) 47 LGRA 319, *Minister for Aboriginal Affairs v Peko-Wallsend Ltd* (1986) 162 CLR 24.

⁶⁰ *Corporation of the City of Enfield v Development Assessment Commission* (2000) 199 CLR 135, *Timbarra Protection Coalition v Ross Mining NL* (1999) 46 NSWLR 55 and *Woolworths Ltd v Pallas Newco Pty Limited* (2004) 61 NSWLR 707

⁶¹ See R Lyster, "Chasing down the climate change footprint of the private and public sectors: Forces converge", (2007) 24 EPLJ 281 at 300-309; J Peel, "The role of climate change litigation in Australia's response to global warming", (2007) 24 EPLJ 90 at 96-100; Marcus Priest, "Jury Still Out on Climate Change Liability", *Australian Financial Review*, Legal Affairs, Friday, 5 October 2007

⁶² (2004) 140 LGRA 100; [2004] VCAT 2029

⁶³ (2006) 152 LGRA 258

⁶⁴ [2007] NSWLEC 490

⁶⁵ High Court of New Zealand, Auckland, HK AK Civ 2006 – 404-004617 12 October 2006, (Williams J)

⁶⁶ (2007) 127 S Ct. 1438; 167 L. Ed. 2d 248 and see cases discussed in R Lyster, note 61, pp 301-303

⁶⁷ See B J Preston (1993), note 57 at 165-175, Justice P L Stein, "The Role of the New South Wales Land and Environment Court in the Emergence of Public Interest Environmental Law", (1996) 13 EPLJ 179 at 179-183 and B J Preston, "The role of public interest in environmental litigation", (2006) 23 EPLJ 337

Environmental Defender's Office in New South Wales pioneered the concept of legal aid in environmental disputes.⁶⁸

Constitutional law and human rights

Environmental disputes have been the catalyst for constitutional litigation. Litigation concerning world heritage areas is a prime illustration. The trifecta of the *Tasmanian Dam case*,⁶⁹ *Tasmanian Forests case*,⁷⁰ and the *Daintree Rainforest case*⁷¹ were influential in the extension of Commonwealth power in relation to the environment. The legitimate concern to regulate trade in protected fauna led to constitutional decisions concerning s 92 of the Constitution.⁷² Environmental laws influenced decisions on the extent of inconsistency between Commonwealth and State laws.⁷³

I will now deal with human rights and in particular the right to life.

In Australia, human rights can have as their source the common law,⁷⁴ the Constitution⁷⁵ or federal, state and territorial legislation,⁷⁶ which together constitute the law of this country and form one system of jurisprudence.⁷⁷ One fundamental human right is the right to life. Such a right, together with the right to liberty, property and citizenship, were declared in the Magna Carta. Chapter 29 of the 1297 version of the Magna Carta⁷⁸ provides:

“No freeman shall be taken or imprisoned, or be disseised of his freehold, or liberties, or free customs, or be outlawed, or exiled, or in any other wise destroyed; nor will we pass upon him, nor condemn him, but by lawful judgment of his peers or by the law of the land. We will sell to no man, we will not deny or defer to any man either justice or right”.⁷⁹

Chapter 29 of the 1297 version has been adopted as a received Imperial statute into the law of New South Wales,⁸⁰ Victoria,⁸¹ Queensland⁸² and

⁶⁸ See B Boer, “Legal Aid in Environmental Disputes”, (1986) 3 EPLJ 22 and B J Preston, *Environmental Litigation*, LawBook Co, Sydney, 1989, pp 74-80

⁶⁹ *Commonwealth v Tasmania* (1983) 158 CLR 1

⁷⁰ *Richardson v Forestry Commission* (1988) 164 CLR 261

⁷¹ *Queensland v Commonwealth* (1989) 167 CLR 232

⁷² See *Ackroyd v McKechnie* (1986) 161 CLR 60, *Cole v Whitfield* (1988) 165 CLR 360 and *Castlemaine Tooheys Ltd v South Australia* (1990) 169 CLR 436

⁷³ *Botany Municipal Council v Federal Airports Corporation* (1992) 175 CLR 453 and *Commercial Radio Coffs Harbour Ltd v Fuller* (1986) 161 CLR 47

⁷⁴ The common law had anterior operation to and was assumed by the constitutional instruments: see Sir Owen Dixon, *Jesting Pilate*, 1965, pp 174, 198-202, 203-214 and *Lange v Australian Broadcasting Corporation* (1997) 189 CLR 520 at 562-564

⁷⁵ In *Street v Queensland Bar Association* (1989) 168 CLR 461 at 521-522, Deane J noted “The Constitution contains a significant number of express or implied guarantees of rights and immunities”. See also MH McHugh, “Does Australia Need a Bill of Rights?” a paper presented to the New South Wales Bar Association, Charter of Rights Forum No 1, Sydney, 8 August 2007, pp. 5-8. For example, freedom of communication on matters of government and politics has been held to be an indispensable incident of the system of representative government which the Australian Constitution creates: see *Nationwide News Pty Ltd v Willis* (1992) 177 CLR 1, *Australian Capital Television Pty Ltd v The Commonwealth* (1992) 177 CLR 106, *Lange v Australian Broadcasting Corporation* (1997) 189 CLR 520, *Coleman v Power* (2004) 220 CLR 1 and *APLA Ltd v Legal Services Commissioner* (2005) 224 CLR 322

⁷⁶ For example, freedom from racial discrimination and rights to equality before the law under the *Racial Discrimination Act 1975* (Cth) and various human rights under the *Charter of Human Rights and Responsibilities Act 2006* (Vic), including the right to life (s 9). See also MH McHugh, “Does Australia Need a Bill of Rights?”, note 75, pp 10-11

⁷⁷ *Lange v Australian Broadcasting Corporation* (1997) 189 CLR 520 at 564

⁷⁸ 25 Edward 1 c 29 (1297)

⁷⁹ Translation in *Report of the NSW Law Reform Commission on the Application of Imperial Acts* (LRC4), November 1967, Government Printer NSW, p 62

⁸⁰ *Imperial Acts Application Act 1969* (NSW), s 6 and Part 1 of Second Schedule

⁸¹ *Imperial Acts Application Act 1980* (Vic), s 8 Div 3

Australian Capital Territory.⁸³ In the other states of Western Australia, South Australia and Tasmania and in the Northern Territory the version of the Magna Carta in force at the time of the reception legislation, was received as an Imperial statute.⁸⁴ This would include Chapter 29. The Magna Carta may also have been declaratory of common law principles⁸⁵ and hence received as part of the common law in Australia with the arrival of the British settlers.⁸⁶

The Magna Carta recognised three basic principles which are, as summarised by Issacs J in *ex parte Walsh and Johnson; Re Yates*,⁸⁷: “(1) primarily every free man has an inherent right to his life, liberty, property and citizenship; (2) his individual rights must always yield to the necessities of the general welfare at the will of the State; (3) the law of the land is the only mode by which the State can so declare its will”.

As this summary makes clear, the State may abrogate or curtail a citizen’s human rights, but only through the law of the land. This is true whether the juridical source of the right is the common law or a received Imperial statute. There does not seem to be support in Australia for the view taken by Lord Cooke in New Zealand that there can be no abrogation of fundamental rights because “some common law rights presumably lie so deep that even Parliament could not override them”.⁸⁸ Justice Brennan summarised the widespread view in Australia as follows:

“A court will interpret laws of Parliament in the light of a presumption that the Parliament does not intend to abrogate human rights and fundamental freedoms but the Court cannot deny the validity of an exercise of a legislative power expressly granted merely on the ground that the law abrogates human rights and fundamental freedoms or trenches upon political rights which, in the court’s opinion, should be preserved”.⁸⁹

⁸² *Imperial Acts Application Act* 1984 (Qld), s 5 and Sch 1

⁸³ *Imperial Acts Application Ordinance* 1986 (ACT), Sch 3, Pt 2

⁸⁴ See D Clark, “The Icon of Liberty: The Status and Role of the Magna Carta in Australian and New Zealand Law” (2000) 24 MULR 866

⁸⁵ Sir Edward Coke asserted that the Magna Carta “was for the most part declaratory of the principal grounds of the fundamental law of England”: *The Second Part of the Institutes of the Laws of England* (first published 1642, 1979 ed) quoted by D Clark, note 84, p 872. See also *Herron v McGregor* (1986) 6 NSWLR 246 at 252 where McHugh J A stated: “In Vol 1 of his *First Institute* Coke declared (at 22) that Magna Carta was ‘but a confirmation or restitution of the common law’”. (McHugh JA’s view that there was a specific, existing common law right to a speedy trial that was recognised by the Magna Carta has not been accepted in Australia: see *Jago v District Court of New South Wales* (1989) 168 CLR 23. However this does not affect the more general proposition that the Magna Carta is declaratory of the common law principles that did exist). See also Lord Irvine of Lairg, “The Spirit of Magna Carta Continues to Resonate in Modern Law”, a paper based on the Inaugural Magna Carta Lecture, presented in the Great Hall of Parliament House, Canberra on 14 October 2002, pp. 143-144, available at <http://www.aph.gov.au/Senate/pubs/pops/pop39/c07.pdf>

⁸⁶ See *Mabo v Queensland [No. 2]* (1992) 175 CLR 1 at 34-38 and 79-80 and *Lange v Australian Broadcasting Corporation* (1997) 189 CLR 520 at 562-567. See also A C Castles, “Australian mediations on Magna Carta” (1989) 63 ALJ 122. In *Calder v British Columbia (Attorney-General)* (1973) 34 DLR (3d) 145 at 203, the Canadian Supreme Court stated that the “Magna Carta...has always been considered to be the law throughout the Empire. It was a law which followed the flag as England assumed jurisdiction over newly-discovered lands or territories”. See also *Regina (Bancoult) v Secretary of State for Foreign and Commonwealth Affairs* [2001] QB 1067 at 1095 [36]

⁸⁷ (1925) 37 CLR 36 at 79

⁸⁸ *Taylor v New Zealand Poultry Board* [1984] 1 NZLR 394 at 398. See also *New Zealand Drivers Association v New Zealand Road Carriers* [1982] 1 NZLR 374 at 390; *Fraser v State Services Commission* [1984] 1 NZLR 116 at 121. In the United Kingdom, see *Oppenheimer v Cattermole* [1976] AC 249 at 278 that a pre-war German decree depriving Jews of German citizenship was “so grave an infringement of human rights that the courts of this country ought to refuse to recognise it as a law at all”. For comment, see I D Killey, “Peace, Order and Good Government: A Limitation on Legislative Competence” (1989) 17 Melb U L Rev 24

⁸⁹ *Nationwide News Pty Ltd v Willis* (1992) 177 CLR 1 at 43, 48 per Brennan J. See also Justice G Brennan, “Courts Democracy and the Law”, (1991) 65 ALJ 32 at 38; *Building Construction Employees and Builders’ Labourers Federation of New South Wales v Minister for Industrial Relations* (1986) 7 NSWLR 372 at 387, 405; *Greiner v Independent Commission Against Corruption* (1992) 28 NSWLR 125 at 152; N O’Neill, “Blue-eyed Babies May be Murdered: Dicey’s First Principle Upheld in the Court of

However, before the courts will find that the legislature has intended to abrogate or curtail a citizen's fundamental law rights or immunities the intention must be clearly expressed:

“The insistence on express authorisation of an abrogation or curtailment of a fundamental right, freedom or immunity must be understood as a requirement for some manifestation or indication that the legislature has not only directed its attention to the question of the abrogation or curtailment of such basic rights, freedoms or immunities but has also determined upon abrogation or curtailment of them. The courts should not impute to the legislature an intention to interfere with fundamental rights. Such an intention must be clearly manifested by unmistakable and unambiguous language. General words will rarely be sufficient for that purpose if they do not specifically deal with the question because, in the context in which they appear, they will often be ambiguous on the aspect of interference with fundamental rights”.⁹⁰

So much for the existence of a fundamental right to life and the need for express authorisation by law to abrogate or curtail the right. But what is the content of the right? In particular, in an environmental context, does the right to life involve, not merely a bare right of animal existence, but also a right to live in an environment of such a quality as is consistent with a life of dignity and wellbeing – that is, a right to a clean and healthy environment? This question has not been determined in Australia⁹¹ but it is increasingly being addressed internationally and in other countries.

