Independent Forestry Panel

Public submission

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Topic 1. Sustainability of current and future forestry operations in NSW

'Sustainability' has many interpretations, scales and dimensions. As the idea was originally understood in the late 80s/early 90s, NSW public forest management is probably amongst the most sustainable in the world.

The Brundtland Commission report of 1987 (1) was broadly welcomed by foresters, as the concept that "development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (sustainable development) seemed to be a perfect fit with the ideals of the forestry profession. The criteria of the Montreal Process (2) also seemed to provide a useful benchmarking process without imposing obligations that the profession would be unable to meet.

The first two principles of the Rio Declaration of 1992 (3) proclaim:

Principle 1: 'Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.'

Principle 2: 'States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies'.

Given the comprehensive and adequate conservation reserve system established in NSW in the late 1990s and early 21st century (4) , the now limited scale of commercial native forestry should not raise concerns for the environmental sustainability of broad-scale forest ecotypes. Short term and localised environmental impacts may occur, but most ecosystems rely on some disturbance for regeneration and renewal. Focus on the 'micro' scale and insisting that sustainability must be demonstrated for every operation on every site at any point in time will inevitably lead to a collapse in system resilience at the broader scale.

1) World Commission on Environment and Development Our Common Future. Oxford University Press 1987).

2) Montreal Process Working Group, 'Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (1995). Online via https://montreal-process.org/documents/publications/techreports/1995santiago_e.pdf

3) Rio Declaration UN Doc. A/CONF.151/26 (vol. I), 31 ILM 874 (1992).

4) Joint ANZECC / MCFFA National Forest Policy Statement Implementation Sub-committee (JANIS), Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia (Commonwealth of Australia, 1997).

Topic 2. Environmental and cultural values of forests, including threatened species and Aboriginal cultural heritage values

Public native forest policy in NSW over the past half-century has often been seen simply as a conflict between 'environmental' and 'commercial' interests. This follows the government confusions of the late 19th century, where forest policy was driven by a conflict between agricultural and forestry interests. Then, as now, professional foresters and the forest industry

saw their role as protectors of their homes and their forests, with not just a clear vested interest in the sustainability of their working environment (both economically and environmentally).
What is often forgotten in discussions of forest policy is the depth of feeling held by those who live and work in forest communities. More than just a place and a job, being part of these communities and part of the forestry industry or profession imparts a deep sense of identity to the individuals concerned , an identity that cannot be bought off simply with 'compensation' or 'alternative employment'.
The cultural ethos of the professional forester was perhaps best summed up by EHF Swain, one of Australia's earliest and most notable forestry figures:
'I have at least this large satisfaction, that I can hand over my trust in a better condition that in which I found it. Probably I will not be here to see the consummation of my policy; but I am glad of the opportunity to put the matter on record'. (5)
This sense of place, respect for the environment and drive to protect and improve that environment is no doubt also held by many of the traditional owners of forested lands. Although in many cases aboriginal connections to land have sadly been stretched to or beyond breaking point, it is likely that there is more in common between traditional indigenous attitudes and forestry attitudes than there is between the indigenous and the preservationist environmental lobby.
5) E.H.F. Swain, Annual Report 1915-1916 , North Western Forestry District (1916)

Topic 4. The future of softwood and hardwood plantations and the continuation of Private Native Forestry in helping meet timber supply needs

It is notable that the recent closure of the native forest industry in Victoria was soon followed by a spike in Australia's imports of timber from Brazil. (6) No doubt all of NSW's timber needs could be met from sources of either imported timber or other (more expensive, less effective) alternatives, or with sufficient time and investment from local plantations. If the true costs of such substitutions were to be honestly examined, the decision to make such replacements may well prove to be at best irresponsible, and in some cases simply unconscionable.
6) ABARES, available online

Topic 5. The role of State Forests in maximising the delivery of a range of environmental, economic and social outcomes and options for diverse management, including Aboriginal forest management models

State forests could in principle be managed to deliver any balance of benefits that the ecosystems can provide. The question is not whether or not that can be done, it is what that balance should be, and (perhaps most importantly), who decides what it should be?
The Australian Labour Party's Secretary for Lands in 1915 William Ashford was pivotal in establishing the NSW Forestry Commission, noting crucially that:
"If there is one thing we have learned, with regard to our forestry policy, it is the necessity for continuity. We must work on a system which will have regard to the conditions years hence, if we are to get the best results; and it is only by the appointment of a commission, free to a certain extent from Ministerial control, that we can hope to have continuity of policy in the changing conditions of our political life'. (7)
While some oversight may be necessary, Ashford recognised the importance of forestry being managed by a specifically trained cadre of professionals, as free as possible from outside interference.
The second level of the 'who' question goes to local influence. The Forestry Commission instituted a system of management plans at quite local levels, allowing for local concerns and priorities to be reflected in local decision-making. More recently, attempts at a deeper local involvement are

evident in the Brigalow and Nandewar Community Conservation Act 2005, which established a multi-agency Council and a series of local advisory committees to oversee forest management directions. Sadly, this initiative appears to have collapsed due to a near universal lack of will to make it work.

7) William Ashford, Legislative Assembly second reading speech, 16 August 1916, p 898.

Topic 6. Opportunities to realise carbon and biodiversity benefits and support carbon and biodiversity markets, and mitigate and adapt to climate change risks, including the greenhouse gas emission impacts of different uses of forests and assessment of climate change risks to forests

NSW State Forest management has to some extent been a victim of its own success in considering these markets, as little additionality would be gained from changes to current management regimes. Perhaps some marginal carbon gains could be realised from longer rotations. Biodiversity assessments methods that would rate a cessation of management as being advantageous over current practices are likely to rely on 'metrics' of biodiversity rather than troubling to assess outcomes.

Can the law reconcile conservation of native vegetation and biodiversity with sustainable forestry?

The short answer is 'no'. The problems stem not from an absence of Law, but from an absense of Ethics.

The themes of this article may be summarised as follows:

i) True and lasting gains for ecologically sustainable management will only be made when management imbibes and exhibits a 'Land Ethic' in the true sense of Aldo Leopold's work, effecively integrating human and non human elements.
ii) The ideals of Colonial Foresty had the potential to develop into a Land Ethic suitable for modern times.
iii) Coercive approaches (financial or legal) are inimical to the development of that ethic. The experience of public native forestry in New South Wales is instructive.

Background to Australian Forestry

Colonial forestry

In the latter half of the 19th century the British found themselves responsible for forest management throughout their sprawling empire, and realised that uncontrolled exploitation (either for export, local colonial use or by indigenous populations) was unsustainable. Particularly in India the Colonial administration lacked the technical expertise required, and responded firstly by employing a number of German professionals, then by training British forestry cadets initially in Germany and later at Nancy in France.

The German botanist and forester Dietrich Brandis was instrumental in developing the first (colonial) Indian Forest Law in 1865 and the more comprehensive Forest Act of 1878.[1] Beginning with the enforcing of areas reserved from agricultural clearing and the regulation of harvesting, forests were brought into scientific management through mapping, surveys, the preparation of working plans[2] and protection from fire. Brandis also identified and protected 'sacred groves', and is credited by

[1] Ramachandra Guha, 'Forestry in British and Post-British India: A Historical analysis' (1983) 18(45/46) *Economic and Political Weekly* 1940.
[2] Manoj Kumar et al, 'Forest working plan for the sustainable management and biodiversity of forest in India (2020) 39(1) *Journal of Sustainable Forestry* 1.

Underwood as "perhaps one of the first forest administrators … to recognise the spiritual as well as the utilitarian nature of forests". [3]

Brandis returned to academia in Europe in 1883, replaced by another German forester Wilhelm Schlich. Schlich was later to produce what became the major English language forestry textbook series for several decades. In Volume 1[4] he gives extensive attention to the 'indirect utility' of forests; effects on climate, soil and water quality and erosion protection. Schlich and his contemporary Henry Baden-Powell established the Indian Forestry Journal, with Baden-Powell noting in 1877 that "*Forests have two great purposes. First they yield timber and other produce, second they occupy a certain place in the organisation of nature … in particular their influence on the air and the soil*".[5] Forest Surveyor Thomas Webber commented in 1902 that "*In establishing a Forest Department and protecting the timber from destruction the government has also extended its protecting arm over the wildlife so it shall not be exterminated in a ruthless and wasteful manner*".[6]

Although what later became known as "Colonial Forestry" undoubtedly had its sins, misunderstandings and mistakes,[7] the above notes serve to illustrate Underwood's summary of professional Indian foresters at the beginning of the 20th century:[8]

> "*The notion that these foresters were uninterested in their surroundings or in anything other than commerce seems to me ridiculous. Just as is the case throughout the world today, early foresters in India loved the forest and cared for it, not just as a place to produce timber, but because it provided humans with pleasures and interests, and wildlife with their habitat*".

Conservation in the United States

The early Indian foresters had their impact on the New World, with both Gifford Pinchot (first head of the United States Forest Service) and Henry Graves (the second head) having studied in Europe under Brandis.[9] The early post-colonisation history of the US was one of unmitigated land exploitation; it was estimated that by 1900 150 million acres of forest (> 60 million hectares) had been converted to farmland.[10] On his return to the United States after studying at the French National School of

[3] Roger Underwood, *Foresters of the Raj* (York Gum, 2013) 12.
[4] W Schlich, *A Manual of Forestry* (Bradbury, Agnew &Co, 1889) vol 1, 25.
[5] H Baden-Powell, *Indian Forestry* (1887) 2, apud Roger Underwood, *Foresters of the Raj* (York Gum, 2013) 38.
[6] apud Roger Underwood, *Foresters of the Raj* (York Gum, 2013) 40.
[7] Raymond Bryant, 'Romancing Colonial Forestry: the discourse of 'forestry as progress' in British Burma' (1996) 162(2) *Geographical Journal* 169.
[8] Underwood, above n 3, 231.
[9] Ibid 14
[10] James L Huffman, 'A history of forest policy in the United States' (1978) 8(2) *Environmental Law* 239.

Forestry Pinchot described the American forestry situation as *"… the most rapid and extensive forest destruction ever known*".[11]

The conservation movement developed along two strands: what might be termed the utilitarian or spiritual, or what Kuhlmann[12] describes as the imperial or foundational. The ethic of 19th and early 20th century foresters would clearly fall along 'utilitarian' lines.

Utilitarian/imperial

Perhaps the earliest utilitarian American conservationist was George Perkins Marsh. As a keen and well-travelled historical scholar Marsh had seen the environmental impacts of human activity in parts of Europe, and was left unimpressed: "*But man is everywhere a disturbing agent. Wherever he plants his foot, the harmonies of nature are turned to discords".*[13] Marsh however was no advocate for a withdrawal from nature: "*…the sooner a natural wood is brought into the state of an artificially regulated one, the better it is for all the multiplied interests which depend on the wise administration of this branch of public economy".*[14] The attitude was anthropogenic and utilitarian, seeing conservation as a practical necessity.

Early American 'Forest Reserves' were set aside under the *Act of March 3, 1891*[15] from all development, and faced considerable opposition in the rapidly developing USA of the late 19th century. Pinchot was critical of the disallowance of timber extraction from the reserves, but supported the efforts to save them from unregulated exploitation.[16] Following intense opposition to the reserves from pro-development forces an inquiry was held and in 1897 the National Forest Commission issued a report stating:[17]

> "*These great bodies of reserved lands cannot be withdrawn from all occupation and use. They must be made to perform their part in the economy of the Nation. Unless the reserved lands of the public domain are made to contribute to the welfare and prosperity of the country, they should be thrown open to settlement and the whole system of reserved forest abandoned.*"

[11] Ibid 251.
[12] Walter Kuhlmann, 'Making the Law more Ecocentric: Responding to Leopold and conservation biology' (1996) 7 *Duke Environmental Law & Policy Forum* 133.
[13] George Perkins Marsh, *Man and Nature* (Charles Scribner 1864) 36.
[14] Ibid 304.
[15] *Act of March 3*, 561, 26 (1891).
[16] Huffman, above n 10 259.
[17] Ibid 263.

President Teddy Roosevelt was a strong supporter of utilitarian forestry, noting in 1901:[18]

> "*The fundamental idea of forestry is the perpetuation of forests by use. Forest protection is not an end in itself…* "

The United States Forest Service was formed in 1905, and the Service was given control of the reserves. In a letter (drafted by Pinchot) establishing the power of the Service the Secretary of Agriculture James Wilson instructed that the resources of the forest reserves were to be used with such restrictions "*only as will insure the permanence of their resources*", and that the guiding management principle be the famous line of "*the greatest good for the greatest number over the long run*".[19] The letter also sternly advised that success could be attained "*only when the administration of each reserve is left very largely in the hands of the local officers, under the eye of thoroughly trained and competent inspectors*".

Spiritual/foundational

The spiritual limb of modern Western environmentalist thought has ancient roots,[20] but began to solidify in its current form with the American philosopher Henry Thoreau. Thoreau's description of wilderness in *The Maine Woods* is apropos:[21]

> *Man was not to be associated with it … not even the surface had been scarred by man, but it was a specimen of what God saw fit to make this world*'.

Aldo Leopold was a graduate of the Yale School of Forestry, and spent his early working career with the US Forestry Service. Leopold's early writings derive from what Oerschlaeger calls "*recognition of the dynamic interrelation of the human species and nature*".[22] Leopold went on to write in *A Sand County Almanac*:[23]

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[18] apud Huffman above n 10 266.
[19] Huffmann above n 10 267.
[20] Chris Eastaugh, 'Green Philosophies in the Face of Climate Change' (2010) 11(3) *BC Journal of Ecosystems and Management* 34.
[21] Thoreau Society 'Thoreau reader' (2008).
[22] Max Oerschlaeger (1991) '*The idea of wilderness, from prehistory to the age of ecology*' (Yale University Press 1991) 221.
[23] Aldo Leopold '*A Sand County Almanac'* (Oxford University Press 1949) viii.

> "*Conservation is getting nowhere because it is incompatible with our Abrahamic concept of land. We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."*

Leopold is often considered to be the 'father of ecocentrism', for his development of the 'land ethic'. A phrase sometimes termed 'Leopold's summary moral maxim'[24] holds that:[25]

> "*A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise*".

Although arguably not particularly influential at the time, corrupted interpretations of Leopold's writings have enjoyed a resurgence as the underpinning of a less utilitarian environmental philosophy.[26] In practice, what passes for ecocentrism in modern times has more in common with Thoreau than Leopold.

Australia

Australia was settled by the British as a series of separate colonies, but the forest administrative history is broadly similar across each. New South Wales will be used here as an example.

NSW < 1916

Early settlement followed a similar pattern to the United States, with an overwhelmingly dominant 'development' urge and ineffective regulation of timber harvest and destruction. Some forest reserves were gazetted from 1871 via the *Crown Lands Act* of 1861.[27] Management of the reserves was the responsibility of the Lands Department, who also had carriage of releasing land for settlement and clearing for agriculture. Over the ensuing three decades responsibility was swapped

[24] J B Callicott, 1987. 'The Conceptual Foundations of the Land Ethic', In Companion to *A Sand County Almanac*. ed. J.B. Callicott, pp. 186-217. (University of Wisconsin Press 1987) 186.
[25] Leopold above n 23 224.
[26] R Roberta Millstein 'Debunking myths around Aldo Leopold's Land Ethic' (2018) 217 *Biological Conservation* 391.
[27] *Crown Lands Act 1861* (NSW).

back and forwards between the Lands and Mines Departments, with a brief period of independence reporting directly to the Colonial Secretary.

This is not to say that forest preservation was without its advocates; the Tamworth District Surveyor Arthur Dewhurst argued very strongly in a letter to the Surveyor General that large areas of the Namoi-Narrabri area be placed in forest reserves and adequately protected from ringbarking.[28] Noting that the "*object of such reservation is the protection of indigenous timber for the future benefit of the Colony*", it was perhaps with a grim foreboding of the future Dewhurst quotes a Captain Campbell Walker F.R.G.S of the Indian Forest Department:[29]

> "*The question of direct financial gain, or of extracting a revenue from the forest by the State, should ever be subordinate to their conservancy for climatic considerations and improvements to meet the demands for the future*"

and further, the Governor of India 1876:[30]

> "*It has been the policy of this Government (Madras), a policy which has been approved by the Secretary of State, that the production of a surplus is neither the present nor ultimate primary object of forest operations; and while seeking to increase the productive powers and revenues of the forest, the Government has had mainly in view the utilization of increasing revenues in extending plantations, and in conserving indigenous forests, and by this means supplying the people and railways with cheap fuel, and preserving or restoring those climatic conditions which appear to be more or less dependent on the existence of woodlands*".

The ineffectiveness of NSW regulation, the pace of clearing for settlement and the scale of illegal timber cutting[31] led to concerns of a looming timber shortage and a Royal Commission was announced, reporting in 1908. In response NSW passed the first Forest Act, and appointed R. Dalrymple Hay as Director of the Forestry Department. The Act required the Minister to "*within three years of the commence-*

[28] A. Dewhurst, letter dated 6 May 1878, reproduced as 'Namoi-Narrabri Timber Reserve (Surveyors' Reports and Plans) by the Legislative Assembly of New South Wales 1878-1879. Laid on the Table in accordance with a promise made in answer to Question of Mr Dangar MP 8 October 1878.
[29] Ibid 11.
[30] Ibid.
[31] Mark Allen 'Exploiting the Land Laws – it wasn't only the squatters' (2012) Chapter 3 in Australia's ever changing Forests VI: Proceedings of the Eighth National Conference on Australian Forest History. Brett J Stubbs et al (eds).

ment of this Act, or as soon after the expiration of that period as practicable, cause a classification of the forest lands of the State … for the purpose of determining which of such lands are suitable to be— (a) permanently dedicated as State forests; (b) temporarily reserved as timber reserves".[32]

EHF (Harold) Swain was Australia's first cadet forester, and although not formally university educated had imbibed Schlich's syllabus of the Oxford School of Forestry.[33] Swain was given charge of the Narrabri Moree Forest District in July 1911, and began the classification work required by the Act. He also organised the 'First Regional Conference' of the District in 1915. Papers given by foresters at this conference[34] demonstrate a fascinating range of interests, a depth of understanding and a universal sense of the importance and rightness of their work. Swain himself best summed up the ethos of the Forestry Department in his final report of 1915/16 before his resignation and move to Queensland:[35]

> *"I have at least this large satisfaction, that I can hand over my trust in a better condition that in which I found it. … Probably I will not be here to see the consummation of my policy; but I am glad of the opportunity to put the matter on record"*.

The 1909 Act proved to be insufficient, with Hay arguing as to financial, regulatory and political deficiencies. Finally he persuaded the Secretary of Lands William Ashford to his cause. Ashford sponsored passage of the *Forestry Act 1916*, which largely met the recommendations of the 1908 Royal Commission.[36] Ashford spoke of "*the great destruction of our natural resources*", and the "*higher duty of conserving our forests and perpetuating them for the future use of our community*". Most importantly from the foresters' perspective:[37]

> "*If there is one thing we have learned, with regard to our forestry policy, it is the necessity for continuity. We must work on a system which will have regard to the conditions years hence, if we are to get the best results; and it is only by the appointment of a commission, free to a certain extent from Ministerial control, that we can hope to have continuity of policy in the changing conditions of our political life".*

[32] *Forestry Act 1909* (NSW) s 7.
[33] Underwood above n 3 300
[34] Unpublished, copy of transcript in this author's personal collection.
[35] E.H.F. Swain, *Annual Report 1915-1916 – North Western Forestry District* (1916) 7
[36] L.T. Carron, 'A History of Forestry in Australia', (Australian National University Press 1985) 10.
[37] William Ashford, second reading speech, apud Fintan OLaighin 2016.

NSW 1916 – 1970

The 1916 Act gave the newly formed Forestry Commission practically unfettered control of lands dedicated as State Forests. Hay retired in 1926, replaced by Norman Jolly (who had studied under Schlich at Oxford and worked for the Indian Forest Service in Burma). The Commission embarked on the work of expanding the State Forest estate, quantifying resources and regulating harvesting. The Commission was entitled to retain one half of the timber royalties it received,[38] with any extra funding needing to be begged from either government loans or from State consolidated revenue.[39]

In 1935 ammendments were made for the dedication of 'flora reserves', 'catchment reserves' and 'National Forests'.[40] Carron[41] mistakenly conflates the changes; the Act shows National Forests to be a more secure tenure for the Commission,[42] while the flora and catchment reserves seperately had clear objects relating to their purpose and an obligation placed on the Commission to manage clearly in line with those objects. Working Plans were to be prepared for each reserve and required approval by the Minister. No operations were to be permitted outside of those enunciated in the Working Plans. Objects went to 'preservation of native flora on the flora reserve',[43] and the 'protection of water supply catchment areas…' and the 'prevention or mitigation of erosion and silting of reservoirs by the preservation of native timber cover, the afforestation of portions of the catchment reserve which bear no timber cover or bear inadequate timber cover'. The Act also made allowance for local community involvement by either municipal councils or 'representatives of any local committee or public body or organisation'. Reserves could be gazetted by the Governor over State Forest, but not over National Forest. All three changes of status were to only be revocable by Act of Parliament.

World War II placed pressure on the Commission, with demands for greater timber output during the war and in the post-war boom. Pre-war the Commission's practice was to licence a limited number of sawmills, and assign to each a 'quota' of sawlogs. Quotas were recommended by Districts, and required proof of sustainability to gain endorsement from the Commissioner. Quotas were abandoned for the war effort, and post-war boom demands for timber (and restricted availability of imports)[44] strained the sustainabilty of the resource. The State government demanded the Commission operate under 'budget equilibrium' (essentially, to be self funding).[45] Eventually, by necessity, the State weakened and returned to funding the Commission's budget shortfall, perhaps tied to an increase in the Commission's

[38] *Forestry Act 1916 (NSW)* s13.
[39] Carron above n 36 20.
[40] *Forestry (Amendment) Act* 1935 (NSW).
[41] Carron above n 36 15.
[42] *Forestry (Amendment) Act 1935* (NSW) s5.
[43] *Forestry (Amendment) Act 1935* (NSW) s3.
[44] Carron above n 36 19.
[45] Ibid 21.

efforts to establish softwood plantations. Silvicutural improvement programmes in State Forests were a casualty of budget pressures.[46]

In 1954 the Conservation Authority of New South Wales warned of increasing demands for timber that the Commission would be required to meet,[47] while the Commission advised that "*it will take appoximately 100 years before all hardwood forests suitable for intensive management have been developed to the extent necessary for the production of maximun annual increment*".[48] Summarising its findings the Conservation Authority announced[49] that

> "*…if the Commission is able to bring all remaining areas of forest land within the range of markets by the provision of necessary access roads, the supply of native timber should be maintained at approximately the present level over the next 10 years. Thereafter, on a long term basis the ability to meet demand will be dependent to a major extent on the progress made by the Forestry Commission in the silvicultural treatment and management of its native forests and the progress made in maintaining minimum requirements for plantation establishment*".

In practice, this meant harvesting in areas previously not considered, the conversion of what were 'low productivity' forests into a condition where they were producing useful timber, and the borrowing of large sums of money to plant exotic pine trees.

The 1950s and 1960s saw the development of comprehensive Management Plans covering most forests, with a clear eye to scientific management and sustainabilty. Sawmills were persuaded to accept smaller logs, new markets were developed, silvicultural research intensified and establishment of exotic pine plantations expanded. By the early 1970s Carron suggests that the Commission "… *might well have had some satisfaction that, at last after half a century, it had brought things sufficiently under control for it to carry out its major objective reasonably well*".[50]

NSW 1970 - 1990

While the Forestry Commission was concerned with meeting the voracious requirement of the State, social changes had been brewing. The Vietnam war had normalised protest, Rachael Carson's 'Silent Springs'[51] alerted people to the dangers of trusting others with care of the environment… the narrative is sufficiently well

[46] Ibid 25
[47] Conservation Authority of New South Wales Timber Resources Inquiry Final Report, (1954) 6
[48] Ibid 9.
[49] Ibid 15.
[50] Carron above n 36, 30.
[51] Rachael Carson *Silent Springs* (Houghton Mifflin 1962).

known to not need repeating here. The Forestry Commission famously faced public challenges to its decisions at Terania Creek[52] and in the Eden Woodchipping[53] controversies. These incidents notwithstanding, it was in the courts that they faced what were to become existential threats.