International treaties on human rights⁹² do not expressly state that a person has a right to a clean and healthy environment.⁹³ Any right with such a content would need to be derived by implication from the more general human rights in the instruments, such as, the right to life in the Universal Declaration of Human Rights,⁹⁴ International Covenant on Civil and Political Rights⁹⁵ and the Convention on the Rights of the Child;⁹⁶ the right to health in the International Covenant of Economic,

Appeal”, (1987) 12 *Legal Service Bulletin* 2; G Winterton, “Extra-Constitutional Notions in Australian Constitutional Law”, (1986) 16 *F L Rev* 223 at 231-235. Note, however, that in *Union Steamship Co of Australia Pty Ltd v King* (1988) 166 CLR 1 at 10, the High Court did leave open the question “[w]hether the exercise of that legislative power is subject to some restraints by reference to rights deeply rooted in our democratic system and the common law”

⁹⁰ *Coco v The Queen* (1994) 179 CLR 427 at 437. See also *Potter v Minaghan* (1908) 7 CLR 277 at 304; *Kartinyeri v Commonwealth of Australia* (1998) 195 CLR 337 at 381 [89]; *Daniels Corporation International Pty Ltd v Australian Competition and Consumer Commission* (2002) 213 CLR 543 at 553 [11], 582 [106]-[108]; *Plaintiff S157/2002 v Commonwealth of Australia* (2003) 211 CLR 476 at 492 [30]; *Al-Kateb v Godwin* (2004) 219 CLR 562 at 577 [19]-[20]; *Thomas v Mowbray* (2007) 237 ALR 194 at 249 [208], 300 [380] and Hon JJ Spigelman “Principle of Legality and the Clear Statement Principle” (2005) 79 ALJ 769 at 774-776

⁹¹ There have been calls for Australia to establish environmental rights: see Justice P L Stein, “An Antipodean Perspective on Environmental Rights”, (1995) 12 *EPLJ* 50 at 52 and T Simpson and V Jackson, “Human Rights and the Environment”, (1997) 14 *EPLJ* 268 at 277. See also Justice M Kirby, “Human Rights: An Agenda for the Future” in B Galligan and C Sampford (eds), *Rethinking Human Rights*, Federation Press, 1997, p 2 at pp 4 and 8

⁹² An international treaty or convention to which Australia accedes does not have force as municipal law (of the Commonwealth or the States): *Kioa v West* (1985) 159 CLR 550 at 570 *Dietrich v The Queen* (1992) 177 CLR 292 at 305; *Minister for Immigration and Ethnic Affairs v Teoh* (1995) 183 CLR 273 at 286-287. Nevertheless, an Australian statute will be interpreted and applied, as far as its language admits, so as not to be inconsistent with established rules of international law: *Polites v Commonwealth of Australia* (1945) 70 CLR 60 at 68-69, 77, 80-81; *Minister for Immigration and Ethnic Affairs v Teoh* (1995) 183 CLR 273 at 287; *Kartinyer v Commonwealth of Australia* (1998) 195 CLR 337 at 384 [97]; *Al-Kateb v Godwin* (2004) 219 CLR 562 at 589 [63], 591 [65]; *Thomas v Mowbray* (2007) 237 ALR 194 at 300 [380]

⁹³ See T Stephens, “Multiple International Courts and the ‘Fragmentation’ of International Environment Law”, 25 *The Australian Year Book of International Law* 227 at 242-243

⁹⁴ Article 3

⁹⁵ Article 6

⁹⁶ Article 6

Cultural and Social Rights,⁹⁷ and the Convention of the Rights of the Child;⁹⁸ and the right to an adequate standard of living in the Universal Declaration of Human Rights⁹⁹ and in the International Covenant on Economic, Cultural and Social Rights¹⁰⁰.

There are, however, a number of soft law, international declarations expressly recognising a right to a clean and healthy environment. The first such soft law declaration was the Stockholm Declaration in 1972 which provided that:

“Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and being, and he bears a solemn responsibility to protect and improve the environment for present and future generations”.¹⁰¹

The link between human rights and environmental protection was also established in the preamble to the Stockholm Declaration:

“Both aspects of man’s environment, the natural and the man-made, are essential to his well-being and to the enjoyment of basic human rights, even the right to life itself”.

This link was described by the Vice President of the International Court of Justice, Judge C G Weeramantry, as follows:

“The protection of the environment is likewise a vital part of contemporary human rights doctrine, for it is a *sine qua non* for numerous human rights such as the right to health and the right to life itself. It is scarcely necessary to elaborate on this, as damage to the environment can impair and undermine all the human rights spoken of in the Universal Declaration and other human rights instruments”.¹⁰²

The Rio Declaration made at the UNCED Conference on Environment and Development (or Earth Summit) in Rio de Janeiro in 1992 put the issue of a human right to a clean and healthy environment within the context of sustainable development. Principle 1 of the Rio Declaration provides that:

“Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature”.

At national level, an increasing number of countries have constitutional provisions recognising a duty owed by the national government to its citizens to prevent harm to the environment or recognising the importance of a healthy environment either as a duty of the state or as a right.¹⁰³ An example is the Constitution of the Republic of South Africa which states in s 24 that:

“Everyone has the right (a) to an environment that is not harmful to their health or well being; and (b) to have the environment protected, for the benefit of present and future generations, through reasonable and other legislative measures that (i) prevent pollution and degradation; (ii) promote conservation;

⁹⁷ Article 12

⁹⁸ Article 24

⁹⁹ Article 25

¹⁰⁰ Article 11

¹⁰¹ Principle 1 of the Declaration of the UN Conference on the Human Environment, 16 June 1972, Stockholm

¹⁰² C G Weeramantry J in his separate opinion in the International Court of Justice’s decision in *Gabcikovo-Nagymaros Project (Hungary v Slovakia)* 1997 ICJ 97 at 110; 37 ILM 162 at 206 (1998)

¹⁰³ B E Hill, S Wolfson, N Targ, “Human rights and the environment: A synopsis and some predictions” (2004) 16 Geo. Int’l Envtl L Rev 359 at 381

and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”.¹⁰⁴

Another example is the Constitution of the Ukraine, which states in Article 50:

“Every person has the right to a safe and healthy environment and to compensation for damages resulting in the violation of this right”.

Other national constitutions refer to a decent, healthy (Hungary, Nicaragua, Korea, Turkey), pleasant (Korea), natural, clean, ecologically balanced (Peru, Philippines, Portugal) or safe environment or one free from contamination (Chile).¹⁰⁵

National courts have also interpreted constitutional provisions recognising the human right to life as including a right to a clean and healthy environment. India is a lead example, interpreting Article 21 of the Constitution of India which provides simply “No person shall be deprived of his life or personal liberty except according to procedures established by law” as including the right of enjoyment of pollution-free water and air for full enjoyment of life and as providing a basis for sustainable development and intergenerational equity.¹⁰⁶

In the Philippines, the Supreme Court of Philippines has held that “the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature” in Article II, s 16 of the Constitution is a mere deduction from, if not a reiteration of, the right to life provision in Article III, s 1 which states “No person shall be deprived of life, liberty, or property without due process of law”.¹⁰⁷

In Pakistan, the Supreme Court of Pakistan has given a wide interpretation to Article 9 of the Constitution which provides that “No person shall be deprived of life or liberty save in accordance with law” so as to include a right to have a clean atmosphere and unpolluted environment.¹⁰⁸ In Nigeria, the Federal High Court of Nigeria has held that the fundamental rights to life and dignity of a human in ss 33(1) and 34(1) of the Constitution of the Federal Republic of Nigeria 1999 “inevitably includes the right to clean, poison-free, pollution-free and healthy environment”.¹⁰⁹

¹⁰⁴ Section 24 of Chapter 2 of the Constitution which is a Bill of Rights. See J Glazewski, “The Environment, Human Rights and a New South African Constitution”, (1991) 7 SAJHR 167, J Glazewski, “The Environment and the New Interim Constitution” (1994) 1 SAJELP 1, T Winstanley “Entrenching Environmental Protection in the New Constitution”, (1995) 2 SAJELP 85

¹⁰⁵ UNEP, *Judicial Handbook on Environmental Law*, UNEP, 2005, p 30. See generally, E Brandl and H Bungert, “Constitutional Entrenchment of Environmental Protection: A Comparative Analysis of Experiences Abroad”, (1992) 16 Harv Entl L Rev 1 and J Thornton and S Tromans, “Human Rights and Environmental Wrongs. Incorporating the European Convention on Human Rights: Some Thoughts on the Consequences for UK Environmental Law”, (1999) 11 J Evtl L 35

¹⁰⁶ See *M C Mehta v Union of India* AIR 1988 SC 1037 at 1038-1039 [4]; *Subhash Kumar v State of Bihar* AIR 1991 SC 420 at 424[7]; *Virendra Gaur v State of Haryana* 1995 (2) SCC 577; *Vellore Citizens Welfare Forum v Union of India* AIR 1996 SC 2715, (1996) 5 SCC 647 at [12]-[15]; *AP Pollution Control Board v Prof MV Nayudu (ret'd)* [1999] 1 LRI 185 at [59]; *M C Mehta v Kamal Nath* AIR 2000 SC 1997 at [8]-[10]; A Rosencranz and S Rustomjee, “Citizen’s Right to a Healthful Environment” (1995) 25 (6) *Environmental Policy and Law* 324 at 325-327, 7; B E Hill, S Wolfson, N Targ, “Human rights and the environment: A synopsis and some predictions” (2004) 16 *Geo. Int’l Evtl L Rev* 359 at 383-384 and A B Divan, “The Supreme Court of India – Access to Courts and Public Interest Litigation” in R J Fowler (ed), note 3, pp 48-59

¹⁰⁷ *Minors Oposa v Factoran, Secretary of the Department of Environment and Natural Resources* 33 ILM 173 (1994); 224 SCRA 792 (1994). See also *Environmental Law Training Manual*, Philippine Judicial Academy, Manila, 2006, p 27

¹⁰⁸ *Shehla, Zia v WAPDA* PLD 1994 SC 693 at [12]-[15]; *General Secretary, West Pakistan Salt Miners Labour Union, Khewral, Jhelum v Director of Industries and Mineral Development, Punjab* 1994 SCMR 2061 at [4]

¹⁰⁹ *Gbemre v Shell Petroleum Development Company Nigeria Ltd and others*, Suit No FHC/B/CS/53/05, Federal High Court of Nigeria (C V Nwokorie Presiding Judge), 14 November 2005 (orders made 15 November 2005)

In Kenya, the High Court of Kenya has held in relation to s 71(1) of the Constitution of Kenya which provides “No person shall be deprived of his life intentionally save in execution of the sentence of a court in respect of a criminal offence under the law of Kenya of which he has been convicted”, that “whereas the literal meaning of life under s 71 means absence of physical elimination, the dictionary covers the activity of living. That activity takes place in some environment and therefore the denial of wholesome environment is a deprivation of life...Thus a development that threatens life is not sustainable and ought to be halted. In environmental law life must have this expanded meaning as a matter of necessity”.¹¹⁰

Contract law

The environment can influence the law of contract in at least two ways. First, conservation of the environment or components of it may be able to be achieved by a private agreement between the owner of the land on which the environment occurs and a relevant government authority. Various statutes provide for the making of these voluntary environmental agreements.¹¹¹ The use of voluntary environmental agreements can be a useful tool in ensuring the conservation of biological diversity in situ.¹¹²

Secondly, certain contracts relating to pollution and environmentally harmful products and processes may be invalid or unenforceable as being contrary to public policy. The underlying principle is that expressed by Isaacs J in *Wilkinson v Osborne*:¹¹³

“In my opinion the ‘public policy’ which a Court is entitled to apply as a test of the validity to a contract is in relation to some definite and governing principle which the community as a whole has already adopted either formally by law or tacitly by its general course of corporate life, and which the Courts of the country can therefore recognise and enforce. The Court is not a legislator: it cannot initiate the principle; it can only state or formulate it if it already exists.