Two key pieces of legislation were passed in the 1970s; the *National Parks and Wildlife Act 1974* (NP&W Act) and the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Section 112 of the EP&A Act[54] mandated that, in the absence of other considerations, *"A determining authority shall not make a final decision to undertake, or to approve of the undertaking of, an activity that is … likely to significantly affect the environment unless— (a) the determining authority has obtained, examined and considered an environmental impact statement in respect of that activity…".* In 1981 Peter Prineas of the 'National Parks Association' sought declarations from the Land and Environment Court that the Commission's Environmental Impact Statement (EIS) was inadequate, and not an EIS within the meaning of s112. Cripps J found in favour of the Commission, noting that "*In matters of scientific assessment it must be doubtful whether an environmental impact statement, as a matter of practical reality, would ever address every aspect of the problem. There will be always some expert prepared to deny adequacy of treatment to it and to point to its shortcomings or deficiencies*".[55] Of note, the National Parks and Wildlife Service testified as to the 'high standard' of the Commission's EIS.[56] Following an appeal to the Supreme Court the Commission was again successful, with Hutley JA saying that "*The burdens thrown upon any entrepreneur by Pt V of the Act and the regulations are so heavy that the regulations should not be given an extended meaning*".[57]

In 1982 Dianne Kivi (fronting for the National Parks Association)[58] sought orders in the Land and Environment Court that the Forestry Commission be restrained from certain harvesting activities in Goonimbar State Forest. In this case the Commission were unsuccessful, with Cripps J ruling that the proposed actions could not be undertaken without an EIS.[59] Part of the Commission's argument was based on the fact that the disputed activities were to be carried out on a relatively small part of one forest, and thus would not have a significant effect on "the environment" sensu s112 of the *EP&A Act*. This argument failed in light of the National Parks and Wildlife Service's interest in the subject area and other non-timber values, leading Cripps J to conclude that the activity was likely to significantly affect the environment.[60]

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[52] Vanessa Bible, *Terania Creek and the forging of modern environmental activism* (Palgrave 2018).
[53] John Formby *No garden of Eden: the Eden woodchip EIS*. (Australia National University 1986).
[54] Now s5.7 of the *Environmental Protection and Administration Act 1979* (NSW).
[55] *Prineas v Forestry Commission of New South Wales* (1983) 49 LGRA 402, 417 (Cripps J).
[56] Ibid 407.
[57] *Prineas v Forestry Commission of New South Wales* (1984) 53 LGRA 160, 165 (Hutley JA).
[58] James Somerville 2005 https://www.colongwilderness.org.au/files/news/saving_the_rainforest_pdf_format.pdf.
[59] *Kivi v Forestry Commission of N.S.W*. 1982 47 LGRA 38 (Cripps J).
[60] Ibid 48 (Cripps J).

Wendy Jarasius was a member of the 'Towamba Valley Catchment Association'. The first *Jarasius c*ase[61] involved an application for injunctions against the issue of timber licences granted for particular harvesting operations in the Eden Native Forest Management Area. In what may have been a misreading of Cripps J in *Kivi*, the respondents submitted that the "environment" was the whole of the 300,000 hectare Management Area. Hemmings J was unimpressed by this argument, and held that the relevant environment was "*the forest area within which the activity under consideration is located and its adjoining areas*".[62] In other respects the Commission had a win; the applicant's suggestion that the 'social' environment should also be considered was unsuccessful. Somewhat undiplomatically, Hemmings J agreed with the respondents on this point, saying "*I respectfully agree that it is difficult to see how delusions of local residents come within the purview of s111*".[63]

Hemmings J appeared to have some sympathy for the invidious position the Commission had been placed in, praising "*… the competence and dedication to their profession of all forestry officers called to give evidence*".[64] He also noted, without apparent censure[65];

> "*The [Forestry Commission] also clearly demonstrated a resentment to the participation of the Department of Environment and Planning or other public authorities in any decision making process in relation to activities in Crown timber lands*".

Regardless of Hemming J's sympathy or otherwise, the primacy of the Department of Environment and Planning as administrators of the *EP&A Act* over the Forestry Commission's duties under the *Forestry Act* was firmly established. Two further cases served to underline the point.[66] but the Commission did have one win in a second action brought by Jarasius.[67]

Further legal problems for the Commission had their genesis in an unlikely source. In *Bropho v Western Australia*[68] in 1990 the High Court effectively overturned the common law principle of Crown immunity, departing from the tests enunciated in *Province of Bombay v Municipal Corporation of the City of Bombay.*[69] The previous common law position had been the Crown was immune from statutory provisions unless expressly bound or *"…bound, as has often been said, 'by necessary implication.' If, that is to say, it is manifest from the very terms of the statute that it*

[61] *Jarasius v Forestry Commission of New south Wales [no 1]* (1988) 71 LGRA 79.
[62] *Jarasius v Forestry Commission of New south Wales [No 1]* (1988) 71 LGRA 79 92 (Hemmings J).
[63] Ibid 93
[64] Ibid 106
[65] Ibid 105
[66] *Bailey v Forestry Commission of New South Wales* (1989) 67 LGRA 200; *Corkill v Forestry Commission (NSW)* (1990) [1] 71 LGRA 116.
[67] *Jarasius v Forestry Commission of New South Wales [No 2]* (1988) 69 LGRA 156.
[68] *Bropho v Western Australia* [1990] HCA 24; (1990) 171 CLR 1.
[69] *Province of Bombay v Municipal Corporation of the City of Bombay* [1947] AC 58 61.

was the intention of the Legislature that the Crown should be bound, then the result is the same as if the Crown had been expressly named".[70] This principle had been affirmed in Australia as recently as 1982.[71]

In *Bropho*, Brenann J summarised the High Court's new understanding of Crown Immunity as: "…*the presumption cannot be put any higher than this: that the Crown is not bound by statute unless a contrary intention can be discerned from all the relevant circumstance*".[72]

In 1991 John Corkill of the North East Forest Alliance again challenged the Commission, this time on the grounds that the Commission's activities were in breach of s98 and s99 of the *National Parks and Wildlife Act 1974* (NSW) which prohibit the taking or harming of protected or endangered fauna. (the *Chaelundi* case).[73] Corkill's submission was based on the premises that the Forestry Corporation and/or its contractors were not 'the Crown', and thus had no immunity from the NP&W Act. It was common ground between the parties that the NP&W Act did not expressly bind the Crown, and that:[74]

> "*Accordingly [if the Commission is the Crown], the presumption is that provisions of s98 and s99 do not apply to the Forestry Commission. The parties accept that Bropho v Western Australia (1990) 171 CLR 1 confirms the presumption".*

Regarding the NP&W Act's applicability to the Crown Stein J commented that "…*counsel were unable to refer me to any authority which had considered the issue*".[75]

Stein J however appears then to have addressed a question that was not asked. In *Bropho* Stein J discovered that 'legislative intent', including "*consideration of the subject matter and … purpose of the Act*"[76] was sufficient to determine the matter of Crown immunity. Notwithstanding that at the time the NP&W Act was promulgated in 1974 it was settled law that Crown immunity would be presumed and that in the 27 years since it had not occurred to anybody (including the present litigants) to question that point, Stein J was able to derive an insight that the legislative intention of the 1974 Act was indeed to bind the Crown. On appeal, despite arguments from the Solicitor-General, the Supreme Court[77] supported Stein J's conclusions on the basis that if the legislation had intended the Forestry Commission to have immunity

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[70] *Province of Bombay v Municipal Corporation of the City of* Bombay [1947] AC 58 61 (du Parcq J).
[71] *Bolwell v Australian Telecommunication Commission* [1982] FCA 64; 42 ALR 235.
[72] *Bropho v Western Australia* [1990] HCA 24; (1990) 171 CLR 1. 20 (Brennan J).
[73] *Corkill v Forestry Commission of New South Wales [No 2]* (1990) 73 LGRA 126.
[74] *Corkill v Forestry Commission of New South Wales [No 2]* (1990) 73 LGRA 126 133 (Stein J).
[75] ibid 135
[76] Ibid 134
[77] *Forestry Commission of New South Wales v Corkill* (1991) 73 LGRA 247.

it could have said so.[78] It is perhaps with no small sense of the 'resentfulness' referred to by Hemmings J[79] that this author[80] points to the words of du Parcq J in the Privy Council, viz; "*it must always be remembered that, if it be the intention of the legislature that the Crown shall be bound, nothing is easier than to say so in plain words*".[81]

1990 >

Although in a day-to-day sense the Forestry Commission survived past *Chaelundi*, its spirit and spine were broken. Their faith in the law was shattered, and their scope to make independent decisions in the sphere of their professional expertise removed.

Meaningful management plans were no longer produced, long term planning abandoned, and activities focussed on compliance with the minutae of regulation while meeting the financial demands of the State. Ashford's promise of a "*… commission, free to a certain extent from Ministerial control, [with] continuity of policy in the changing conditions of our political life"*[82] was finished.

Commission activities continued, with normal practice being the application for licences under s120 of the NP&W Act. Licences under the *Fisheries Management Act 1994* (NSW) and the *Protection of the Environment Operations Act 1997* were sought and obtained, perhaps in response to the Commission's loss of a stream pollution nuisance case in *Van Son v Forestry Commission of New South Wales.*[83] With the putting into practice of the Regional Forest Agreement schemes the conditions of these licences were essentially transferred into Integrated Forestry Operation Approval conditions.[84] The current Coastal IFOA conditions[85] and protocols[86] encompass 360 pages of legally binding text, with detailed prescriptions and prohibitions covering all permissible activities. Contra Moore,[87] there are presently two 'Forest Management Plans' for native forestry in NSW, each of which are little more than motherhood statements.

What was once a Commission empowered to sustainably manage a substantial portion of the State's natural resources has become a Corporation[88] devoted to collecting royalties whilst spending the least amount of time and money necessary to avoid legal censure. The anti-forestry activists, with the active and enthusiastic

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[78] Ibid 255
[79] *Jarasius v Forestry Commission of New South Wales* (1988) 71 LGRA 79 105 (Hemmings J).
[80] Chris Eastaugh, *Dr rerum naturalium technicarum* from the Institut für Waldbau, Universität für Bodenkultur Wien. In practical English terms, a PhD in Forestry. Currently employed as 'Information and Resources Specialist' with Forestry Corporation NSW.
[81] *Province of Bombay v Municipal Corporation of the City of Bombay* [1947] AC 58 63 (du Parcq J)
[82] William Ashton, second reading speech, apud Fintan OLaighin 2016.
[83] *Van Son v Forestry Commission of New South Wales* (1995) 86 LGERA 108.
[84] *Forestry and National Park Estate Act 1998* (NSW)
[85] Coastal conditions
[86] Coastal Protocols
[87] Cameron Moore, *Natural Resources Law* (Lawbook Co 2016) 278.
[88] *Forestry Act 2012* (NSW)

assistance of the Law, had succeeded in making real the imaginary monster they had sought to dispel.

From philosophy to Conventions to Law

In his finding against the Commission Stein J drew support from *Bropho*, changing attitudes to State power and rising environmental concern. He was, no doubt, swimming with the tide of history. That tide had (and has) two intertwining dimensions: one stemming from environmental philosophy and one from formal international environmental conventions.

Environmental philosophy

There are those within the legal profession who have expressly supported a more 'ecocentric' approach to environmental law.[89] The concept of ecocentrism may be (loosely) described as "*taking a nature-centred approach rather than a human-centred approach*".[90] Ecocentrism purports to find much of its philosophical underpinning in the works of Aldo Leopold, developed into what Kuhlmann[91] calls the 'foundational' stream of conservationist thought, in contrast to the utilitarian.

Much work that purports to build on Leopold (or to refute him) rely on a corrupted understanding of Leopold's message; what Millstein[92] calls the 'Six myths' concerning the Land Ethic. Ideas of the primacy of 'wild' nature have developed into a general sense that 'interference' with Nature is inherently a bad thing,[93] and must be limited to the fullest extent possible.

Leopold's insights in fact went not to the avoidance of activities, but to the ethics of integration. As far as is possible in such a short space, a better understanding of the central thrust of Leopold's work may be gained from two passages that precede and follow his so-called 'maxim':[94]

[89] BJ Preston (2011), 'Internalising Ecocentrism in Environmental Law', 3rd Wild Law Conference: Earth Jurisprudence – Building Theory and Practice. 16-18 September 2011, Griffith University, Queensland.
[90] ibid
[91] Kuhlmann above n 12.
[92] Roberta Millstein above n 26.
[93] Eastaugh above n 20.
[94] Leopold https://rintintin.colorado.edu/~vancecd/phil308/Leopold.pdf.

> *"Perhaps the most serious obstacle impeding the evolution of a land ethic is the fact that our educational and economic system is headed away from, rather than toward, an intense consciousness of land. Your true modern is separated from the land…".*
>
> *"An innumerable host of actions and attitudes, comprising perhaps the bulk of all land relations, is determined by the land-users' tastes and predilections, rather than by his purse. The bulk of all land relations hinges on investments of time, forethought, skill, and faith rather than on investments of cash. As a land-user thinketh, so is he".*

And from the foreword to A Sand County Almanac:[95]

> "*When we see land as a community to which we belong, we may begin to use it with love and respect*".

These sentiments would not be unrecognisable to the Colonial Foresters, even if they did not always have the eloquence (or spare time) to enunciate them.

International conventions and National agreements

The Brundtland Commission report of 1987[96] was broadly welcomed by foresters, as the concept that "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (sustainable development) seemed to be a perfect fit with the ideals of the forestry profession.[97] The criteria of the Montréal Process also seemed to provide a useful benchmarking process without imposing obligations that the profession would be unable to meet.

The first two principles of the Rio Declaration of 1992[98] proclaim:

[95] Leopold above n 23.

[96] World Commission on Environment and Development *Our Common Future*. Oxford University Press 1987).

[97] Without citation. For this and similar statements the author draws on his experience as a past employee of the International Union of Forest Research Organisations in Vienna.

[98] Rio Declaration UN Doc. A/CONF.151/26 (vol. I), 31 ILM 874 (1992).

> Principle 1: "*Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature*."
>
> Principle 2: "*States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies…*".

Again, no concerns for professional forestry here. It may be pointed out in passing that Preston's ecocentric 'nature-centred approach'[99] may have some conflict with Principle 1.

The relevant Commonwealth response to these conventions was Part 4 Division 4 of the *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)*, which (via the Regional Forest Agreements) essentially devolves responsibility for management of forest activities to the States in return for compliance with RFA conditions. In the case of the North East of NSW (for example), the current RFA[100] has purposes that appear to contain some guarantees of the interests of forest industries and responsible forest managers. The RFA prescribes the use of IFOAs, but with little detail as to their required content.

Overall, there would appear to be nothing explicit in the international conventions or Regional Forest Agreements that would challenge or limit the ability of foresters to discharge their obligations according to the ethics of their profession.

Environmental Law

A key concept in Australian environmental law is that of ecologically sustainable development, which has been defined as: '*using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased*.[101] This is commonly highlighted along the lines of six principles:[102]

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[99] Preston above n 90.

[100] Regional Forest Agreement Deed of variation in relation to the regional forest agreement for the north east region https://www.agriculture.gov.au/sites/default/files/sitecollectiondocuments/forestry/rfa/2018-north-east-rfa-variation.PDF.

[101] National Strategy for Ecologically Sustainable Development http://www.environment.gov.au/about-us/esd/publications/national-esd-strategy.

[102] J.B. Preston Principles of Ecologicaly Sustainable Development. (nd) https://www.lec.justice.nsw.gov.au/Documents/preston_principles%20of%20ecologically%20sustainable%20development.pdf.

- Principle of sustainable use
- Principle of integration
- Precautionary principle
- Inter-generational and intra-generational equity
- Conservation of biological diversity and ecological integrity
- Internalisation of external environmental costs

As ethical principles for land management, it is difficult to see how these could be improved upon. The ethic is not the problem, the problem comes in the application.

Without decision makers having an appropriate ethical attitude (and the power to give it reign), history shows unregulated resource exploitation inevitably leads to environmental devastation. Absent these ethics, decision makers must be restricted and coerced. The six principles of ESD are incorporated into statutes, and also inform adjudication. As practical guidelines though, they devolve into prescriptions, almost invariably prohibitions that involve the avoidance of 'interference' with particular parts of the landscape.

Persons planning harvesting operations today have no need for any understanding of stream morphology or riparian ecology. All they need to know may be that "*Any area of land within the distance specified in column 2 of the table … from a drainage feature specified next to it in column 1 is a drainage feature protection zone for the purposes of this approval*"[103] and that "*logging operations must not be carried out in a drainage protection area*".[104]

The harvest planner thus goes to great lengths to harvest as closely as possible to the prescribed line, while the Environmental Protection Authority goes to equally great lengths to ensure the line is not crossed. Neither give a moment's thought as to why. The characteristics, needs and perhaps even rights of the stream and its denizens are essentially irrelevant, other than that the (often contested) precise location of the edge of the bank is used to define the prohibited line. In its efforts to mandate sustainability, the Law has produced the very antithesis of the land ethic necessary for its realisation.

Conclusions

How has it come to this, that a profession predicated on the ideals of long term sustainability found itself pilloried for attempting to carry out its function along the lines dictated to by its political masters, and then forced to become the very thing it hated most? The horns of the dilemma that the Commission became impaled upon were first financial, and finally philosophical. The financial element needs little

[103] Brigalow Nandewar IFOA s107.
[104] Brigalow Nandewar IFOA s113.

explanation; lacking the enlightenment of the 19th century Indian colonial administrations the *Forestry Act* of 1916 tied the Commission to the State's budgetary apron strings – no doubt through both government parsimony and an instinct to retain ultimate control. The second was the altered norms apparent in Stein J's legal activism. By today's lights the primacy of environmental concerns over commercial concerns seems uncontroversial, and the immediate environmental results positive. It is this author's opinion that the long term consequences will be overwhelmingly negative. The efforts of the law serve to push people away from the true understanding of the environment necessary for us to seamlessly become part of it.

Could it have gone differently? The seeds of the Land Ethic were available to us, in our inheritance from the Colonial foresters. There are a number of historical junctures from which counterfactuals might be developed. Had the *Forestry Act* of 1916 provided for funding sufficient that economic imperatives did not take total precedence, had the Commission had the power and foresight in the 1950s to resist demands for increased production, had they seized the opportunity in the 1970s to use Environmental Impact Statements as a true means of community involvement and education, all could have brought us to a different reality today. Following *Chaelundi* though, what remains of the Forestry Commission no longer even pretends to have any influence over its own destiny, and the seedlings of ethical forestry have withered to dust.

Chris Eastaugh

Precaution and adaptive governance in New South Wales public land management, with particular regard to native State Forests

Contents

Introduction

Recent decades have seen a growing understanding of the importance of sustainability in ecosystem and resource management. Coupled with this has been increasing recognition of the challenges posed by climate change, and the pressures that this will place on human interactions with the environment. Public concern with the risks of human activities in nature and apprehension about the uncertainties of what may result from such activity place pressure on land managers to be both cautious and transparent about their actions.

Increasing evidence of climate-related pressures on the environment would appear to dictate the need for action, to protect what can be protected and ensure that unpreventable harm is minimised or mitigated. The impetus to act, however, is constrained by the scientific and legal uncertainties that surround the risks of action.

Commonly, an 'adaptive management' approach is suggested in such circumstances, as a strategy focussed on gaining the knowledge necessary to reduce uncertainty. This however requires actions that go beyond what might currently be recommended or permitted in a particular place under rules predicated on the protection of the environment as it currently exists.

This paper explores the changing understandings of optimum environmental management, the approach to 'precaution' taken by Australian courts, and the impact of the governance arrangements that currently apply to public State Forest management in New South Wales.

1. Part 1: Concepts and Frameworks

1.1 Concepts and definitions

Whilst the reader is expected to have some familiarity with these concepts, definitions are sometimes subjective or contested.[1] The purpose here is to not to make any definitive statement on what definitions may be appropriate in every circumstance, merely to explain and justify how particular terms are used in subsequent discussion.

[1] Bryan G Norton, *Sustainability: A philosophy of adaptive ecosystem management* (University of Chicago Press, 2005) xi.

1.1.1 Ecologically Sustainable Development

1.1.1.1General concept

'Sustainability' in the context of renewable resources was once a relatively non-controversial concept. Simply enough, the rate of extraction should not exceed the rate of replacement. As the term was broadened to consider issues surrounding development other that than that of renewable resource exploitation, the imperative that such developments not do more harm than good required some conceptualisation. This came to be known as 'sustainable development'.

The 1987 Brundtland Commission report defined sustainable development as "… *development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" and further, "*The loss of plant and animal species can greatly limit the options of future generations; so sustainable development requires the conservation of plant and animal species*".[2]

Sustainability has been framed as an 'obligation to the future'[3], an imperative that actions do not reduce the ratio of opportunities to constraints for future generations[4].

1.1.1.2 Australian application

Following from the Rio Conference in 1992[5], in Australia 'ecologically sustainable development' (ESD) was defined in the 1992 National Strategy for Ecologically Sustainable Development (NSESD) 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*"[6].

The NSESD was a purely federal policy statement. These policies flowed to state level via the Intergovernmental Agreement on the Environment (IGAE, reproduced as Schedule 1 of the *National Environment Protection Council Act 1994* (Cth)) and the National Forest Policy Statement (NFPS).[7] This latter statement had its genesis in the international Non-

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[2] World Commission on Environment and Development, *Our Common Future* (Oxford University Press, 1987).
[3] Norton, above n 1, 304.
[4] Ibid 98.
[5] United Nations Conference on Environment and Development, *Rio Declaration on Environment and Development*, UN Doc A/CONF.151/26 (Vol I) (1992) (*Rio Declaration*)
[6] Ecologically Sustainable Development Steering Committee, *National Strategy for Ecologically Sustainable Development* (1992).
https://www.environment.gov.au/archive/esd/national/nsesd/strategy/intro.html#WIESD

[7] Commonwealth of Australia, National Forest Policy Statement: a New Focus for Australia's Forests (Australian Government, 1992).

Binding Statement of Forest Principles,[8] developed at the Rio conference. The NFPS adopted three principles "as the basis of ecologically sustainable development"[9].

- Maintaining the ecological processes within forests (the formation of soil, energy flows, and the carbon, nutrient and water cycles),
- Maintaining the biological diversity of forests, and
- Optimising the benefits to the community from all uses of forests within ecological constraints.

1.1.1.4 Sustainability as process

The principles of ESD should be applied as a whole, not in parts.[10] This tends towards understanding the concept as a 'process' rather than a set of prescriptions with some arbitrary attempt at 'balance'.[11] Process-based solutions are compatible with the way the legal system sees the world, and to some extent release the Court from requiring an expert understanding of all aspects of an issue. Courts are generally deferential to properly authorised decision-makers working within the bounds of their delegation,[12] and will only overturn decisions where the assessment or decision process has been demonstrably inadequate or if they are specifically empowered to conduct merit review.

1.1.2 Biodiversity

The keystone document for Australia's system of conservation reserves (the JANIS report, formally the 'Nationally agreed criteria for the establishment of a comprehensive, adequate and representative reserve system for forests in Australia')[13] gives the following definition for biodiversity:

"*Biological diversity, or biodiversity, is the variety of all life-forms, the genes they contain, and the ecosystems of which they are a part. Biodiversity is generally considered*

[8] Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests, Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992, Vol I, United Nations Publication, resolution 1, annex III.13 June 1992, UN Doc A/CONF 152/6/Rev.1, 31 ILM 881 (1992).
[9] Ibid glossary i.
[10] Blue Wedges Inc v Minister for Environment, Heritage and the Arts (2008) 165 FCR 211.
[11] Jaqueline Peel, The precautionary principle in practice: environmental decision-making and scientific uncertainty (Federation press, 2005), 211.
[12] Ibid 221.
[13] Joint ANZECC / MCFFA National Forest Policy Statement Implementation Sub-committee (JANIS), Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia (Commonwealth of Australia, 1997).

at three levels: genetic diversity, species diversity, and ecosystem diversity. It is sometimes considered at the landscape diversity level".[14]

On examination, the imperative to preserve, conserve or protect 'biological diversity' is a somewhat amorphous goal. As Fisher notes, "*The values of the natural environment are diverse. Intrinsic or instrumental; ecological or economic; aesthetic, cultural or spiritual. Biological diversity can be approached from any of those perspectives. It is about relationships among systems*"[15]. The definition describes a process, and an outcome.[16]

The principle of conservation of biological diversity is '*Fundamental*' and decision makers must show consideration commensurate.[17] Preston J described the conservation of threatened species in *Bentley v BGP Properties Pty Ltd (Bentley)* as "*an essential action in the conservation of species diversity, and hence of biological diversity, and of ecological integrity*".[18]

1.1.3 Risk and harm

1.1.3.1 Risk

'Risk' is the probability of some negative outcome. Strictly speaking risk has been held to be mathematically quantifiable,[19] but in general conversation 'risk' may be conflated with 'uncertainty', which is the case where it is not possible to assign a probability to the chance of a negative outcome. A further classification is 'ignorance', which is the prospect of negative outcomes that come as a surprise.[20] Quantifiable risks can be assessed in a cost benefit analysis, and supportable decisions made on those grounds. Uncertainty is more difficult, as there are no firm grounds on which to make assessments. In a more general sense, risk is often taken to mean simply the 'potential' for harm.

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[14] Ibid, 22.
[15] D E Fisher, Australian Environmental Law: Norms, principles and rules (Thompson Reuters, 2014), 539.
[16] Justice Brian J Preston, 'The judicial development of ecologically sustainable development' in Douglas Fisher (ed) Research Handbook on Fundamental Concepts in Environmental Law (Elgar, 2016) 475, 505-506.
[17] Warkworth Mining Ltd v Bulga Milbrodale Progress Association Inc [2014] NSWCA 105.
[18] Bentley v BGP Properties Pty Ltd (2006) 145 LGERA 234, [63].
[19] Mark Burgman, Risks and decision for conservation and environmental management (Cambridge, 2005), 449; Silvio O Funtowicz and Jerome R Ravetz, 'Three types of risk assessment' in Covello V T et al (eds) Environmental Impact Assessment, Technology Assessment and Risk Analysis (Springer Verlag, 1985) 831.
[20] European Environment Agency *Late Lessons from early warnings: the precautionary principle 1896-2000* (Office for Official Publications of the European Communities, 2001), 170.