The rule of law as to contracts against public policy is constant – namely that every bargain contrary to social governing principle is regarded as prejudicial to the State, or, in other words, contrary to ‘public policy’ or as is sometimes called, ‘policy of the law’, and the State by its tribunals refuses to enforce it.

...

The Courts refuse to give effect to such a bargain, not for the sake of the defendant, not to protect any interest of his – indeed they do not fail to notice that his failure to abide by his agreement sometimes adds dishonesty to illegality – but they refuse to enforce the bargain for the sake of the community, it would be prejudiced if such a bargain were countenanced”.¹¹⁴

¹¹⁰ *Waweru v Republic* (2006) 1 KLR (E&L) 677 at 690-691. See also at 687

¹¹¹ See for example, conservation agreements under Division 12 Part 4 of the *National Parks and Wildlife Act* 1974 (NSW) and s 126A of the *Threatened Species Conservation Act* 1995 (NSW), property vegetation plans under Part 4 of the *Native Vegetation Act* 2003 (NSW), heritage agreements under ss 23 and 23A of the *Native Vegetation Act* 1991 (SA) and heritage agreements under Part 3B of the *Heritage Act* 1977 (NSW)

¹¹² See generally D Curran, “The conservation of biological diversity on private property in NSW” (2000) 17 EPLJ 34, A P Danne, “Voluntary environmental agreements in Australia: an analysis of statutory and non-statutory frameworks for the implementation of voluntary environmental agreements in Australia”, (2003) 20 EPLJ 287, S Shearing, “Taxation incentives for conservation covenants”, (2006) 11 LGLJ 139, J A Fitzsimmons, “Private Protected Areas? Assessing the suitability through incorporating conservation agreements over private land into the national reserve system: the case study of Victoria” (2006) 23 EPLJ 365 and E Peden, “Conservation Agreements – contracts or not?”, a paper presented to the Beyond Environmental Law Conference, Sydney, 16-17 February 2007

¹¹³ (1915) 21 CLR 89 at 97

¹¹⁴ (1915) 21 CLR 89 at 97-98

The statement has been cited with approval on numerous occasions.¹¹⁵

As I have noted earlier, society's views change and with respect to environmental matters, this change is towards imposing stricter standards in environmental responsibility. As stated in *Re Jacob v Morris (dec'd)*,¹¹⁶ "Public policy is not...fixed and stable. From generation to generation ideas change as to what is necessary or injurious, so that 'public policy is a variable thing. It must fluctuate with the circumstances of the time'".¹¹⁷ The courts are bound to adapt to these changing circumstances.

Byers has predicted that the time has come where courts will strike down a contract which is designed to pollute or has as an inevitable consequence to the pollution of the environment as being contrary to public policy.¹¹⁸

One way in which a contract relating to environmental harm could be seen to be contrary to public policy is if it involves statutory illegality. In *Yango Pastoral Company Pty Limited v First Chicago Australia Ltd*,¹¹⁹ Gibbs ACJ identified four ways in which the enforceability of a contract may be affected by a statutory provision which renders particular conduct unlawful:

"(1) The contract may be to do something which the statute forbids; (2) The contract may be one which the statute expressly or impliedly prohibits; (3) The contract, although lawful on its face, may be made in order to effect a purpose which the statute renders unlawful, or (4) The contract, although lawful according to its own terms, may be performed in a manner which the statute prohibits."¹²⁰

In the first class of case, a statute might prohibit pollution or prohibit the manufacture, marketing, sale or distribution of an environmentally harmful product. Such a statute may affect the enforceability of a contract in which one or both of the parties have undertaken to do the very act of pollution, manufacture, marketing, sales or distribution which is prohibited. An illustration would be a contract by one person to collect the waste of another person and to dispose of it by dumping it in a particular river where that act would contravene clean waters legislation.¹²¹ A court is unlikely to enforce such a contract either by an order of specific performance or by enabling a party to recover damages for breach or wrongful repudiation of such a contract.¹²²

In the second class of case, the statute may be directed to the very making of the contract. In such a case, it can be expected that the legislature would provide expressly in relation to the enforceability of the contract. An illustration is a statute which makes it unlawful for any person to subdivide land into allotments or to offer for sale or to sell such allotments except in accordance with the statutory provisions. A contract entered into for the sale of certain allotments without first complying with the statutory provisions would be illegal and invalid.¹²³

¹¹⁵ See for example, *Re Jacob v Morris (dec'd)* (1943) 43 SR (NSW) 352 at 355-356 and *A v Hayden* (1984) 156 CLR 532 at 558 and 571

¹¹⁶ (1943) 43 SR (NSW) 352

¹¹⁷ (1943) 43 SR (NSW) 352 at 356. See also *Shaw v Groom* [1970] 2 QB 504 at 523, *Seidler v Schallhofer* [1982] 2 NSWLR 80 at 87-89 and *A v Hayden* (1984) 156 CLR 532 at 558

¹¹⁸ Sir Maurice Byers QC, "Concluding remarks" in R J Fowler (ed), note 3, p 178

¹¹⁹ (1978) 139 CLR 410

¹²⁰ (1978) 139 CLR 410 at 413

¹²¹ Such as s 120 of the *Protection of the Environment Operations Act* (NSW)

¹²² K Lindgren, "Public policy and the enforcement of contracts relating to pollution and environmentally harmful products and processes" in S Thomas, (ed), note 4, p 256

¹²³ *George v Greater Adelaide Development Co Ltd* (1929) 43 CLR 91. See further K Lindgren, note 122, p 258

The third class of case focuses attention on the intention of the parties at the time of entering into a contract. It identifies whether such contracts are accompanied by illegal intent. A contract which is entered into with the object of committing an illegal act is unenforceable.¹²⁴ Lindgren gives the example of “Company A contracts to dispose of Company B’s waste intending, unbeknown to Company B, to dump the waste in a stream in contravention of legislation. Once Company B becomes aware that Company A is illegally polluting the stream, Company B ceases to make its waste available to Company A. Company A sues Company B for damages for breach of contract”.¹²⁵ In such a case, the contract would not be enforceable by Company A.¹²⁶ Company B, however, would be entitled to enforce it, not having been aware at the time of contracting of Company A’s intention, and Company B would be entitled to discontinue performing the contract upon becoming aware of Company A’s illegal intention.¹²⁷

The fourth class of case contemplates a contract, lawful on its face, which has the potential to be performed lawfully or unlawfully and which neither party, when contracting, intends to perform unlawfully, but which in fact is performed, in one respect or another, unlawfully by one party or both parties and if by one party only, with or without the other’s prior knowledge of the illegality. In an environmental context, there might be many contracts, in the performance of which contraventions of environmental protection legislation might occur. Lindgren’s example is that, in the course of carriage of goods by land, sea or even air, acts of pollution might be committed by the carrier. On the assumption that there was not an initial or supervening intention to break the law, the enforcement of the contract is, *prima facie*, not affected. If there was such an intention to break the law, the contract would not be enforceable by the party having that intention from the time that he or she develops it or even by the other party who knowingly acquiesces in that intention, from the time that he or she knowingly acquiesces. A party who in fact performs illegally will not be entitled to recover in respect of the prohibited acts of performance, at least if it would be necessary to plead the illegal acts in the proceedings for recovery, since to allow such recovery would be to allow such a person to take advantage of his or her wrong.¹²⁸

Conclusion

The above examples illustrate the responsiveness of the law to the ever-changing environment and environmental issues. The responsiveness of the law to changing needs ensures the continuing relevance of the law and the attainment of environmental justice.

The concept of ecologically sustainable development involves the integration of three components - economic development, social development and environmental protection - as interdependent and mutually reinforcing pillars. It involves not only intergenerational equity or equity between the present and the future generations but also intragenerational equity which involves ensuring equality within the present generation, such that each member has an equal right to benefit from access the earth’s natural and cultural resources and to benefit from a clean and healthy environment. Environmental harm, however, commonly discriminates against the economically and socially disadvantaged of society. Ensuring access to environmental justice for all people is fundamental if intragenerational equity is to be achieved.

¹²⁴ *St Johns Shipping Corporation v Joseph Rank Ltd* [1957] 1 QB 267 at 283

¹²⁵ K Lindgren, note 122, p 259

¹²⁶ K Lindgren, note 122, p 261

¹²⁷ K Lindgren, note 122, p 261

¹²⁸ K Lindgren, note 122, pp 261-262

Achieving access to environmental justice for everyone will require constant and continuing analysis of the law and our system of justice. As the former Chief Justice of India, the Hon P N Bhagwati, has said:

“If our judicial process is to be responsive to our society’s needs, if it is to fulfil its true purpose and advance the cause it is intended to serve, it must be subjected to a constant and continuing analysis. Our judicial systems must continually be renovated and improved so they become a fit and adequate instrument of justice as we conceive it to be, not only for the fortunate few, but also for the masses”.¹²⁹

Justice Cardozo in his address on the topic of “Faith in a Doubting World” to the New York County Lawyers Association, said this:

“Where shall we find a more stirring message than the great speech delivered by Lord Brougham a century ago in the English House of Commons when he spoke in support of a motion that an address be presented to the King petitioning a Commission be established to enquire into the defects occasioned by time and otherwise in the laws of this realm of England as administered in the Courts of Common Law, and the remedies which may be expedient for the same.

He then proceeded to quote from a book written by Claude Mullins with a provocative title, *In Quest of Justice*:

‘It was the boast of Augustus that he found Rome of brick and left it of marble. But how much nobler would be our sovereign’s boast, when he shall have to say that he found law dear and left it cheap; found a sealed book, left it a living letter; found the patrimony of the rich, left it the inheritance of the poor; found it the double-edged sword of craft and oppression, left it the stuff of honesty and the shield of innocence.’¹³⁰

Can I conclude by adapting Bhagwati’s words. Let all who are privileged to serve in our system of justice – both judges and lawyers - exercise their respective functions in a manner that brings environmental justice to everyone in the country. I am sure that Legal Aid New South Wales and the dedicated lawyers, both public and private, who work in the legal aid system, in times to come, will help to make environmental justice a ready instrument in the hands of all people.

¹²⁹ P N Bhagwati, “The Courtroom as Temple of Justice”, in WH Malik and C E L Ochaita (eds), *Furthering Judicial Education: Proceedings of the Conference of Judicial Schools in Latin America*, World Bank Technical Paper No 528, World Bank, p 29

¹³⁰ As cited in PN Bhagwati, note 129, p 29

Aboriginal Relationship with Land and Water: Aboriginal Commercial Activity¹

Aboriginal Relationship with Land, Water and Law

Prior to English occupation of Australia, Aboriginals operated pursuant to a jurisprudence contained in a system of Laws based on a Law of Relationship to all life forms.

“Situating yourself inside yourself – as the site of law. This must be done to begin to gain any understanding for feeling lawfulness. It will be shown how feeling (and not emotion) internally galvanizes a person’s relationships with other life forms. From this it will be demonstrated how intrinsic the feeling of lawfulness is to the law of relationship and how the law of relationship helps balance energies. Where the feeling of legality, rather than the governance of men is crucial to, as much as a result of, the enactment of the law of relationship” (Parker 2012).

The law of feeling and relationship is intrinsic. Rights and responsibilities are very sophisticated. Advanced Aboriginal legal thinking, in common with many First Nations Peoples, adopts a jurisprudential philosophy that is radically different from western legal systems. However, Aboriginal regulation involves highly sophisticated and complex systems of individual and societal responsibilities from which evolve particular rights. Regulation is oral, passing from one to another according to entitlement to know and, as explained above, recorded by dance, song and story type which must be precisely remembered in full detail. Traditionally, Aboriginal ‘ownership’, particularly of land and water, vested in those with the knowledge of the stories, songs and dance. It is critically important under Aboriginal Law that the knowledge-holder controls what knowledge emerges and when and to whom. This contrasts with the Western ‘right to knowledge’ approach in which the enquirer tends to maintain control.