1.1.3.2 Harm

The 'negative outcomes' referred to above are variously expressed as damage, harm or injury, all somewhat subjective. Preston J made the issue of 'harm' quite broad: "*Harm should not be limited to measurable harm such as actual harm to human health. It can also include a broader notion of the quality of life*".[21]

The fact of whether 'harm' has occurred is not limited to actual harm, but also includes the potential risk of harm.[22] From *Bentley*; "*Harmfulness needs to be considered not only in terms of actual harm but also harm that is likely to occur in the future as a result of the commission of the offence. The seriousness lies not only in the actual death or damage to ... the threatened species and their habitats at the time of commission of the offence but also in the potential for harm which the acts ... might entail*".[23]

Preston J took a comprehensive view of ecological interconnectedness;[24] "*Harm can include harm to the environment and its ecology. Harm to an animal or plant not only adversely affects that animal or plant, it also affects other biota that have ecological relationships to that animal or plant*". Further: "*Harm can be direct or indirect, individual or cumulative. Activities that contribute incrementally to the gradual deterioration of the environment, even when they cause no discernible direct harm to human interest, should also be treated seriously*".[25]

Unlike in other fields of law, the issue to be proven is not necessarily that an adverse impact has indeed occurred and the environment has suffered deleterious effects, but that actions have been proven to have the potential for such effects to be encountered. In *Director-General, Department of Environment, Climate Change and Water v Forestry Commission of New South Wales*,[26] as a result of poor communication (obscured details on an operational planning map) the Forestry Commission allowed a planned fuel reduction burn to damage habitat of the protected Smoky Mouse. In discussing the impacts of the error the Commission submitted that the prospect of harm was "equivocal or "neutral" given the uncertainty of the impacts of the burn on the habitat of the Smoky Mouse and the possibility that the "*long-term impact of the burn on the Smoky Mouse habitat could in fact be beneficial*".[27] Preston J took a more pessimistic approach to the possibility of harm; while accepting that there was no evidence of long-term harm, the potential was real and thus "beyond reasonable doubt" the burn

[21] Bentley v BGP Properties Pty Ltd (2006) 145 LGERA 234, [145].
[22] Environmental Protection Authority v Waste Recycling and Processing Corporation (2006) 148 LGERA 299, 325.
[23] Bentley v BGP Properties Pty Ltd (2006) 145 LGERA 234, [175].
[24] Environmental Protection Authority v Waste Recycling and Processing Corporation (2006) 148 LGERA 299, [146].
[25] Bentley v BGP Properties Pty Ltd (2006) 145 LGERA 234, [147].
[26] *Director-General, Department of Environment, Climate Change and Water v Forestry Commission of New South Wales* [2011] NSWLEC 102.
[27] Ibid 73.

"caused likely environmental harm".[28] Simply because no evidence of harm is apparent is not in itself evidence of the lack of harm.[29]

The decision to not take some action may also be an occasion for harm; the *National Parks and Wildlife Act* (NSW) (s5) specifies that "To 'harm' an object or place may include acts or omissions". Recent reforms to environmental legislation in NSW have however taken some authority over threatened species and wildlife away from the National Parks Service, and the replacement regulating Act (the *Biodiversity Conservation Act 2016* (NSW)) does not encompass the possibility that an omission may cause harm. This would appear to promote some prejudice against action, even if such action were preventative or precautionary in nature.

1.1.3.3 Assessment / Characterisation

Decision making clearly involves forming some opinion of what harm may be caused by an action or a failure to act. This is generally termed 'risk assessment'. The U.S. National Research Council (NRC) makes some distinction between risk assessment, risk characterisation and risk management,[30] but stresses the interconnectedness of these concepts.

Risk assessment should be a value-neutral examination of possible negative impacts of a proposal and its alternatives.[31] Assessment involves primarily a process of understanding processes and their possible consequences; a lack of bias and preconceived ideas of solutions is important. Also important is to ask the right questions; the way the question is framed will influence the answers. While science should be value-neutral, scientists do have their own influences[32] and so the question framing should spread a wide net to capture all significant concerns.[33]

The risk assessment provides the data necessary for a manager to make a properly informed decision. Exactly what data are necessary is not always clear at the beginning of a project proposal. Hence the NRC strongly advises for stakeholder input from the beginning of the assessment process, to help formulate the problem and ensure that the right questions are being asked.[34] The assessment process can tease out where risks can be quantified, where uncertainty lies and, importantly, which issues have the greatest weight in the mind of stakeholders.

Risk characterisation is the process whereby information in a risk assessment is translated into a form usable by a risk manager. Its purpose is to "*enhance practical*

[28] Ibid 74.
[29] Peel, above n 11, 48.
[30] National Research Council, *Understanding Risk* (National Academy Press, 1996)
[31] Ibid 34.
[32] Ibid 25
[33] Ibid 22.
[34] Ibid 29.

understanding and illuminate practical choices".[35] The assessment/characterisation process is thus also a communication tool,[36] ensuring all views are heard and promoting a shared vison of desired outcomes.[37] Burgman stresses the point that the process is "*just as important as a kind of social grease as it is an instrument of social analysis*".[38]

Risk assessments, as part of the risk decision-making process, are not merely technical matters. The weight given to various perspectives is very much a public policy choice.[39] Following a successful assessment/characterisation process, risk can be "*seen as a joint product of knowledge about the future and consent about the most desired prospects*".[40]

1.1.3.4 Risk Management

"*Thinking about risk, I contend, has been one-sided: safety has been over-identified with keeping things from happening*".[41]

The above examination of 'harm' and 'risk' at first glance suggests that only a goal of 'zero risk' is an appropriate response. This in itself is at least a potentially harmful attitude, inimical to progress.[42] Freeman Dyson pointed the 'hidden cost of saying no' as a deterrence to technological advancement.[43] Weiner gives several examples of unintended consequences of low risk tolerance; a ban on DDT increases risk from malaria, bans on chlorination of water increases illness from waterborne disease, the 'war on drugs' leading to increased criminality, police chases to apprehend offenders causing accidents, or children injured by safety airbags.[44] Bans on genetically modified foods promote herbicide use in poor countries, and reduce food availability.[45]

A modicum of uncertainty is a universal condition.[46] Even when a risk is clearly present, the benefits of a proposal may be sufficiently clear to make the risk worth taking. Some risks are unavoidable and must be accepted. Keeney describes it thusly: "*Acceptable risk is not necessarily a level of risk with which we are happy. We would all prefer less risk to more risk given that other consequences were held fixed…. … acceptable risk is the is the risk associated with the best of the available alternatives; it is not the risk associated*

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[35] Ibid 16.
[36] Burgman, above n 19, 60-61.
[37] National Research Council, above n 30, 18.
[38] Burgman, above n 19, 61.
[39] National Research Council, above n 30, 26.
[40] Mary Douglas and Aaron Wildavsky, (1983) *Risk and Culture* (University of California Press, 1983), 5.
[41] Aaron Wildavsky, *Searching for Safety* (Transaction, 2017), 2
[42] Peel, above n 11, 50.
[43] Freeman J Dyson, 'The hidden cost of saying NO!' (1975) 31(6) *Bulletin of the Atomic Scientists* 24, 23.
[44] Jonathan B Wiener, 'Whose precaution after all? A comment on the comparison and evolution of risk regulatory systems' (2003) 13 *Duke Journal of Comparative & International Law* 207, 224.
[45] Ibid 241.
[46] Wildavsky, above n 41, 5.

with the best alternative which we would like to have available".[47] The level at which society deems a particular risk tolerable is a social choice, varying across jurisdictions. Weiner highlights a range of examples between the U.S. and E.U.[48]

Risk decisions thus involve a balance between the possible positive and negative outcomes, weighted by both the likelihood of the event and the seriousness of the consequences. Often the calculus is between a present risk (or certainty) of harm against a future possibility of benefit. Ideally, the consequences of development will place future generations in a wealthier position than the present, hence allocating the cost of present risk to the future may be deemed acceptable.[49]

The issue of public response to 'risk' in development proposals or policies is sometimes misunderstood. It is not risk (in terms of identified and assessed negative probabilities of harm) that the public are worried about, the worries are about the unknown. Institutions then respond to "… *what are believed to be misconceived public demands for zero risk*".[50] The public often are not so bothered with uncertainty per se, their underlying worries are with ignorance – concern for the things that may have not been properly considered. Institutions that fail to understand this difference will not successfully allay public concern. The European Environment Agency advises a focus on the irreversibility of actions,[51] as these are the issues that most concern the public.

1.1.4 Precautionary approach / principle

The precautionary principle (or precautionary approach) is now embedded in a vast range of international and national agreements worldwide.[52] The most common formulation follows that of the Rio Declaration's Agenda 21: "*Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation"*.[53] The notion of 'scientific uncertainty' is central,[54] but the 'mere hypothesis' of harm is insufficient to trigger the principle.[55]

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[47] Ralph L Keeney, 'Issues in evaluating risks of fatalities' in Pp 517-534 in Covello V T et al (eds) *Environmental Impact Assessment, Technology Assessment and Risk Analysis* (Springer Verlag, 1985) 517, 519.
[48] Weiner, above n 44, 225-229.
[49] Brendan Moyle, 'Making the precautionary principle work for biodiversity: Avoiding perverse outcomes in decision making under uncertainty' in Rosie Cooney and Barney Dickson (eds) *Biodiversity & the Precautionary Principle* (Earthscan, 2005) 159, 162.
[50] European Environment Agency , above n 20, 185.
[51] Ibid 170.
[52] Ibid 14.
[53] United Nations Conference on Environment and Development, above n5.
[54] Peel, above n 11, 47.
[55] Ibid 50.

The effect of the precautionary principle is to shift the burden of proof from the objector to the proponent of a proposal.[56] If the objector can demonstrate a risk of damage, then the proponent is obliged to demonstrate the adequacy of controls or mitigating measures.[57] This was made clear in Telstra Corporation v Hornsby Shire Council, with the court enunciating two conditions precedent for the principle to apply: a threat of serious or irreversible environmental damage, and scientific uncertainty around that damage.[58] Some however have advised against using fixed definitions of the principle, advising rather a focus on the "*process by which public decisions are made*".[59]

The precautionary principle has been criticised for encouraging an overly 'timid' approach to development,[60] or promoting a 'bias against change'[61] and such a view could hinder effective decision making.[62] Not only the effect of the immediate development or action at hand is relevant; decision makers are also obliged to take into account cumulative harm.[63]

Nevertheless, in the main decision-makers and courts "*do not understand the principles of ecologically sustainable development and in particular the precautionary principle to mean that development should not proceed simply because the full consequences for ecological consequences upon which life depends are unknown*".[64]

Although a threat of serious harm and a lack of full scientific certainty must trigger the principle,[65] it has not turned out to be the hard brake on development that some may have initially feared.[66] In some cases precaution has held sway in decision-making: Australia's Minister for the Environment refused to issue a permit for the importation of

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[56] Ibid 154,155; Elizabeth Fisher, 'Is the precautionary principle justiciable?' (2001) 13(3) *Journal of Environmental Law* 315.
[57] *Conservation Council of South Australia v Tuna Boat Owners Association (No 2)* [1999] SAERDC 86, [24].
[58] *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133.
[59] Fisher, Elizabeth, (2001) 'Is the precautionary principle justiciable?' (2001) 13(3) *Journal of Environmental Law* 315, 319.
[60] Moyle, above n 49, 171
[61] Adrian Newton and Sara Oldfield, 'Forest policy, the precautionary principle and sustainable forest management' in Rosie Cooney and Barney Dickson (eds) *Biodiversity & the Precautionary Principle* (Earthscan, 2005) 21, 35.
[62] Ibid 35; Wildavsky above n 41, 7.
[63] *Rozen v Macedon Ranges Shire Council* [2009] VCAT 2746.
[64] *Port Vincent Progress Association v Development Assessment Commission* [1999] SAERDC 7, [26].
[65] *BGP Properties Pty Ltd v Lake Macquarie City Council* [2004] NSWLEC 399.
[66] Søren Holm and John Harris, 'Precautionary principle stifles discovery' (1999) 400 *Nature* 398; Gary E Marchant, 'From general policy to legal rule: aspirations and limitations of the precautionary principle' (2003) 111(4) *Environmental Health Perspectives* 1799; Daniel Castro, and Michael McLaughlin, 'Ten ways the precautionary principle undermines progress in artificial intelligence' (2019) Working paper, Information Technology and Innovation Foundation; J D Graham, 'The perils of the precautionary principle: lessons from the American and European experience' (2004) 818 *Heritage Letters*; D Wainwright, 'Disenchantment, ambivalence, and the precautionary principle: the becalming of British health policy' (1998) 28(3) *International Journal of Health Services* 407.

Bumblebees, citing a 'precautionary approach'.[67] Requests to import plants for research into salinity control have been blocked by precautionary quarantine rules, on the grounds that they may become weeds.[68] According to Low, the Australian quarantine service has a policy of not assessing the merit of imports when the quarantine risk is high.[69] Such an approach tends towards the 'zero risk' interpretation of precaution that is usually warned against. Lower risk imports however are assessed under a cost-benefit approach.

In summarising the thoughts of the time, Wheeler J in *Bridgetown Greenbushes Friends of the Forest Inc v Executive Director of the Department of Conservation and Land Management* noted a 'clear thread of common sense caution'[70] in earlier decisions. The precautionary principle as common sense was also commented on by Sackville J in *Friends of Hinchinbrook Society Inc v Ministry for the Environment* [71] and Stein J in *Leatch v Director-General of National Parks and Wildlife Service*. Stein J expressed the view that "…*caution should be the keystone of the Court's approach"*[72] even if the precautionary principle was not expressed, making the unique effect and force of the principle rather debateable.