“There is a perception by some that access to Indigenous knowledge is an entitlement, as though it is part of the global commons” (Collings 2006, p. 2).

A person with knowledge (for example about a watercourse) may need to defer to a person who is more senior, of a different gender or the ‘proper’ one (Neate 2003). The person questioned may not be permitted by traditional law to divulge information (Eades 1992, Eades 1995, Hunt 1999, also *Danci v. Danci* (1984) FLC 91-560, *Gaito v. R* (1960) 104 CLR 419).

“Even in mundane matters, it is wrong to speak of (or for) somebody else’s country, dreaming, or personal business unless given explicit licence to do so” (Gray 2000, p. 4).

Indigenous lawyer, Irene Watson, considers it essential to create conversations going beyond popularly perceived Aboriginal ‘leaders’ because Land Councils and Rep Bodies can effectively silence the voice of traditional and broader language-named identity groups. They may comprise, in fact, the least traditional people and those living away from country with little knowledge of story, song and dance. The right to speak should not go away from people in one area or elide group identities (D. Foley 2007, G. Foley 2007, Claudie 2007).

¹ Kelleher, 2013, Schumpeter’s *Bahnbrechen* Considered in the Light of Native Title Legislation and Indigenous Entrepreneurship, RMIT University, Melbourne, Synthesis of 4.1.

“(W)hen the land of my grandmother at Cape Jaffa is excavated for a marina ... to house the yachts of those who have stolen everything from my past, present and future, there will ... be little that will be heard; my voice in opposition has as much likelihood of being heard as if I were speaking during the final quarter of an AFL grand final” (Watson 2007, p. 28).

Story, song and dance sustained, and in many respect still sustain, Aboriginal legal and trading systems, with communities coming together for trading and negotiation in ways that resemble the business meeting or conference. Aboriginal people innovated agriculture, aquaculture and housing (Diamond 1997). Non-Indigenous regulators need to step very carefully indeed into these subtle and sophisticated systems. Consultation well beyond the standard umbrella Aboriginal groups is critically important.

Aboriginal Commercial Activity

There is a lack of understanding of Aboriginal traditional ‘trading’ and commercial activity. The exclusion of commercial activity amounts to the exclusion of a fundamental traditional cultural and heritage right. It also, frequently, omits the wealth lying within Aboriginal knowledge and knowledge systems themselves.

Traditional

Australia is described as an affluent society prior to British settlement (Dingle 1988, Mattingley 1998). The standard of living of an 18th century Aborigine has been favourable compared with that of most Europeans of the time (Blainey 1982, Watson 1984). According to UK estimates, in 1722, shortly after Captain Cook planted his British flag on a sandy spot along Australia’s east coast, only 4% of the earth’s people were ‘free’, with the remainder, according to Schumpeter, slaves, serfs, indentured servants or vassals (McGraw 2007, 146). All Australian Aborigines were free. Although the first settlers brought narrow notions of freedom, and despite their great disadvantages, Aboriginal people were never officially rendered slaves.

As described above, story, song and dance sustained the entire Aboriginal legal and trading systems. Nevertheless, Aboriginal social organisation rejected the pursuit of wealth and social mobility. All Aboriginal Nations had concepts of property that equated little with western notions of private property. Clear territorial boundaries applied and, within ‘country’, all land and water was precious and precisely regulated. Trade was communally controlled without a financial system involving money, stocks, bonds or credit mechanisms. Land and water was held to provide for the family group. It was managed and protected for future generations. There is some suggestion that the economic trading base was led by a stratified society ruled by chiefs with a form of heredity succession to such office (Commonwealth of Australia 2004, Dawson 1881, Lovett 2007, 2). Among some People, the trading base lent itself to the formation of villages (Commonwealth of Australia 2004, 5, Coutts et al 1978, *Lovett on behalf of the Gunditjmara People v State of Victoria* [2007] FCA 474 (30 March 2007), pts 4 and 18).

Whilst knowledge systems and philosophical standpoint differed from Europeans, traditional methods of research and application existed with knowledge carrying responsibilities to the human beings, animals, plants and places with which the knowledge was concerned (Pereira & Gupta 1993).

Aboriginal knowledge was inherently dynamic and constantly evolving through experimentation and innovation, rendering it responsive to fresh insight and external stimuli.

Whilst international trading was long a peaceful and profitable enterprise in northern Australia, with annual trading visits by Maccassans and others from countries north of the Australian coast, competition models are shown in the literature to have led, before white settlement, to the genesis of conflicts, violence and distrust:

“Many Guditjmara people were massacred on Guditjmara land ... by whalers bent on protecting their commercial interests” (Lovett 2007, 16).

Post-Settlement

From the earliest days after white settlement, Aboriginals took up business opportunities arising from the arrival of settlers. Their centuries old trading activity laid the foundations for the post-settlement commercial exchange that gradually established between Aboriginals and Europeans (Trudgen 2000). Often their first contact with the settlers raised economic and commercial matters eg opportunities to lead the newcomers through their land and introduce them to water sources and ‘the exchange of food, tools and cloth for labour’ (Hercus & Sutton 1986, 1). However, not all trade between Aboriginals and the white settlers was competitive or fraught, let alone exploitative or violent. Western desert Aboriginals traded artifacts with Europeans as far back as the late eighteenth century including, not only utilitarian objects but artifacts for sale (Batty 2006). It was a creative interchange in which the Aboriginal supplier and European buyer exercised in varying degrees of influence on a classic supply-and-demand basis (Barnes 2007, Museum Victoria 1929). Likewise, the European supplier provided new opportunities for easier to use materials and attractive items unknown traditionally. For example, Patterson records Aboriginal use of European bottles that were broken to provide easier stone napping and new tools (Paterson 1999).

The literature also notes that the function of Aboriginal language has marked differences from western, documented language and that different terminologies together with different traditional approaches to trading *per se*, needed to be overcome by nimble traders. In parts of Australia, some Aboriginal people never spoke English at all, while in others ‘Aboriginal English’ because a model of common trading communication (Eades 1992).

Aboriginal knowledge of, for example, the location of water and mineral resources, was highly desired by settlers who had a widespread conviction that Aboriginals knew precious locations but would keep this knowledge secret. However, a quiet assumption of responsibility and capacity to manage on the part of Aboriginal people was recognised by many. For example, the South Australian Railways welcomed Aboriginals on the Ghan railway, with the common view being:

“Is there really anything we can do for Aborigines that they can’t do better for themselves.”
(Gordon undated in Rowley 1970, fn 2, 76).

The confidence of early settlers in Aboriginal pastoral business skills saw them bequeathed pastoral stations (Hercus & Sutton 1986, 192, McDougall Vines 2010, Moore & Kelleher 2009). Indigenous innovation is honoured on the Australian \$50 banknote, showing the Aboriginal inventor David Unaipon who developed and patented a modified shearing handpiece that revolutionised the nation’s wool industry. He made patent applications for nine other inventions, including a centrifugal motor, a multi-radial wheel and a mechanical propulsion device (Jones 1999).

However, despite the evidence of Aboriginal venturing, it is sometimes viewed, especially by anthropologists, as a tradition that is culturally antithetical to commercial activity and entrepreneurship:

“Ours is a market-civilisation, theirs not. Indeed, there is a sense in which The Dreaming and The Market are mutually exclusive.” (Stanner 1958-9, included in Stanner 2009, 163).

This is a romantic, even somewhat paternalistic, view of The Dreaming and contrasts with identification of tradition as the filter through which any innovation occurs (Schumpeter 1939, 244-247). Further, innovation could be theoretically encouraged by such a dichotomy between traditional/modern creates the chaos for creative/destruction and so becomes the setting for entrepreneurial opportunity (D. Foley 2005/2006, Marrie 2007, 49). Thus, the view of eminent social scientist, Professor Charles Rowley appears more appropriate:

“(Aboriginal) traditions embody a unique and profound view of reality that may even now be developed by Aboriginal scholars to enrich the mainstream of human thoughts. The skills are precisely what the nation needs to appreciate and to conserve a unique environment in real danger” (Rowley 197, 358).

Aboriginal knowledge of plants, traditional farming and water and land management practices, crop diversity, over this period aligns with the Indigenous entrepreneurship literature as being of considerable potential significance (Akerle 1996, Altieri 1987, Oldfield & Alcorn 1998, PCAST 1998, Shiva 1998).

Aboriginal knowledge systems themselves have great value, with their unique notions of being in the world, connectedness to place, kin, community, all species and the natural world, lying as they do within a very different perspective of time and history (Grievies 2004). There is recognition in the literature over this period of the need for their protection by appropriate regulatory change (Langton & Ma Rhea 2005, Marrie 2007). Studies during the early 2000s draw attention to regulatory change that encourages the concentration of life industries into the few giant transnational corporation, for example the increasing global control of seed and pharmaceuticals by multinational corporations that leaves Aboriginals paying for access to their own knowledge (Langton & Ma Rhea 2005, Marrie 2007). The fundamental difference of Aboriginal knowledge systems requires that Aboriginal knowledge recovery, if led by Aboriginals, will not look the same as programs led by ‘experts’ such as scientists, conservationist, technologists, even if participatory, due to the, often goodwill, ‘cherry-picking’ that selects and emphasises some Indigenous knowledge, whilst ignoring, discarding or excluding others (Nakata 2008). There has been increased willingness to consider those aspects of Aboriginal knowledge that are, apparently, uninteresting or of no value, have no funding, are not published and remain marginalised or at risk of being overlooked or actually written out. Increasingly, the literature records attempts to secure Aboriginal led or sole-run projects and critical thinking approaches by ‘experts’ for alternative knowledges or understandings that might lie before them but be being overlooked or interpreted from one perspective, ignoring other equally valid approaches.

Western rules (such as those created by Native Title Act or Traditional Owner Settlement Act) concerning who speaks, in what way and at what points, emphasize the power of European law and the authority of the Judge, who can choose to speak freely at any time – but do not necessarily

reflect how Aboriginals and their communities organise and 'regulate' themselves (Morphy 2007). Traditional owners held knowledge of the Laws and customs that was the subject matter of enquiry. Traditional owners as well as individual Aboriginals may or may not be members/leaders of a RAP under Aboriginal Heritage Act, a PBC under the Native Title Act or other 'western' regulatory construct. It is critical that the western legal system and its regulatory change does not reinforce its intrinsic power and increase Aboriginal alienation or cultural disjuncture. Aboriginal reservations about interacting with law and regulatory change are articulated by Watson who examined what she calls an absorption process in which Aboriginals become consumed by the State and its citizens, who then, by that consumption, almost seek to become Aboriginal.

"(W)hites come into the space of our freedom to roam as Aboriginal peoples over our Aboriginal places and spaces ... They anticipate coming into their own state of lawfulness through the consuming of our sovereignty" (Watson, 2007, p. 18).

SUMMARY

Aboriginal 'regulation' and 'regulatory change' is oral, through stories, songs and dance. Right to Aboriginal knowledge is according to Aboriginal Law and practices, which do not divide out the spiritual and involve *feeling lawfulness*. There is need for greater Aboriginal autonomy in decision-making. Culture needs protection from post-modern 'cannabilisation'. New regulation needs to open up not constrict Aboriginal rights and needs to carefully avoid relying upon umbrella groups such as RAPs, PBCs as the sole repositories for communication with and provision of rights to Aboriginals.

Entrepreneurship and Indigenous Agreements

Aboriginals will not consider delegating responsibility for protecting the viability and sustainability of traditional land and waters (O’Faircheallaigh & Corbett 2005, Randall 2003, Brody 2000). However, Aboriginal knowledge can be:

“downplayed as it is experiential, intuitive and holistic, denying neat boundaries between the physical, cultural and spiritual” (O’Faircheallaigh & Corbett 2005, p. 633).