The precautionary principle was developed as a guide for the decision-making process,[73] and has been described as a 'political aspiration' rather than a legal standard.[74] Rather than providing a strict checklist of conditions of applicability, "*The principle provides the philosophical authority to make decisions in the face of uncertainty*".[75] Tucker described impact assessments (or risk assessments, as discussed above) as a mechanism for putting the precautionary principle into practice.[76] The important thing is not the principle, but the genuine and comprehensive nature of the assessment.

Schuijers on the other hand sees the primary value of the principle as being to the Courts rather than to the project proponents or opponents, as a way to prevent the law's inherent conservatism from being at odds with clear social policy. "*Though it may*

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[67] Cameron Moore and Caroline Gross, 'Great big hairy bees! Regulating the European bumblebee, *Bombus terrestris* L. What does it say about the precautionary principle?' [2012] (1) *International Journal of Rural Law and Policy* 1, 17.
[68] Tim Low, 'Preventing alien invasions: the Precautionary Principle in practice in weed risk assessment in Australia' in Rosie Cooney and Barney Dickson (eds) *Biodiversity & the Precautionary Principle* (Earthscan, 2005) 141, 147-149.
[69] Ibid149.
[70] *Bridgetown Greenbushes Friends of the Forest Inc v Executive Director of the Department of Conservation and Land Management* (1997) WAR 102, 119.
[71] *Friends of Hinchinbrook Society Inc v Ministry for the Environment* (1997) 142 ALR 632, 678-679.
[72] *Leatch v Director-General of National Parks and Wildlife Service* (1993) 91 LGERA 270, 24.
[73] Fisher above n 59, 319.
[74] *Nicholls v Director-General of National Parks and Wildlife* (1994) 84 LGERA 397, 419.
[75] Justice Paul L Stein, *Are decision-makers too cautious with the precautionary principle?* Address to the Land and Environment Court of New South Wales Annual Conference 14/15 October 1999, Blue Mountains.
[76] Graham Tucker and Jo Treweek, 'The precautionary principle in impact assessment: an international review' in Rosie Cooney and Barney Dickson (eds) *Biodiversity & the Precautionary Principle* (Earthscan, 2005) 73, 88.

seem like common sense to the risk averse, if the principle did not exist then a "lack of scientific certainty" argument would potentially appeal to the law's need for facts to be established before they are used to justify a response that may harm someone's interests".[77]

Moore was also unconvinced of the unique utility of the precautionary principle: "*Upon examination of the regulatory approach of each jurisdiction, it is possible to say that the precautionary principle has had a role to play but it is far from consistent and much less significant than the principle of conservation of biological diversity".*[78] Indeed, if the principles of ecologically sustainable development are explicit or implied then the precautionary principle seems to add little guidance to decision-makers beyond a general duty to give proper, genuine and realistic consideration to matters. Sackville J made this explicit: "*It would be difficult, for example, for the Minister to have regard only to the protection, conservation and presentation of particular property … unless he or she takes account of the prospect of serious and irreversible harm to the property in circumstances where scientific opinion is uncertain or in conflict.*[79] Although attention to the principle may be described as 'decisive' in some situations,[80] if careful attention to ESD principles is explicitly or implicitly required then then the 'precautionary principle' must exist whether invoked or not.

1.1.5 Other 'error resilient' concepts

The precautionary principle is just one of several possible 'error resilient concepts'.[81] Moyle contrasts precaution with 'robustness' (delivering a satisfactory result in a wide range of scenarios) and 'adaptability': "*Robustness and adaptability appear to be very similar to precaution. Nonetheless, two important differences remain. The first is that robustness explicitly recognises that there can be reciprocal threats of environmental harm in any strategy selected. It is not possible to presume (as with the precautionary principle) that there is a single safe bet that ought to be preferred. The second difference is that this process is willing to experiment with strategies that could yield high gains. Rather than waiting for proof of its safety to be demonstrated, this approach incorporates learning into the choice of strategy. This is also why scenarios try to identify early signals that indicate which state of the world is true, so management can adapt to this knowledge*".[82]

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[77] Laura Schuijers, 'Environmental decision-making in the Anthropocene: Challenges for ecologically sustainable development and the case for systems thinking' (2017) 34 Environmental and Planning Law Journal 179, 190.
[78] Moore, above n67, 3.
[79] *Friends of Hinchinbrook Society Inc v Ministry for the Environment* (1997) 142 ALR 632, 79.
[80] Moore, above n 67, 19.
[81] Malcolm MacGarvin, 'Fisheries: taking stock' in European Environment Agency *Late Lessons from early warnings: the precautionary principle 1896-2000* (Office for Official Publications of the European Communities, 2001) 17, 26.
[82] Moyle, above n 49, 171.

Wildavsky uses the term 'resilience' to describe the capacity to deal with unknown hazards;[83] an increase of such resilience (properly communicated) can allay public concerns regarding irreversible consequences. This leads to an understanding of two strategies for dealing with risk;[84] anticipation (for things that are foreseeable) and resilience (as some insurance against the unforeseeable). Resilience reflects a system's ability to absorb impacts and continue to function, while adaptive capacity refers to a system's ability to adjust to new conditions.[85]

Holling variously defined resilience as the negative probability of extinction[86] or more gently as a property that allows a system to absorb and utilise change.[87] He framed systems as boundaries between desirable and undesirable states, with safety margins/guard rails.[88]

Another general concept of systems was described by Wildavsk in terms of 'micro' and 'macro' stability,[89] with the conclusion that only one may be encouraged, to the detriment of the other. The relationship of stability and flexibility has also been noted in economics. Klein concludes that too great a focus on the former is inimical to the later: paradoxically, controlling the individual elements of the system reduces the ability of the greater system to adapt to unexpected change.[90] Holling had the same insights for ecosystems: "*The very approach, therefore, that assures a stable maximum sustained yield of a renewable resource might so change these deterministic conditions that the resilience is lost so that a chance or rare event that previously could have been absorbed can trigger a sudden dramatic change and loss of structural integrity*".[91] Management policies often attempt to reduce variability[92] and in the process reduce resilience.

[83] Wildavsky, above n 41, 78.
[84] Ibid 117.
[85] Robin Kundis Craig et al, 'Balancing stability and flexibility in adaptive governance: an analysis of tools available in U.S. environmental law' (2017) 22(2) Ecology and Society 1, 22.
[86] C S Holling, 'Resilience and stability of ecological systems' (1973) 4 *Annual Review of Ecology and Systematics* 1, 20.
[87] C S Holling, (ed) *Adaptive environmental assessment and management* (International Institute of Applied Systems Analysis, 1978), 11.
[88] Ibid 9.
[89] Wildavsky, above n 41, 6.
[90] Burton H Klein, *The role of feedback in a dynamically stable economic system*, *Social Science Working Paper 305* (Division of the Humanities and Social Sciences California Institute of Technology, 1980).
[91] Holling, above n 86, 21.
[92] Holling, above n 87, 11.

1.1.6 Adaptive Management

Adaptive management has also been described by its founder as "…*not really much more than common sense*".[93] Consciously undertaken though, it reorients the perspective of the developer from one of 'assumed certainty' to one of 'prepared responsiveness'.[94] The point is to use the project itself as an experiment, to gather knowledge and use that knowledge to refine management in a continual feedback loop. Far more than simply pilot projects (which can often fail due to the fact that results at large scales often do not reflect the results of small trials),[95] it is a process of continual learning,[96] "… *an approach to understanding justifying and implementing policies that effect the environment*"[97] or "…*a search for the right things to do*".[98] Stakeholders are often open to adaptive management over a strict precaution approach.[99]

The primary driver for adaptive management approaches is a lack of knowledge. By commencing work and carefully monitoring outcomes,[100] better decisions can be made. Even though some elements of the project may involve risk, this can be outweighed by the benefits of the knowledge gained.[101] The *De Brett* case[102] is a good illustration of this: the benefits gained from data collected from commercial fishing were held to be of such importance that they outweighed the risk of the activity.

Adaptive management is more than just a 'try it and see' approach. In planning a programme, it is crucial to know what variables exactly are important, what precisely is to be monitored. Adaptive evaluation requires specific indicators tailored to stakeholder requirements.[103] Effectively, the process also includes implicitly selecting a specific meaning of biodiversity[104] in order to know whether the impacts are positive or negative.

Models are central to adaptive management, to make sense of the data collected. These are not 'predictions', but are instruments to assess how well the managers' understanding of processes matches reality. Monitoring criteria should be selected

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[93] Ibid 136.
[94] Ibid 136.
[95] Ibid 137.
[96] Carl Walters, *Adaptive Management of renewable resources* (The Blackburn Press, 1986), 8.
[97] Norton, above n 1, 92.
[98] Ibid 95.
[99] Newton, above n 61, 29.
[100] *De Brett Investments Pty Ltd and Lamason v Australian Fisheries Management Authority* [2004] AATA 704, [194]; Peel, above n11, 95.
[101] Peel, above n 11, 200.
[102] *De Brett Investments Pty Ltd and Lamason v Australian Fisheries Management Authority* [2004] AATA 704.
[103] Holling, above n 87, 118.
[104] Botkin, Daniel B et al, (2007) 'Forecasting the effects of global warming on biodiversity' (2007) 57(3) *BioScience* 227, 228.

based on what will best improve models.[105] Botkin stresses the importance of validating models and testing assumptions.[106]

Although difficult to implement and regulate,[107] some promising early steps towards adaptive management have been made. These range from court rulings that found planning schemes or proposals to be acceptable based on the possibility of added conditions being applied which could be varied as the need arose,[108] approvals for limited period of time if damage is not irreversible,[109] or approval based on the acceptability of monitoring and ongoing scientific studies.[110] In *Ironstone Community Action Group Inc v NSW Minister for Planning and Duralie Coal Pty Ltd*, the Court directly imposed monitoring and reporting requirements of their own, as amendments to the development plan.[111]

1.2 Contexts and Frameworks

The concept and definitions discussed above are sometimes fluid and contested. The perspective taken and the meaning of particular concepts is to some extent dependent on the observer. Systems and paradigms currently in place have evolved from particular understandings of the ecological world, coloured by values and the need to fit into existing administrative, legal and governance structures. These will be examined in the succeeding section of this report.

1.2.1 Ecological

> "*The failure of management of living resources is a symptom of what is wrong with the myths, beliefs and fundamental paradigms that modern technological society holds about nature. Some of these myths concern …. The character of wilderness*".[112]

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[105] Walters, above n 96, 262.
[106] Botkin, above n 104, 228.
[107] Peel, above n 11, 200.
[108] Ibid 199; *R v Resource Planning and Development Commission ex parte Aquatas Pty Ltd* (1998) 100 LGERA 1; *Conservation Council of South Australia v Tuna Boat Owners Association (No 2)* [1999] SAERDC 86, [35].
[109] Peel, above n 11, 199; *St Ives Development Pty Ltd v City of Mandurah* (2003) 31 SR (WA) 313.
[110] *North Queensland Conservation Council v Great Barrier Reef Marine Park Authority* [2000] AATA 935, [221]; *Lawyers for Forests Inc v Minister for the Environment, Heritage and the Arts* [2009] FCA 330.
[111] *Ironstone Community Action Group Inc v NSW Minister for Planning and Duralie Coal Pty Ltd* [2011] NSWLEC 195.
[112] Daniel B Botkin, The Moon in the Nautilus Shell: Discordant Harmonies Reconsidered (Oxford University Press, 2012), 38.