Standard form agreements need to be developed that build in consistent new venture performance indicators, including steps to monitor and enforce. They need to routinely include unambiguous concrete goals, commitments and responsibilities supported by identified key representatives able to provide ongoing leadership and credible measures to deal with failure to fulfill obligations (O’Faircheallaigh 2002). There is a predictable evenness as to what Aboriginal people seek - minimal damage to country (protection) and maximum financial return (reward) through training, employment, business opportunities, community development, financial returns and skills building (Neate 2001). Aboriginal benefit needs to be commensurate with the scale and impact of any development operation and, so far as possible, long-term benefit. They should offer Aboriginal business and employment, rather than merely an income stream, and they must ensure protection over a range of areas including environment and cultural heritage and a balance between benefits and impact on land and waters aligning trust structures, assured cultural appropriateness and enforcement provisions with effective penalties on all parties, not just paternalistic arrangements for Aboriginal default or delay. Finally such agreements provided for regular review of long-term agreement objectives (National Native Title Council 2008). Well-formed agreements can create the solid economic base that assists achievement of traditional and contemporary Aboriginal cultural values.

Groundwater, rivers and ecosystems: comparative insights into law and policy for making the links

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Amid the raging debates about environmental water during the Millennium Drought, and the prelude to new management arrangements for the Murray-Darling Basin (MDB), a general silence fell on the subject of groundwater — eloquently communicating its perceived irrelevance to these debates. Yet groundwater can, and often does, feed rivers,¹ lakes, wetlands, springs, floodplains, estuaries, aquifer-dwelling fauna and even terrestrial vegetation (all groundwater-dependent ecosystems, or GDEs).² Some GDEs are iconic — take river red gums along the Murray, millennia-old mound springs in the Great Artesian Basin, and Coorong wetlands³ — others are less well known, but can support astounding biodiversity.⁴ Pumping groundwater can “pull” water away from connected rivers, and inadvertently damage or destroy GDEs (adverse pumping impacts). As groundwater demand increases, and coal-seam gas and shale gas industries increase the incidental extraction of groundwater,⁵ laws and policies need to recognise the potential for these adverse pumping impacts. While they should not needlessly discourage groundwater use (indeed, sometimes using groundwater is environmentally preferable to using surface water), they must be alert to threats to hard-fought environmental flows and valuable GDEs — not to mention consumptive surface water entitlements.

This article briefly reviews the state of Australian water law and policy mechanisms for preventing and remedying adverse pumping impacts (linking mechanisms), with a focus on groundwater-dependent surface waters and their associated ecosystems. Using legal analysis and interviews with water agency staff across 22 states in Australia and the western United States (US), it investigates key gaps and challenges that affect these mechanisms and their implementation, and suggests ways to overcome those challenges based on experiences across these states. These regions have much in common: water scarcity, over-allocation, generally similar legal systems, levels of development, and acknowledgement of the ecological value of water. However, groundwater demand is higher in the western

US, adverse pumping impacts have manifested themselves earlier and more severely, and underlying state water allocation laws are more numerous and varied.⁶ The similarities are sufficient to make law and policy experiences mutually relevant, but different enough to produce a “living laboratory” of useful approaches to similar problems.

Approaches to protecting rivers and ecosystems from groundwater pumping

Focus on the level of an individual groundwater entitlement

Rather than the water planning focus of very useful previous work,⁷ this article focuses at the level of individual water entitlements or other statutory rights to extract groundwater, while acknowledging the influence and value of water plans and other higher-level arrangements relating to monitoring and water accounting. There are four reasons for this alternative focus. First, an individual bore can have very localised pumping impacts on river reaches (particularly pools in unregulated river systems) and other GDEs. Accordingly, it is important to consider decision-making tools at that local level, in light of specific local conditions (which may not appear distinctly at the water plan level) and a specific predicted impact. Second, this emphasis uncovers statutory linking mechanisms not previously discussed in the literature, and largely overlooked by national-level policy work, which has focused on plans.⁸ Third, water plans typically only take effect “on the ground” through constraints or considerations that they apply to licensing processes, alongside other statutory provisions.⁹ Fourth, significant areas of Australia, in which groundwater use is less intensive, lack water plans (or water plans that cover groundwater), although extraction there can have significant localised adverse impacts managed through licences or other arrangements.¹⁰

Picture law and policy mechanisms for controlling adverse pumping impacts as being grouped into two toolboxes. Tools in the *preventive* toolbox can apply

before pumping itself commences, when an agency receives the application and considers its predicted impacts against acceptable thresholds of impact. Tools in the *remedial* toolbox can apply after pumping commences, when an agency can deal with any unacceptable impacts that have manifested in practice, and that were unanticipated earlier or were permitted before the introduction of a preventive licensing policy. A single jurisdiction may use multiple tools in these toolboxes, and most do.

Each toolbox has compartments structured by the method used to set a threshold of acceptable impact: regulatory (mandatory), economic or voluntary. These distinctions, along with comparisons with the western US, serve to expose gaps in these toolboxes and potential for future development.

The preventive toolbox

Regulatory mechanisms for preventing unacceptable impacts involve using water plans or statutory provisions to set either *numerical* or *principle-based* thresholds, beyond which groundwater pumping will not be permitted.

Simple numerical thresholds are one option. They can:

- prohibit or restrict new groundwater uses or bore permits:
 - completely, or for most types of uses, within a water plan area, based on impacts on rivers;¹¹
 - within a set distance of a stream or other GDE (for example, a spring);¹² or
 - above a certain prospective total volume of groundwater extraction (cap), which is set considering adverse pumping impacts — for example, reserving a proportion of recharge for environmental purposes;¹³ or
- much more rarely, apply a cap or allocate water to surface water and groundwater users in a joint or linked way.¹⁴

Once they are set, simple thresholds are easy to administer: an agency simply compares a pumping application to a cap figure, or a geographical “no-go zone”, to determine whether the pumping may proceed. However, they are relatively imprecise. A large-scale cap can translate into very different levels of impact at a point, depending on the location of bores, particularly in heterogeneous hydrogeological environments. In addition, a simple “no-go zone” that does not follow hydrogeological conditions can allow bores just outside its boundary, which have much the same effect as bores just inside its boundary.¹⁵

More **complex numerical thresholds**, which are rare in Australia, set impacts more precisely by requiring a

modelled calculation of the pumping impacts of an individual groundwater licence application. The trade-off is that they are more expensive and time-consuming to administer, and raise questions about the accuracy of the technical models used to predict impacts. An example is refusing a new licence that would result in exceeding a maximum allowable decrease in water table level, or pressure, at a set distance from a river or spring.¹⁶ A related, but less onerous, approach is to set thresholds that require calculating individual pumping impacts using average local values of hydrogeological parameters.¹⁷ Western US states commonly use complex thresholds, typically requiring an agency to refuse an application for a well that would draw more than a certain proportion of its water from a river within a certain period of time.

Numerical thresholds in Australia tend to allow comparatively large adverse pumping impacts. New South Wales (NSW) has banned new groundwater licences in certain areas where 70% of the water pumped from bores is drawn from connected surface waters within a single irrigation season (a “70% in 9 months policy”).¹⁸ In formulating sustainable diversion limits for the MDB, the MDB Authority used a “50% in 50 years policy” as a key threshold of risk related to setting groundwater extraction caps.¹⁹

By contrast, numerical thresholds in western US states are much stricter in areas with fully allocated surface water, even in areas that would be considered to have low connectivity between surface water and groundwater in Australia.²⁰ Colorado adopts a 0.1% in 100 years policy; Washington and Montana prohibit groundwater pumping having *any* impact over the long term.²¹ Groundwater offset programs — conceptually similar to carbon or habitat offsets — make these thresholds politically possible. Pumping above these levels of impact is not banned outright; rather, a groundwater permit applicant can offset adverse pumping impacts to ensure that there is no *net* exceedance of the threshold. Methods of offsetting include replacing the water that the bore would capture from the river, by buying and retiring, or leasing and not using, a surface water right or groundwater right that affects the same river;²² using replacement water from another source;²³ or, sometimes, paying financial compensation²⁴ or undertaking environmental projects to benefit the affected areas.²⁵

Rather than being quantified, **principle-based thresholds** are expressed as:

- qualitative standards — for example, requiring that granting a licence be in “the public interest”;²⁶ or

- a set of specific environmental issues to be considered — for example, the effects of extracting water on ecosystems²⁷ and the integrity of water-courses, lakes, springs or aquifers;²⁸ ecological sustainability;²⁹ and similar matters.³⁰

In practice, agencies frequently seem unable to specify exactly how they consider these standards and issues, though they appreciate the flexibility that they offer. In addition, courts view the requirements as very broad³¹ and are unlikely to offer particularly specific guidance. Policy guidelines setting out detailed deliberative criteria that clearly correspond to these statutory licensing provisions seem very rare. The resulting high degree of discretion afforded to decision makers considering principle-based thresholds means that they are unlikely to be used consistently or systematically to protect rivers or other GDEs. Sometimes these thresholds are assumed to be satisfied if the applicable water plan has not identified the potential for adverse impacts, or the pumping comes within an applicable cap, and no public protest ensues,³² even though caps, for example, are not necessarily set with regard to the same kinds of statutory considerations as apply to the grant of individual licences.³³ One solution is to set out explicit locally tailored criteria that define principle-based standards, like the public interest, using water plans (as has occurred in New Mexico and Idaho),³⁴ regulations that are triggered if public comment raises the issue (as in Oregon),³⁵ or formal implementation guidelines.

The economic and voluntary compartments of the Australian preventive toolbox are almost empty. Some statutes explicitly allow for economic approaches,³⁶ which could regulate effects on GDEs by, for example, charging a pumping fee to constrain groundwater pumping to acceptable levels. These provisions are rarely used for this purpose in practice.³⁷ Voluntary tools are theoretically possible — for example, to allow groundwater users to purchase voluntary groundwater offsets before pumping commences, mirroring voluntary carbon offsets and voluntary surface water offsets that have emerged in the Pacific Northwest.³⁸ These types of formal arrangements to control groundwater pumping impacts have appeared in practice in neither Australia nor the western US in relation to groundwater.

The remedial toolbox

After pumping begins, and when it becomes obvious that groundwater pumping impacts have become unacceptable, the remedial phase commences. Policy statements about entrenched overallocation suggest that remedial tools are more necessary than one might hope.

The regulatory compartment of the remedial toolbox bristles with possibility, but is rarely used. A water minister often has wide discretion to curtail pumping to

protect ecosystems.³⁹ This rarely occurs in practice, however, other than in fairly uncontroversial or emergency situations — for example, where there has been illegal overuse, or dramatic increases in salinity caused by pumping.⁴⁰ Water plans can, and sometimes do, reduce groundwater entitlements⁴¹ or allocations.⁴² Bitter experience and ongoing litigation over cutting groundwater entitlements suggest the political wisdom of reducing groundwater allocations, which is perceived as less threatening.⁴³ Buying back water entitlements or offering “structural adjustment” payments often soothes the sting of regulatory reductions.

Economically determined thresholds of impact are almost unknown. However, one could imagine at least two possibilities that would serve as both preventive and remedial tools. A simple approach could impose fees in areas where GDEs are more “valuable” than average. A more complex approach could impose location-dependent pumping fees that reflect the monetised adverse impacts of groundwater pumping. One approach to valuing these impacts would be to use ecosystem services, which has assisted setting surface water diversion limits in the MDB.⁴⁴ Either would encourage groundwater pumpers to locate — or relocate — to areas in which pumping is cheaper and has fewer adverse impacts. Though this would doubtless strike challenges in reflecting environmental costs that vary (probably non-linearly) in time and space,⁴⁵ the underlying concepts are very similar to voluntary trading zone tools, discussed below, and recent NSW policy that requires a large-scale project involving “aquifer interference” to provide a security deposit that reflects “the level of risk to the aquifer or its dependent ecosystems from the proposed activity”.⁴⁶

Voluntary tools (as defined here, which neither rely on mandatory thresholds of acceptable impact nor compel a groundwater pumper to act in a particular way) are rare. Existing voluntary tools include one-way water trading rules, which ensure that groundwater entitlements may only be transferred out of a sensitive area, or away from a river-side zone, or from one water source to another, such that adverse pumping impacts diminish over time;⁴⁷ and engineering solutions — for example, pumping water into high-value wetlands, caves or river pools affected by groundwater use.⁴⁸ Individuals may also elect to reduce their groundwater pumping voluntarily, on a more informal basis.

In summary, then, Australia’s preventive toolbox favours imprecise, relatively high-threshold, macro-scale protections that are easy to administer; and little else is widely used in practice. Our remedial toolbox contains regulatory tools that are used even more rarely, and are politically and (in practice) financially burdensome for governments.

Implementation challenges and potential solutions

Many cross-cutting challenges face laws and policies for controlling adverse groundwater pumping impacts, regardless of the particular tool used.

Groundwater information and burdens of proof:

The general paucity of information on the stream-connectedness of aquifers and other information required to predict adverse pumping impacts⁴⁹ poses a profound challenge to decision makers. They can respond by taking one or more of the following actions, most of which are emerging slowly in Australia, but are more common in the western US:⁵⁰

- assume that groundwater and surface water are connected, in the absence of evidence to the contrary, at least in high-risk areas — a recommended approach that has largely not been adopted in practice in Australia, though various statutory and policy options are available to do this;⁵¹
- require applicants to prove that they will have minimal impacts,⁵² which would require some agencies to confront sensitivities about requiring applicants to undertake potentially expensive investigations;⁵³
- grant a licence, conditional on the holder collecting additional data during an initial pumping term;⁵⁴ and/or
- invest in studying groundwater-surface water interaction⁵⁵ in a pragmatic way by systematically prioritising investigations based on groundwater demand, the ecological value of groundwater, and hydrological complexity.⁵⁶

Prioritising protections: There is often little existing scientific knowledge about the locations or water needs of GDEs, and determining their water requirements is an emerging and time-consuming science.⁵⁷ A slew of new scientific tools and maps, released after a period of substantial government investment into GDE research, will help identify GDEs,⁵⁸ but prioritising them for protection is an ongoing challenge. A number of bases for prioritising GDEs have emerged:

- community values, usually in conjunction with another basis;⁵⁹
- advice from special-purpose technical committees⁶⁰ or regional natural resources agencies;⁶¹
- pre-existing lists of valuable species or ecosystems — for example, endangered species or Ramsar wetlands, or GDEs within protected areas;⁶²
- basic threat assessment (such as the surrounding level of consumptive demand for groundwater); or
- sophisticated multi-criteria or multiple-input risk assessment.⁶³

Impacts distributed in time: Long time lags can separate pumping groundwater and impacting streamflow or other GDEs — both because groundwater often moves slowly, and because ecosystems take time to respond to reduced water availability.⁶⁴ Australian laws and policies are frequently silent on the time horizons within which impacts must be felt to be considered material. Commonly adopted short-term views⁶⁵ can inadvertently “lock in” cumulatively significant future impacts that are considered too distant (or too politically difficult) to worry about. One groundwater expert has suggested that in the MDB, groundwater pumping that commenced in 1993 will deplete streamflow by at least 711 GL/yr by 2050.⁶⁶ By comparison, this is over a quarter of the volume of water required to be recovered for the environment under the MDB plan. Failing to consider a long enough time horizon could also mean investing in expensive remedial measures that could prove futile in changed future climatic conditions — a current policy issue in Western Australia’s drying climate.⁶⁷

Cumulative impacts of licence-exempt groundwater uses: Groundwater uses that do not require a licence — typically domestic or stock bores, and sometimes wells⁶⁸ used by extractive industries, such as unconventional gas⁶⁹ — fall outside the scope of many of the tools discussed here, which generally operate only on licensed uses. Several solutions to controlling their individually small, but sometimes cumulatively significant, impacts present themselves. Many are very recent:⁷⁰

- provide for special regulatory controls that apply to licence-exempt uses — for example, plan provisions, ministerial orders, or conditions on the siting of bores,⁷¹ or monitoring and mitigation requirements for coal-seam gas activities;⁷²
- apply a cap⁷³ or other threshold⁷⁴ to all licensable and licence-exempt extraction; or
- remove licence exemptions in areas of intensive groundwater use;⁷⁵ or require a special licence for incidental extraction.⁷⁶

Involving third parties: Water planning processes generally provide for community comment and participation on committees formulating management plans, and some water licensing processes (arguably not enough) also provide for public comment.⁷⁷ Western US states almost universally require public comment processes in licensing.⁷⁸ Third-party input is particularly valuable in the context of adverse pumping impacts because many GDEs are highly localised and are therefore unlikely to be described in water plans, and scientific data about them are often scarce. However, gaining meaningful third-party input in this context is a significant challenge: public awareness is low; time lags obscure

connections between groundwater pumping and environmental change; Australian environmental non-government organisations (NGOs) are not generally highly engaged with groundwater matters; and environmental water holders and managers seem generally unengaged with groundwater licensing decision makers. On the other hand, new accessible tools such as the Australian National GDE Atlas⁷⁹ could help inform agencies and the public about the presence of GDEs near proposed or existing bores. In addition, endangered species issues, which have driven strong concerns for certain GDEs in the western US,⁸⁰ are emerging in Australia,⁸¹ building on older movements to protect wilderness caves.⁸²

Opportunities for Australia

Australian jurisdictions can improve both the range of mechanisms available to control the adverse impacts of pumping groundwater on rivers and other GDEs, and the implementation of existing mechanisms. With an eye to current economic concerns, and water reform fatigue, the most pragmatic way to pursue these improvements is by working within existing law and policy structures, as far as possible. Based on the analysis above, I offer the following seven recommendations for water agencies and stakeholders:

1. Re-emphasise the importance of licence-level considerations, in addition to water plan-level mechanisms (such as caps), in controlling adverse pumping impacts. The former can be more tailored to the local situation than the latter.
2. Consider lowering numerical thresholds of pumping impacts deemed to be worth preventing, using a long (or at least explicit) time horizon, and encompassing all groundwater use, whether licensable or not. Focusing on prevention accords with Australia's forward-looking planning philosophy, and will avoid locking in undesirable future impacts that are politically and financially difficult to remedy.
3. Consider developing formal groundwater offset programs, building on western US experience and existing mentions in Australian groundwater policy,⁸³ and current ad hoc and emerging use of them in various groundwater contexts.⁸⁴ Offset programs can reduce the political risks of more robustly protecting surface waters in fully allocated catchments, particularly in the context of large, economically significant extractive projects.
4. Increase the effectiveness of flexible, principle-based thresholds (such as the "public interest" test, and statutory environmental considerations) by detailing locally specific, compulsory deliberative criteria in water plans or formal implementation guidelines.
5. Encourage community and NGO involvement in groundwater licensing and planning by emphasising places, benefits and species that people can relate to — for example, use the freely available National GDE Atlas, ecosystem services concepts, and connections between groundwater and endangered species to raise awareness.
6. Consider developing economic tools using existing powers to impose environment-related pumping fees,⁸⁵ and national policy support.⁸⁶
7. Invest in methods and policies for prioritising the protection of GDEs. They are vital to systematically implementing all of the tools discussed here. Consider imposing a burden of proof on groundwater applicants to demonstrate that pumping will not result in unacceptable adverse impacts in high-priority areas.

Together, these measures would help to enhance the Australian toolbox of mechanisms for preventing and remedying the adverse impacts of pumping groundwater on rivers and other GDEs, and increase the effectiveness of our existing tools.

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Footnotes

1. Note that in some cases, diverting surface water impacts groundwater supplies and ecosystems by reducing recharge to aquifers in "losing" streams, and laws and policies must deal with this reverse situation — for example, Natural Resources Management Act 2004 (SA), ss 132(1)(a)(iii), 132(1)(c). For reasons of brevity, this article focuses solely on the impacts of pumping groundwater on surface waters and ecosystems.

2. For a formal definition, see C Clifton, B Cossens and C McAuley, *A Framework for Assessing the Environmental Water Requirements of Groundwater Dependent Ecosystems: Report 1 Assessment Toolbox*, 2007, p 1.
3. Sinclair Knight Merz Pty Ltd, *Environmental Water Requirements to Maintain Groundwater Dependent Ecosystems*, National River Health Program Environmental Flows Initiative Technical Report Number 2, 2001, pp 4, 8.
4. MT Guzik et al, "Is the Australian subterranean fauna uniquely diverse?" (2010) 24 *Invertebrate Systematics* 407, p 411.
5. R Nelson, "Unconventional gas and produced water" in *Australia's Unconventional Energy Options*, ed Committee for Economic Development of Australia, 2012, p 27.
6. The dominant system for allocating water in the western US is prior appropriation, under which a right to extract water that developed earlier in time is "senior" to, and more reliable than, a "junior" right that developed later. An administrative permit system generally applies. If there is insufficient water to satisfy all users, the right of the most junior will not be fulfilled, in order, to ensure supply to seniors. See J L Sax et al, *Legal Control of Water Resources: Cases and Materials* (4th ed), 2006, pp 124–6.
7. Sinclair Knight Merz, *National Framework for Integrated Management of Connected Groundwater and Surface Water Systems*, 2011; M Tomlinson, *Ecological Water Requirements of Groundwater Systems: A Knowledge and Policy Review*, 2011; National Water Commission, Australia, *National Water Planning Report Card 2011*, 2011.
8. For example, principle-based thresholds: below, nn 26–30 and accompanying text.
9. Water plans do very occasionally contain "self-executing" provisions that control pumping that does not need to be licensed: see below, n 71.
10. For example, declared subartesian areas in Queensland: Water Act 2000 (Qld), s 1046; Water Regulation 2002 (Qld), Sch 11.
11. For example, Water Sharing Plan for the Bega and Brogo Rivers Area Regulated, Unregulated and Alluvial Water Sources 2011 (NSW), cl 54.
12. Tomlinson, *Ecological Water Requirements*, above, n 7, p 127.
13. Tomlinson, *Ecological Water Requirements*, above, n 7, p 17.
14. For example, the Peel Valley in New South Wales: Sinclair Knight Merz, *National Framework*, above, n 7, p 61.
15. Interview with Jennifer Fraser, Director, Groundwater and Licensing, Victorian Department of Sustainability and Environment, and Patrick O'Halloran, Manager, Policy and Licensing, Victorian Department of Sustainability and Environment, Melbourne, 24 May 2012. Alternatives to simple no-go zones have been proposed, which would involve a multiple zone approach: R Evans, *The Effects of Groundwater Pumping on Stream Flow in Australia: Technical Report*, 2007, pp 71–6.
16. Tomlinson, *Ecological Water Requirements*, above, n 7, pp 52, 127.
17. For example, "cumulative spring factors": Department of Natural Resources and Mines, Queensland, Great Artesian Basin Resource Operations Plan, 2007, as amended, 2012, cl 39.
18. Interview with Michael Williams, Manager, Groundwater, NSW Office of Water, Sydney, 24 July 2012.
19. This threshold was used as part of the Recharge Risk Assessment Method process, the results of which were later modified in some cases in the formulation of sustainable diversion limits. Murray-Darling Basin Authority, *The Proposed Groundwater Baseline and Sustainable Diversion Limits: Methods Report*, 2012, pp 19–20.
20. I propose several hypotheses to explain this difference: adverse effects have been less severe in Australia, leading to a correspondingly reduced will to prevent impacts; remedial tools are theoretically easier to administer in Australia, since governments have commonly reserved to themselves the power to reduce entitlements (an act that would attract legal challenge in the western United States, based on being an unconstitutional "taking" of private property without just compensation); and the prior appropriation system brings home the impacts of relatively small adverse impacts to individual surface water right users, as opposed to being diluted among a consumptive pool, which excites correspondingly louder calls to restrain these impacts.
21. *Postema v Pollution Control Hearings Board* (2000) 142 Wn2d 68, p 94; telephone interview with Tim Davis, Water Resources Division Administrator, Montana Department of Natural Resources and Conservation, 2 August 2012.
22. For example, Revised Statutes of Nebraska, § 46-715(3)(e); Oregon Administrative Rules, rr 690-505-0610(3)(b), 690-505-0610(8); telephone interview with Tim Davis, above, n 21 (referring to buying "contract water" from federal government storage projects, for release to a stream).
23. For example, discharging water stored using managed aquifer recharge into the river: W Blomquist, T Heikkila and E Schlager, "Institutions and conjunctive water management among three western states" (2001) 41 *Natural Resources Journal* 653, pp 678–9; Idaho Administrative Code, r 37.03.11.043 (03)(d); telephone interview with Tim Davis, above, n 21.
24. Interview with Brian Patton, Planning Bureau Chief, Idaho Water Resource Board, Boise, 31 October 2011; interview with Kent Jones, State Engineer, Utah Division of Water Rights, Salt Lake City, 2 November 2011 (describing an early practice of accepting monetary compensation, which occurs less often now).
25. Department of Ecology, Washington (state), *Focus on Mitigation in the Yakima Basin*, 2012, p 2, available at <https://fortress.wa.gov>; interview with Brian Walsh, Policy and Planning Section Manager, Water Resources Program, Washington Department of Ecology, Lacey, 27 October 2011; interview with Kevin Rein, Deputy State Engineer, Colorado Division of Water Resources, Denver, 7 November 2011 (in relation to the Colorado Water Conservation Board allowing injury to an