Traditional (now outdated) theories of ecology depended on founding ideas of stability, balance and order. Much of modern environmentalism still has these concepts as their basis.[113] In science too, principles such as maximum sustainable yield and carrying capacity derive from assumptions of predictability.[114] Many legislative or regulatory instruments contains an explicit or implied assumption that populations exist at a steady state of abundance except when harvested by people,[115] even though this is impractical to apply in the real world.[116]

It was once thought that ecosystems followed an orderly succession from 'pioneer' through to 'climax' states of existence; "…*an orderly process of community development that is reasonably directional and therefore, predictable*" culminating in "*a stabilized ecosystem*".[117] Within this predictable system, populations of organisms were though to follow logistic growth patterns to a stable maximum. As Botkin has noted, no examples of this have been found in reality.[118] More common are examples of irruptions of species, taking advantage of good conditions to vastly overpopulate their environment, leading to extensive damage and inevitable collapse.[119]

It may be that ecological systems are be inherently unpredictable,[120] particularly when combined with economic and social systems of human intervention. Unpredictability in a system does not however imply instability; indeed stability can be contrasted with resilience.[121] The natural mutability of ecology, which always has an element of chance[122] is largely ignored in laws, policies and beliefs.[123]

The consequence of 'stability' has been a poor outcome for owls and fish in north-western USA. Restrictive precautionary approaches and precaution-driven administration leads to higher large-scale fire risk, hence negative habitat outcomes for northern spotted owl.[124] Conversely, salmon require a degree of fine sediments in waterways, which result from the smaller fires that are now excluded from the forest.[125]

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[113] Ibid 61; Chris S Eastaugh, 'Green philosophies in the face of climate change' (2011) 11(3) BC Journal of Ecosystems and Management 34; Lee Godden, Jacqueline Peel and Jan McDonald, Environmental Law, Oxford 2nd ed, 2019) 485, 17.
[114] Botkin above n 112, 36; Ernst Assmann, The Principles of Forest Yield Study (Pergamon, 1970)
[115] Botkin above n 112, 36.
[116] Ibid 37.
[117] E P Odum, 'The strategy of ecosystem development' (1969) 164 Science 262, 262.
[118] Botkin, above n 112, 34, 57.
[119] Ibid 25-28; Vic Jurskis, The Great Koala Scam (Connor Court, 2020).
[120] MacGarvin, above n 81, 25.
[121] Wildavsky above n 41, 86.
[122] Botkin above n 112, 170.
[123] Ibid 88.
[124] Stephen P Mealey et al, 'Precaution in the American Endangered Species Act as a precursor to environmental decline: the case of the Northwest Forest Plan' in Rosie Cooney and Barney Dickson (eds) *Biodiversity & the Precautionary Principle* (Earthscan, 2005) 189, 190, 197; Gary J Roloff, Stephen P Mealey and John D Bailey (2012) 'Comparative hazard assessment for protected species in a fire-prone landscape' (2012) 277 *Forest Ecology and Management* 1.
[125] S P Mealey and J W Thomas, 'Uncharacteristic wildfire risk and fish conservation in Oregon' in S A Fitzgerald (ed) *Fire in Oregon's forests: risks, effects, and treatment options* (Oregon Forest

A precautionary approach is concerned in the first instance with risk, but not considering potential benefits can lead to perverse outcomes.[126]

1.2.2 Values/social perspectives

The overwhelming importance of 'values' is stressed in most academic literature on environmental management. Essentially, we cannot manage to attain any set of goals if we don't know what those goals are. Goals will depend on what people find important, which of course will not be a uniform set of criteria. Cooney noted that disputes about precautionary principle are often really disputes over values,[127] perhaps due to divergent goals or perhaps due to different attitudes to risk.[128]

Some stakeholders or groups of stakeholders can at times have reasonably predictable values. Garreau describes the more extreme forms of environmentalism as a 'religion'.[129] Westoby discussed the Professional obligations of foresters to be 'custodians of the interests of the voiceless' in protecting forests for human values.[130]

The wilderness perspective is not the only valid ecosystem ideal. Dyson took exception to the idea of 'wilderness' as an environmental ideal; "*At any season of the year you may find in rural England an ecological harmony of extraordinary richness, with a tremendous variety of species of plants, birds and animals. This ecology is also unusually robust, surviving without obvious damage the assaults inflicted by a high density of human population and industry… But nothing in this ecology of rural England is natural. The natural state of England was incomparably poorer, being a rather uniform expanse of forest and swamp*".[131]

Competing values are impossible to formally weight, and indeed different communities or interest groups may have different conceptualisations of 'sustainability'.[132] A comprehensive risk assessment/characterisation process is vital in developing an understanding of these differences in each local context.

Resources Institute, 2002) 85; Rebecca L Flitcroft et al, 'Wildfire may increase habitat quality for spring Chinook salmon in the Wenatchee river subbasin, WA, USA' (2016) *359 Forest Ecology and Management* 126.

[126] Moyle above n 49, 165, 166.

[127] Cooney, Rosie, (2005) 'From promise to practicalities: the precautionary principle and biodiversity conservation in sustainable use' in Rosie Cooney and Barney Dickson (eds) *Biodiversity & the Precautionary Principle* (Earthscan, 2005) 2, 8.

[128] Douglas above n 40, 11.

[129] Garreau, Joel, 'Environmentalism as religion' (2010) 28 *The New Atlantis* 61

[130] Westoby, Jack C (1985) 'Foresters and politics' (1985) 64(2) *The Commonwealth Forestry Review* 105, 105.

[131] Dyson, above n 43, 25.

[132] Norton, above n 1, 134, 40.

1.2.3 Governance and administration

In general, public land management responsibilities are delegated to a particular government agency. Such agencies develop their own culture, norms of thinking that Clement describes as "*A shared understanding of what is proper or improper behaviour*".[133] Herbert Kaufman in his book 'The Forest Ranger'[134] describes a study of the United States Forest Service he conducted in the 1960s, investigating the strategies the agency used to ensure policies developed in Washington were reliably distributed throughout a continent-wide and remote organisation, and how control was kept over what one would expect to be a collection of stubborn and opinionated individualists. A large part of this was to foster a sense of collective identity, a particularly 'Service' way of thinking and responding to decision-making.

Throughout most of the 20th century most Australian states had highly independent Forest Commissions administratively and culturally organised (not coincidentally)[135] along similar lines to the US Forest Service. Towards the end of the century the land management function of most of these was converted to regular government agencies responsible to the Minister of the day. In New South Wales the Forestry Commission was reconstituted as the Forestry Corporation of NSW (a State Owned Corporation),[136] and retains responsibility for the management of State Forests and Timber Reserves.

Democratic control over independent agencies was traditionally done through statute rather than by administrative measures,[137] but over the past several decades an increased concern for accountability and review has lead to an explosion in the internal regulation of government business.[138] Hood points out numerous problems that have arisen, including functional disruptions,[139] wasted resources[140] and the ineffectuality of sanctions.[141] More generally, the imposition of external control weakens the feedback mechanisms and internal cohesiveness identified by Kaufman as being so critical to agency success.[142] Hood points to Increasing juridification and formality,[143] which effectively moves power to the Courts to interpret agency functions.

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[133] Sarah Clement Susan A Moore and Michael Lockwood, (2015) 'Authority, responsibility and process in Australian biodiversity policy' (2015) 32 *Environmental Planning and Law Journal* 93, 103.
[134] Herbert Kaufman, *The forest ranger: a study in administrative behaviour* Resources for the Future, 1967).
[135] Edward Harold Fulcher Swain, *An Australian Study of American Forestry* (Department of Public Lands Queensland, 1918)
[136] *State Owned Corporations Act 1989* (NSW)
[137] Christopher Hood et al, *Regulation inside government: waste-watchers, quality police, and sleaze busters* (Oxford, 1999), 169.
[138] Ibid 34.
[139] Ibid 13.
[140] Ibid 28
[141] Ibid 54.
[142] Kaufman, above n 134, 92-93, 138, 159.
[143] Hood, above n 137, 105,106.

Courts have traditionally been reluctant to conduct 'merit review'; to intervene in the decision-making process of government agencies, recognising that Parliament has empowered those agencies specifically to make certain decisions. Nevertheless, If the original decision maker ignored relevant considerations then the decision is flawed and review is not 'merits'. Whether a review is judicial or merits is a matter that the court must decide when a case is brought.

In NSW, the Land and Environment Court is specifically empowered to conduct merit reviews,[144] but in the case of public forestry access to the court is limited by ouster clauses in the *Forestry Act 2012* (s69ZA). Action can be brought to the Court by the Environmental Protection Authority. In recent years such actions however have been concerned with regulatory breaches rather than the challenging of decisions. As will be discussed below, the agency 'responsible' for state forest management has little flexibility to make decisions that may invite legal challenge.

1.3 Forestry in NSW

"*Probably no section of business under Government control has experienced greater vicissitudes in its management or less consideration than that connected with our forests. No attempt appears to have been made to lay down a policy of management, and apparently as each department became tired of the business or failed to succeed with it, it was passed on to another.*" – New South Wales Royal Commission on Forests, 1907/1908.[145]

In recognition of the parlous state of affairs described by the Royal Commission, the NSW government introduced the *Forestry Act 1909* (NSW), and later the improved *Forestry Act 1916* (NSW). The 1916 Act established an independent Forestry Commission, with the intent that this be largely free of political influence.[146]

Although forestry in Australia is constitutionally the responsibility of the states, the Australian Forestry Council (AFC) was formed in 1964 to improve consultation and advise the Commonwealth on forestry matters.[147] The initial focus of the Council was firmly on the supply of and demand for forest products, with no mention of environmental responsibilities. By 1973 however, the Council had expressly endorsed the principle of environmental impact statements for significant developments and noted the publication of the booklet 'Forest are Forever; Forestry the environmentally

[144] Stewart Smith, 'A Review of the Land and Environment Court' Briefing Paper 13/01 (NSW Parliamentary Library Research Service, 2001).
[145] Reproduced in Forestry Commission of NSW, *Indigenous forest policy* (New South Wales Government, 1976), 2.
[146] William Ashford, 'second reading speech 1916', apud Fintán ÓLaighin Centenary of the Forestry Commission of NSW, 1916-2016' (2016) 70 *Australian Forest History Society Inc Newsletter* 4.
[147] Max Jacobs, 'The establishment of the Australian Forestry Council' (1964) 44(2) *Commonwealth Forestry Review* 92.

compatible industry'.[148] In New South Wales, the Forestry Commission's 'Indigenous Forest Policy' of 1976[149] incorporated goals and objectives recognisable today as supporting ecologically sustainable management.

The Forestry Commission operated with a great degree of operational independence until the 1980s. Broad policy goals post-WW2 were outlined by the 1954 Conservation Authority of New South Wales and centred on the need to increase native forest production until the nascent softwood plantation estate was as full production.[150]

Caught in the 'New Public Management' push of the 1980s[151] and adverse public scrutiny,[152] the Forestry Commission was formally dissolved in 2012 and replaced by the Forestry Corporation.[153]

1.3.1 Policy and governance background

The aims of the NSESD (see 1.1.1.2) were directed specifically at forest policy via the 1992 National Forest Policy Statement, and more generally to environmental management in the 1992 IGAE. The NFPS specifically introduced 'Comprehensive Regional Assessments' (CRA) as a basis for forest planning,[154] and the concept of a 'comprehensive, adequate and representative' (CAR) conservation reserve system.[155]

The NFPS endorsed the principles of the Australian Forestry Council and required that state codes of practice and standards conform with the AFC national standards. These standards were excerpted as 'Attachment A' of the NFPS.[156] The Statement also introduced the concept of Commonwealth/State 'regional agreements',[157] but only with reference to the export of unprocessed wood and woodchips, which at the time were subject to Commonwealth export approval.

The task of overseeing assessments was given to the Resource and Conservation Assessment Council (RACAC), an assemblage of "*forest stakeholders in the Regional Forest Agreement process, including representatives from the NSW Government agencies, the timber and mining industries, the union, conservationists, the Aboriginal*

[148] Forest and Timber Bureau, *Forests are forever; Forestry, the environmentally compatible industry* (Australian Forestry Council, 1973).
[149] Forestry Commission of NSW, *Indigenous forest policy* (New South Wales Government, 1976).
[150] Conservation Authority of New South Wales, The Conservation, Development and Provision of Timber Resources in New South Wales: Final Report (Government of New South Wales, 1954).
[151] Christopher Hood, 'A public management for all seasons?' (1991) 69 *Public Administration* 3.
[152] R Routley and V Routley, *The Fight for the Forests* (Research School of Social Sciences Australian National University, 1974).
[153] *Forestry Act 2012* (NSW) s5.
[154] Commonwealth of Australia , above n 7, 15.
[155] Ibid 8; JANIS above n 13.
[156] Commonwealth of Australia , above n 7.
[157] Ibid 16.

community and the academic community.[158] The Regional Forest Agreements in concept were first given legislative meaning via the *Export Control (Harwood Woodchips) Regulations* 1996 (Cth).

Over the late 1990s and early 2000s a phenomenal amount of work was done to produce the comprehensive regional assessments required by the NFPS. In NSW these assessments were carried out state-wide, including in areas where no formal regional forest agreement was mooted. The subsequent recommendations for additions to the conservation estate resulted in the transfer of around 1.2 million hectares (one third of the Forestry estate), primarily to the National Parks Service.[159]

For parts of NSW east of the Great Dividing Range this transfer was accomplished via the *Forestry and National Park Estate Act 1998* (NSW). This Act also defined 'forest agreements', being agreements between the three NSW Ministers responsible for Natural Resources, the Environment, and Primary Industries. The Act transferred responsibility for preparing regional forest assessments to a government agency, the Natural Resources Commission,[160] effectively dissolving the stakeholder-driven RACAC.