- instream flow right in return for another measure of environmental value if, for example, replacement water cannot be found). Note that some states specifically exclude certain types of offsetting measures by statute — for example, Colorado Revised Statutes, § 37-92-103(9) (prohibiting offsetting by removing vegetation that uses groundwater).
26. Natural Resources Management Act 2004 (SA), ss 147(6)(a), 149(3)(b), 150(8)(b), 156(3)(b), 157(5)(b); Water Act 2000 (Qld), s 210(1)(i); Rights in Water and Irrigation Act 1914 (WA), Sch 1 cl 7(2)(a).
 27. Water Act 2000 (Qld), s 210(e).
 28. Water Act 2000 (Qld), s 210(f); Water Act 1989 (Vic), s 40(1)(d)(ii).
 29. Rights in Water and Irrigation Act 1914 (WA), Sch 1 cl 7(2)(b), (c); Water Act 1989 (Vic), s 40(1)(g); Water Management Act 1999 (Tas), s 63(1)(c).
 30. Water Act 1989 (Vic), s 40(1)(c); Water Act 1992 (NT), ss 71C(3)(b), 90(1)(e); Water Management Act 2000 (NSW), 63(2)(b).
 31. For example, *Minister for Environment and Conservation v Simes* (2007) 98 SASR 481; 153 LGERA 225; [2007] SASC 248; BC200705228 at [48]; *Harvey v Minister Administering the Water Management Act 2000* (2008) 160 LGERA 50; [2008] NSWLEC 165; BC200804598 at [74]–[75].
 32. Telephone interview with Saji Joseph, Director, National and State Water Policy Water Resources Strategy, Water and Catchments Division, Department of Natural Resources and Mines, Queensland, 19 July 2012; interview with Jennifer Fraser and Patrick O’Halloran, above, n 15.
 33. For example, in Victoria, groundwater caps, which are termed “permissible consumptive volumes”, are not required to be set after technical assessments of resource sustainability or the requirements of GDEs, but statutory licensing requirements refer to a range of very specific environmental issues: interview with Jennifer Fraser and Patrick O’Halloran, above, n 15; Water Act 1989 (Vic), s 53(b).
 34. New Mexico Statutes, § 72-14-3.1(C)(11); A Weeks, “Defining the public interest: administrative narrowing and broadening of the public interest in response to the statutory silence of water codes” (2010) 50 *Natural Resources Journal* 255, pp 283–5; *Taos Regional Water Planning Steering Committee, Taos Regional Water Plan: Volume 1 — Water Plan*, 2008, pp 2-5–2-10, available at www.ose.state.nm.us; *In the Matter of Application for Permit No 37-20742 in the Name of Robert G Friedman*, Idaho Department of Water Resources, 25 August 2003, Idaho Department of Water Resources Decisions 21, ¶ 19 (describing the Blaine County Local Public Interest Water Policy).
 35. Oregon Revised Statutes, §§ 537.153(2), 537.170(8) (setting out detailed criteria that must be considered if a public protest against a groundwater application is made, which overcomes a presumption that granting an application would be in the public interest).
 36. For example, Natural Resources Management Act 2004 (SA), s 103.
 37. Telephone interview with Michael Fuller, Acting Director, Water Planning and Management, Department of Environment, Water and Natural Resources, South Australia, 11 September 2012 (in relation to the use of a natural resources management levy for a variety of activities, none of which directly related to environmental impacts).
 38. T Reeve, “Harnessing a voluntary market to restore flow to dewatered rivers and streams”, Global Water Forum, 2012, available at www.globalwaterforum.org.
 39. For example, Natural Resources Management Act 2004 (SA), ss 132(1)(a)(i), 132(1)(d), 132(1)(e), 132(2), 132(5).
 40. Telephone interview with Susan Worley, Branch Manager, Water Allocation Planning, Department of Water, Western Australia, 6 September 2012; telephone interview with Ingrid Franssen, Manager Policy, Department of Environment, Water and Natural Resources, South Australia, 11 September 2012 (referring to a Notice of Prohibition on Water Use in the Poldia Basin in the Musgrave Prescribed Wells Area).
 41. National Water Commission, *National Water Planning Report Card*, above, n 7, p 385 (in relation to the Lower Gascoyne River Groundwater and Surface Water Allocation Plan 2010); interview with Ingrid Franssen, above, n 40 (referring to the Clare Valley, McLaren Vale, and Tatiara Prescribed Wells areas).
 42. Interview with Simon Cowan, Manager, Groundwater and Unregulated Systems, Goulburn-Murray Water, Tatura, Victoria, 30 July 2012 (describing seasonal allocations based on groundwater trigger levels that are set to maintain the direction of groundwater flow to avoid undesirable movement of saline groundwater); Natural Resource Management Standing Committee, *Case Examples of Managing Overallocated Groundwater Systems*, 2002, p 4.
 43. NSW Office of Water, “Achieving Sustainable Groundwater Entitlements Program”, 2011, available at www.water.nsw.gov.au; *ICM Agriculture Pty Ltd v Commonwealth* (2009) 240 CLR 140; 170 LGERA 373; [2009] HCA 51; BC200911041; interview with Michael Williams, above, n 18.
 44. CSIRO, *Assessment of the Ecological and Economic Benefits of Environmental Water in the Murray-Darling Basin: The Final Report to the Murray-Darling Basin Authority from the CSIRO Multiple Benefits of the Basin Plan Project*, 2012, p 23.
 45. Productivity Commission, Australian Government, *Water Rights Arrangements in Australia and Overseas*, 2003; Agriculture and Resource Management Council of Australia and New Zealand and Standing Committee on Agriculture and Resource Management, *Allocation and Use of Groundwater: A National Framework for Improved Groundwater Management in Australia — Policy Position Paper for Advice to States and Territories*, 1996, p 12, available at www.environment.gov.au.
 46. NSW Office of Water, *NSW Aquifer Interference Policy: NSW Government Policy for the Licensing and Assessment of Aquifer Interference Activities*, 2012, p 30.

47. Interview with Robert Knowles, Water Resources Officer, Goulburn-Murray Water, Tatura, Victoria, 30 July 2012 (referring to the Lower Ovens River water plan encouraging the movement of water extraction from shallower, highly stream-connected aquifers to deeper, less connected aquifers); Sinclair Knight Merz, *National Framework*, above, n 7, pp 55, 70–1; Goulburn-Murray Water, *Upper Ovens River Water Supply Protection Area Water Management Plan*, 2012, pp 44–7.
48. Interview with Susan Worley, above, n 40; Tomlinson, *Ecological Water Requirements*, above, n 7, pp 131–2.
49. For a general overview of the reasons behind this paucity of information in relation to GDEs, and the information required to make decisions about protecting GDEs, see B H Thompson Jr, “Beyond connections: pursuing multidimensional conjunctive management” (2011) 47 *Idaho Law Review* 273, pp 298–301.
50. For examples of western US positions on these matters, see *Simpson v Bijou Irrigation Co* 69 P3d 50, 59 n 7 (Colorado 2003), pp 26–7 (in relation to presuming that groundwater and surface water are connected); interview with Tim Davis, above, n 21 (requiring an applicant for a groundwater permit in a closed basin to submit a formal hydrogeological assessment for the application even to be considered); P Barroll, “Regulation of water versus hydrologic reality in New Mexico” (2003) 2 *Southwest Hydrology* 20, p 21 (granting a temporary permit with a requirement to acquire more information); Revised Code of Washington, § 90.03.290 (providing for a preliminary permit, with the holder to provide further information required by the water agency within the period of the permit). In relation to scientific investigations, see below, n 56 for Montana’s approach.
51. P Cullen, “Flying blind: the disconnect between groundwater and policy”, *10th Murray-Darling Basin Groundwater Workshop*, 19 September 2006, p 4; C J Nevill, “Managing cumulative impacts: groundwater reform in the Murray-Darling Basin, Australia” (2009) 23 *Water Resources Management* 2605, p 2618; National Water Commission, *The National Water Initiative — Securing Australia’s Water Future: 2011 Assessment*, 2011, p 100; I Fullagar, *Rivers & Aquifers: Towards Conjunctive Water Management (Workshop Proceedings)*, 2004, p 2; telephone interview with Ludovic Schmidt, Manager, Water Management Branch, Department of Primary Industries, Parks, Water and Environment, Tasmania, 13 July 2012 (does presume a high level of connectivity in the context of water plans, in the absence of data on the matter, but only one water plan includes groundwater so far, being the Sassafras Wesley Vale Water Management Plan 2012); Water Act 2000 (Qld), s 1006.
52. For example, Natural Resources Management Act 2004 (SA), s 147(1)(c).
53. For example, interviews with Simon Cowan, above, n 42, and Robert Knowles, above, n 47.
54. Department of Sustainability and Environment, Victoria, *Policies for Managing Take and Use Licences*, 21 September 2010, cl 15.
55. Such investigations have become very widespread in Australia. A recent wide-ranging example is Sinclair Knight Merz, *Impacts of Groundwater Extraction on Streamflow in Selected Catchments throughout Australia*, Waterlines Report 84, 2012.
56. For example, R Sheldon, *Groundwater and Surface Water Connectivity in Tasmania: Preliminary Assessment and Risk Analysis*, 2011, pp 52–77, available at www.stors.tas.gov.au; Clark Fork River Basin Task Force, Department of Geography, University of Montana and Montana Department of Natural Resources and Conservation, *Proceedings of the Montana Conjunctive Water Management Conference*, 8–9 June 2009, pp 2–3, 10, available at <http://dnrc.mt.gov>.
57. Tomlinson, *Ecological Water Requirements*, above, n 7, p 28; telephone interview with Moya Tomlinson, Principal Policy Officer, Groundwater Policy Unit, National and State Water Policy, Water Resource Strategy, Department of Natural Resources and Mines, Queensland, 16 July 2012.
58. For example, Australian Government, Bureau of Meteorology, *Atlas of Groundwater Dependent Ecosystems*, available at www.bom.gov.au; D Eamus, *Identifying Groundwater Dependent Ecosystems: A Guide for Land and Water Managers*, 2009; S Richardson et al, *Australian Groundwater-Dependent Ecosystems Toolbox: Part 1: Assessment Framework*, Waterlines Report Series No 69, 2011; P Howe and J Pritchard, *A Framework for Assessing the Environmental Water Requirements of Groundwater Dependent Ecosystems: Report 3 — Implementation*, 2007; interview with Ingrid Franssen, above, n 40 (describing a project to list, map and analyse the probability that wetlands around the state are connected to groundwater, to inform water planning processes); P E Dressel et al, *Mapping Terrestrial Groundwater Dependent Ecosystems: Method Development and Example Output*, 2010; for an overview of National Water Commission-funded projects, see <http://archive.nwc.gov.au>.
59. Interview with Moya Tomlinson, above, n 57 (referring to the Environmental Flows Assessment Program process); interview with Ingrid Franssen, above, n 40 (in relation to identifying GDEs in the Clare Valley).
60. Queensland’s water planning framework involves setting up a special-purpose technical reference panel to assist in the preparation of each water plan. In a few cases, this process has included identifying and assessing the water requirements of “high priority” GDEs: interview with Saji Joseph, above, n 32; interview with Moya Tomlinson, above, n 57; SKM, *Callide Groundwater Dependent Ecosystem Assessment: Fitzroy Basin Water Resource Plan*, 2008, available at www.mackay.qld.gov.au.
61. Interview with Jennifer Fraser and Patrick O’Halloran, above, n 15.
62. In New South Wales, regional plans set out a list of “high priority GDEs” — typically those that are present on an external register. The comprehensiveness of these lists varies

- greatly, with some being entirely empty. Compare, for example, Water Sharing Plan for the Dorrigo Plateau Surface Water Source and the Dorrigo Basalt Groundwater Source (2003), Sch 8, with Water Sharing Plan for the Lower Gwydir Groundwater Source (2003), Sch 5 (stating “To be inserted by the Minister ...”). Tasmania’s Conservation of Freshwater Ecosystems Values database (available at <http://wrt.tas.gov.au>) and the Atlas of Tasmanian Karst both contain GDEs.
63. NSW has completed a project to more comprehensively identify and value GDEs based on an ecologically driven classification system, rather than relying on pre-established lists: interview with Michael Williams, above, n 18; P Serov, L Kuginis and J P Williams, *Risk Assessment Guidelines for Groundwater Dependent Ecosystems: Volume 1 — The Conceptual Framework*, 2012. Further reports associated with these guidelines are available from the NSW Office of Water at www.water.nsw.gov.au. See also Sheldon, above, n 56.
 64. Sinclair Knight Merz, National Framework, above, n 7, pp 9–11.
 65. Nevill, above, n 51, p 2608.
 66. Evans, above, n 15, p 53.
 67. Interview with Susan Worley, above, n 40 (in relation to selecting groundwater-dependent wetlands to be protected in light of the effects of reduced precipitation).
 68. In addition to wells proper, mine voids that intercept groundwater and cause significant “use” through evaporation are another such incidental use of groundwater, with the potential to affect streams and ecosystems. Sinclair Knight Merz, CSIRO and Bureau of Rural Sciences, *Surface and/or Groundwater Interception Activities: Initial Estimates*, 2010, p 95.
 69. For example, Petroleum and Gas (Production and Safety) Act 2004 (Qld), s 185(3).
 70. The NSW policy was only promulgated in late 2012; the provision in Queensland was introduced in 2010 (Water and Other Legislation Amendment Act 2010 (Qld), s 195), and as at the date of writing only one underground water impact report for a cumulative management area has been produced: Queensland Water Commission, *Underground Water Impact Report for the Surat Cumulative Management Area*, 2012.
 71. For example, Natural Resources Management Act 2004 (SA), s 127(2); Water Act 1989 (Vic), ss 33AAA, 33AAB; Water Act 2000 (Qld), ss 22, 26.
 72. Water Act 2000 (Qld), ss 361–454.
 73. Water Act 2007 (Cth), ss 4(1) (take), 23 (long-term average sustainable diversion limits). Presumably under this approach, Basin states will either need to find ways to restrict exempt uses, or restrict licensed uses so that exempt uses can continue (and continue to grow) unimpeded; Sinclair Knight Merz, *National Framework*, above, n 7, p 53.
 74. For example, Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources (Sydney Basin Blue Mountains Groundwater Source) 2011 (NSW) (banning the granting or amending of bore approvals within 100m of high priority GDEs in the case of “bores used solely for extracting basic landholder rights”).
 75. For example, Natural Resources Management Act 2004 (SA), s 124(7); although Victorian statute does not require that public comment be invited in relation to a licensing process, it makes provision for it (Water Act 1989 (Vic), s 49(1)(a)) and, in practice, licensing processes usually include this step: interview with Jennifer Fraser and Patrick O’Halloran, above, n 15.
 76. Water Management Act 2000 (NSW), s 91; NSW Office of Water, *Aquifer Interference Policy*, above, n 46.
 77. For example, Water Act 2000 (Qld), s 210.
 78. For example, Colorado Revised Statutes, § 37-90-107; Revised Code of Washington, §§ 90.03.280, 90.44.060; North Dakota Administrative Code 89-03-01-04.
 79. Bureau of Meteorology, above, n 58.
 80. Concerns focus particularly on endangered anadromous fish and spring-dependent species: interview with Ivan Gall, Groundwater Manager, Department of Water Resources, Oregon, Salem, 25 October 2011; telephone interview with Robert Mace, Deputy Executive Administrator, Water Science and Conservation, Water Development Board, Texas, 1 June 2012.
 81. Interview with Moya Tomlinson, above, n 57 (referring to Great Artesian Basin mound springs).
 82. For example, Colong Caves in NSW and Exit Caves in Tasmania: “Invaders’ fight a quarry”, Sun (Melbourne), 24 April 1971; N Clark, “Quarry lobby re-opens the war”, Hobart Mercury, 10 March 1993.
 83. Sinclair Knight Merz, National Framework, above, n 7, pp 69–70; NSW Office of Water, *Aquifer Interference Policy*, above, n 46, pp 5, 6; Natural Resources Management Act 2004 (SA), s 160(2)(b)(i) (department to require a water user to contribute to an “environmental improvement program” to offset environmentally detrimental effects of water use). Its main use so far has been to require irrigators in the Angas Bremer area to plant deep-rooted vegetation to offset the salinising effect of applying irrigation water: interview with Ingrid Franssen, above, n 40; Department of Sustainability and Environment, Victoria, Western Region Sustainable Water Strategy, 2011, p 125; Murray-Darling Basin Authority, above, n 19, p 20.
 84. For example, interview with Simon Cowan, above, n 42 (referring to a requirement of a Tylden quarry to pump groundwater intercepted by a quarry into a stream); interview with Susan Worley, above, n 40 (referring to the potential requirements to support GDEs affected by mine dewatering in the Pilbara until the water table recovers); Water Act 2000 (Qld), s 408 and following; Victorian Ombudsman, *Investigation into the Foodbowl Modernisation Project and Related Matters*, 2011, p 27 (offsetting impacts of Food Bowl Modernisation Project in reducing seepage to environmentally important wetlands).
 85. Above, nn 37 and 83.
 86. Productivity Commission, above, n 45.

Regulatory Change to Optimise Entrepreneurial Opportunity¹

A regulatory change needs to avoid creating a core market or regulatory failure. One that frees a group granted rights from Government interference appears likely to result in stronger positive impacts on entrepreneurial opportunity, particularly in any sector with a history of substantial distrust of and by Government. Withholding information from key sectors affected by the regulation hinders positive impact whilst their involvement in their own regulation appears to improve impact. Regulatory drafting can improve entrepreneurial opportunity by ensuring the free flow of information to it. Regulatory purpose, if it were to optimize cumulative increase in entrepreneurial opportunity and ensure it retains control of that information, ought to include, at drafting stage, 'knowledge' options such as R&D, idea incubation, research parks, chambers of commerce or university-business knowledge links. It might also need to be somewhat tailored to 'best fit' with the existing circumstances of the targeted key interest sector. Those framing the regulatory change, in seeking to optimise entrepreneurial opportunity, must take into consideration that all parties touched by the regulation will adjust activity to seek productive benefit. New regulatory provisions need to go beyond simply 'rights' endowment if they are to address entrepreneurial opportunity impacts. Careful attention is needed also to go beyond minimizing regulatory costs, both transaction and opportunity, to include methods by which regulatory change might maximize the cumulative effect of resource allocation and lift overall levels of entrepreneurial opportunity. Regulatory change agents, eg Parliamentary Counsel, need to include such considerations 'on their radar' and move beyond cost/burden or risk notions of Regulatory Impact Assessment (RIA). This is not to say that cost/benefit considerations are unimportant as certainly costs negatively impact entrepreneurial opportunity. Where the regulatory change is impenetrable, this hinders entrepreneurial opportunity by blocking dynamism. Regulatory proscriptions, driven by Government accountability imperatives, hinder entrepreneurial opportunity. Likewise, where conflict is likely to arise between public accountability for the 'commons' and entrepreneurial opportunity, this needs to be overtly addressed at a policy level and clearly reflected in regulatory goals, with foresight at the outset given to full consideration of the implications of accountability proscriptions. Mandatory goals and structures need to facilitate entrepreneurial opportunity not just simply to address accountability but to optimise opportunity. It is essential to fit the regulatory mandate properly with what might be called the 'industry' culture of all those that the regulation seeks to benefit. Time as a resource being allocated also needs to be recognized, especially where Government and bureaucracy is heavily implicated in regulatory change.

Framers of regulatory change need to include provisions that ensure that the policy change encapsulated in the regulatory change carries through all the regulatory provisions and is neither limited to the bestowing of rights nor brought into conflict with provisions benefiting others elsewhere in the regulation, including accountability priorities.

Regulatory change that creates an umbrella group 'above' those granted particular rights appears less-than-optimal in its impact on entrepreneurial opportunity. There appears to

¹ Kelleher, 2013, Schumpeter's *Bahnbrechen* Considered in the Light of Native Title Legislation and Indigenous Entrepreneurship, RMIT University, Melbourne, Sythesis of 7.6, Implications for Policy and Practice, 254-256.

be considerable disconnect between the entrepreneurial opportunity for such rights holders and a regulatory change creating and resourcing such an umbrella group.

Great care is needed to ensure that bodies responding to aspects of the regulatory change are not merged with or used to diminish the powers of other entities required in other areas eg education and social services.

Building and supporting existing trusting relationships should be the initial focus of regulatory change if it is to positively and productively shift allocation of entrepreneurial activity. Strong social capital with communities affected is a key trigger for entrepreneurial opportunity and the encouragement of allocation of entrepreneurial activity to productive, rather than unproductive or destructive activity. Effort is needed to recognize and support the social capital that does exist and explore regulatory and operational ways of encouraging community allocation of resources productively. A regulatory model that actively involves key sectors of those affected (i.e. industry self-regulation) is more likely to optimize impact upon entrepreneurial opportunity and effort should be made to consult beyond umbrella bodies directly with the individual key sectors.

The 'command and control' regulatory type is likely to constrain and unnecessarily limit impact upon entrepreneurial opportunity. That said, it is likely that a transformative regulatory change, strongly resisted by powerful interest groups, may only achieve impact on entrepreneurial opportunity by the use of 'command and control' regulatory type. However, careful consideration should be given to the use of a broader range of regulatory types with assessment of 'risk' in the choice of a regulatory type carefully done to avoid paternalism and create rather than hinder opportunity. There is scope, even within a 'command and control' transformative regulatory type, to incorporate other regulatory models and methods at points within the regulatory schema after the transformative action has occurred. For example, other regulatory methods might be preferable to achieve some of the regulatory goals rather than others.

Where regulatory arrangements create a mandatory alliance, public-private partnership or, even a *de facto* partnership, any impact on such partners needs to seriously address inherent power and resourcing imbalances and apply basic alliance theory to its design, future management, review and enforcement arrangements. This is especially the case in regulation of the 'commons' or the power imbalance between individuals and public authorities particularly water authorities. It should avoid fixed goals and structures that lock up funds, but should facilitate entrepreneurial activity, ensuring good fit with existing partner organizations and relevant shared long-term goals.

Regulatory change needs to recognize, address and express relationship with related regulation to optimise positive impact on entrepreneurial opportunity. RIAs need to recognise that entrepreneurial opportunity exists and included measures of entrepreneurial opportunity outcome along with adequate tools and methods to assess this.

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