Forest agreements were required to include "provisions that promote ecologically sustainable forest management",[161] and the Act established the regime of 'integrated forest operation approvals' (IFOAs), with the purpose of "integrating the regulatory regimes for environmental planning and assessment, for the protection of the environment and for threatened species conservation".[162] An IFOA was to be considered the equivalent of relevant licences under the *Protection of the Environment Operations Act 1997* (NSW), the *Threatened Species Conservation Act 1995* (NSW) and the *Fisheries Management Act 1994* (NSW)[163] and also made forestry operations under an IFOA not subject to the *Environmental Planning and Assessment Act 1979* (NSW)[164] or certain orders under the *National Parks and Wildlife Act 1974* (NSW) or the *Local Government Act 1993* (NSW). In the case of breaches of IFOA conditions, the Act limited standing to bring action to the relevant Ministers, the Environmental Protection Authority, or a government agency specifically given statutory standing.[165] Similar provisions for forested areas west of the range are contained in the *Brigalow and Nandewar Community Conservation Act 2005* (NSW) the *National Park Estate (South-Western*

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[158] Chapman, Michelle, *The Regional Forest Agreement process in NSW* (2003) https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/832985/sean-burke-SECA-RFA-renewal-submission-RFAprocess.pdf

[159] Environmental Protection Authority, *New South Wales State of the Environment 1993* (Environmental Protection Authority 1993), 153; Forestry Corporation, 'Our Estate', https://www.forestrycorporation.com.au/about/our-estate.

[160] *Forestry and National Park Estate Act 1998* (NSW) s15.

[161] *Forestry and National Park Estate Act 1998* (NSW) s16(2)(a).

[162] *Forestry and National Park Estate Act 1998* (NSW) s25(b).

[163] *Forestry and National Park Estate Act 1998* (NSW) s33.

[164] *Forestry and National Park Estate Act 1998* (NSW) s36.

[165] Forestry and National Park Estate Act 1998 (NSW) s40

Cypress Reservations) Act 2010 (NSW) and the *National Park Estate (Riverina Red Gum Reservations) Act 2010* (NSW).

From 1999 to 2001 the Commonwealth and NSW signed three Regional Forest Agreements for the Eden, Northeast and Southern regions.[166] The agreements rely heavily on concepts and definitions enunciated in the JANIS report,[167] and introduced the forest management zoning system[168] and forest resource and management evaluation system currently in use. The RFAs accredited the state Environmentally Sustainable Forest Management (ESFM) system (including forest agreements and IFOA's) as "providing for continuing improvement in ESFM".[169] The agreements indicated that the CAR protected areas referenced in the Agreement satisfied the JANIS criteria,[170] and that State Forests outside the reserve system were to be available for timber harvesting.[171] The RFAs imposed a legal obligation on NSW to complete and publish a Regional ESFM plan,[172] specifying that this plan be 'under' the *Forestry Regulation 1994* (NSW) and *Forestry Act 1916* (NSW). The RFA also specified a range of species, landscapes and values that were to be protected via IFOA conditions.

1.3.2 Statutory requirements

The primary instrument regulating public native forestry in New South Wales is the *Forestry Act 2012* (NSW) This establishes the Forestry Corporation as a State Owned Corporation under the *State Owned Corporations Act 1989* (NSW). Section 10 lists the principle objectives of the Corporation:

(1) The principal objectives of the Corporation are as follows—

(a) to be a successful business…
(b) to have regard to the interests of the community in which it operates,

(c) where its activities affect the environment, to conduct its operations in compliance with the principles of ecologically sustainable development contained in section 6(2) of the Protection of the Environment Administration Act 1991,

(d) to contribute towards regional development and decentralisation,

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[166] New South Wales Government, Overview of the New South Wales Forest Management Framework V1.1 March 2021 https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/1318505/overview-of-the-nsw-fmf.v1.1-march-2021.pdf 17.
[167] JANIS, above n 13.
[168] State Forests New South Wales, Managing our forests sustainably: Forest Management Zoning in State Forests (State Forests of New South Wales, 1999).
[169] i.e Commonwealth of Australia and the State of New South Wales Regional Forest Agreement for Northeast New South Wales region (Australian Government, 2000), s52.
[170] i.e Commonwealth of Australia and the State of New South Wales Regional Forest Agreement for Eden region (Australian Government, 1999), s63.
[171] Ibid s68.
[172] Ibid s95.5.

(e) to be an efficient and environmentally sustainable supplier of timber ...

In its function as a land manager of forestry areas the Corporation also has further objectives specified in Section 59, that are not subject to s10(a) or (e).

The *Environmental Protection and Biodiversity Act 1999* (Cth) (the *EPBC Act*) gives effect to Commonwealth obligations under various International treaties. The *Regional Forest Agreement Act 2002* (Cth) was established with the objects, inter alia, of giving effect to Commonwealth obligations under the NFPS and Regional Forestry Agreements.[173] Section 6(4) specifies that Part 3 of the EPBC act (assessments and approvals) "does not apply to an RFA forestry operation that is undertaken in accordance with an RFA".

The *Forestry Act 2012* contains provisions for establishing IFOAs. Section 69N specifies that approvals are to be granted jointly by the Minister for Lands and Forestry and the Minister for the Environment, following consultation with the Minister administering Part 7A of the *Fisheries Management Act 1994* (NSW).

Currently, four IFOAs are in force. The Coastal IFOA[174] was formed following the expiry of the original Northeast, Southern and Eden IFOAs, the Riverina Redgum IFOA[175] is operational until 2030 and the Brigalow Nandewar[176] and Southern Cypress[177] IFOAs expire at the end of 2025.

1.3.3 Subordinate regulation and Standards

The *Forestry Regulation 2012* (NSW) contains the remnants of provisions relevant when the Forestry Commission was a serious regulatory agency in its own right, relating to land access, fire control, commercial licences and the like. Parts of the *Regulation* are antiquated to the point of being archaic, and are now universally ignored (i.e. cl 39, relating to the requirement that timber cut on private property be branded).

IFOAs are made under Part 5B of the *Forestry Act 2012*. Contravening a requirement of an approval is an offence under s69SA of the *Act*, with penalties for a corporation of up

[173] *Regional Forest Agreement Act 2002* (Cth) s3.
[174] State of New South Wales and Environmental Protection Agency, Coastal Integrated Operations Approval – Conditions (NSW Government, 2018); State of New South Wales and Environmental Protection Agency, Coastal Integrated Operations Approval – Protocols (NSW Government, 2018).
[175] Minister for Climate Change and the Environment and the Minister for Primary Industries, Integrated Forest Operations Approval for Riverina Red Gum.
[176] Minister for Climate Change and the Environment and the Minister for Primary Industries, Integrated Forest Operations Approval for Brigalow-Nandewar Region.
[177] Minister for Climate Change and the Environment and the Minister for Primary Industries, Integrated Forest Operations Approval for South-Western Cypress Region.

to five million dollars. IFOAs are complex documents containing a wide range of highly prescriptive and detailed regulations.

FCNSW maintains certification under the Australian Forestry Standard AS 4708-2013 and the Environmental Management System standard ISO 14001:2015. Commercial timber sales are normally made under 'wood supply agreements', with guaranteed terms of supply of particular quantities of various products.

1.3.4 Management plans

Formal Management Plans have a long history in NSW forestry. The 1917 'Foresters Manual' dictated that Management plans were to state, inter alia, the object of management, the necessary or desired road network, the manner of timber exploitation, the optimum form of licencing, the supervision requirements for fire protection and grazing and cost estimates of improvements needed for intensification of management.[178]

By the 1980s Management Plans had developed into comprehensive and detailed documents, comparable to modern environmental impact statements. The 1986 Plan for the Pilliga Management Area[179] for example is around 200 pages (including appendices), covering past, present and future economic, social and environmental issues. The state was divided into 68 management areas[180], each of which was to have a Plan. The 1985 draft 'guidelines for the preparation of Management plans'[181] itself runs to 70 pages. By the mid 1990s however the management plan system had declined in importance, with cursory reviews and no further development. For many areas, the most current (or most recently expired) Plan is that of the 1980s.

Clause 51 of the *Forestry Regulation 2012* pertains to Management plans, but is limited to: "*For the purposes of section 21 (3) of the Act, a management plan must contain the ecologically sustainable forest management strategy to be adopted by the Corporation in relation to the State forest to which the plan applies."* Management plans are also mandated in the Australian Forestry Standard[182], with some more detail regarding expected contents.

[178] Forestry Commission, New South Wales, *The Foresters' Manual* (New South Wales Government, 1917) [89].
[179] Forestry Commission, 'Management Plan for Pilliga Management Area' (1986) (Forestry Commission of N.S.W., 1986).
[180] Ibid iii.
[181] Forestry Commission of NSW, *Draft Incomplete guidelines for the preparation of Management Plans* file MPD40 PHD-300301, February 1985 (Forestry Commission, 1985).
[182] Australian Forestry Standard AS 4708-2013.

1.4 Summary of Part 1

What we see from the above discussions is a situation where the main driving concepts are amorphous and focus on thoughtful process, with a rather ad hoc, top-down governance system required to interpret and apply them. Recommendations in the academic and legal literature almost universally call for decision-makers to involve stakeholders in planning, and to think deeply about all possible ramifications of their decisions. The Courts in turn have stressed the importance of process, and where process is acceptable they are reluctant to overturn the decisions made by the relevant authorities. The 'responsible' authority however, in this case the Forestry Corporation of New South Wales, is tied to a complex web of regulation that centres on the heavily prescriptive integrated forestry operations approvals. This governance arrangement is ill formed to deal with challenges, some of which will be discussed below.

2. Part 2: Challenges and options

2.1 Challenges and pressures

"*… the paradigms of human-controlled preservation and restoration that currently saturate U.S, environmental and natural resources law are ill-suited to promoting efficient and effective adaptation to climate change impacts*".[183]

2.1.1 Values, shifting and misunderstood

Environmental management is well recognised academically as a 'wicked problem',[184] difficult to formulate and with no agreed definition of success. Whether particular management actions are positive or negative often depends on the position of the observer. Far more than simply a question of contested opinions, in a wicked problem case "*the information needed to* understand *the problem depends upon one's idea*

[183] Craig, above n 85, 18.

[184] Horst W J Rittel and Melvin M Webber, (1973) 'Dilemmas in a general theory of planning' (1973) 4 *Policy Sciences* 155; Bernado Almeida, 'The law and its limits: Land grievances, wicked problems, and transitional justice in Timor-Leste' (2021) 15(1) *International Journal of Transitional Justice* 128.

for solving *it*".[185] This circularity leads to differences in peoples' (or organisations') 'framing' of the problem, and limits convergence around possible solutions.

The developments in modern ecological understanding described above are uncomfortable for both the conservation movement and for production foresters, as the images of a desired stability and predictability are not tenable.[186] The necessary move away from assumptions of stability presents great challenges.[187]

2.1.2 Climate change

If the assumption of a static, stationary environment was no longer a tenable framework due to increased ecological understanding, the inevitable impact of climate change makes it obvious. An understanding of 'precaution' as limiting changes to within the negative feedback capacity of a system is no longer a viable ambition. This is not to say that the overriding imperative of ecological sustainability must be abandoned, but it does mean that the forming of goals and conceptions of success must be revised. Climate change is already affecting eco-social and economic systems,[188] and such impacts are likely to continue regardless of the success (or otherwise) of climate mitigation measures. Climate change *adaptation* law and policy, by definition, cannot be preservationist.[189]

Within reserves and productive forests climate related (and other) impacts can be expected to continue or increase. Some changes are readily anticipated (i.e. increased risk of wildfire,[190] increased effects of drought);[191] other risks will come as surprise, such as the effect of fire exclusion on fish.[192] In some cases ecosystem changes can be expected to be drastic, such as a change from a closed-canopy forest to an open woodland system.[193] What is clear is that managers must be flexible and ready to adapt to changing realities, both physical realities and conceptual. Decision-makers should be cognizant that retaining as much flexibility as possible is itself an important adaptation strategy.[194]

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[185] Rittel, above n 184, 3.
[186] Botkin, above n 112, 342
[187] Godden, Lee, Jacqueline Peel and Jan McDonald, *Environmental Law*, Oxford 2nd ed, 2019) 485, 18.
[188] Craig, above n 85, 10-13.
[189] Ibid 30.
[190] Rachael H Nolan et al, 'Causes and consequences of Australia's 2019-20 season of mega-fires' (2020) 26 Global Change Biology 1039; Mark Adams, Majid Shadmanroodposhti and Mathias Neumann, 'Causes and Consequences of Australia's 2019-20 Season of Mega-Fires: a broader perspective' (2020) 26 Global Change Biology 3756.
[191] James S Clark et al, 'The impacts of increasing drought on forest dynamics, structure and biodiversity in the United States' (2016) 22(7) *Global Change Biology* 2329
[192] Mealey, above n 125
[193] Clark above n 191; Horner, Gillis J, et al, 'Forest structure, flooding and grazing predict understory composition of floodplain forests in southeastern Australia' (2012) 268 *Forest Ecology and Management* 148
[194] Craig above n 85, 68.

2.2 Adaptive management

"*Unfortunately, anticipation is not widespread among managers. When all is going well they can manage without it, and when things are going badly it is too late to see any further than the end of one's nose: one has to react, and quickly*."[195]

2.2.1 Design

Adaptive management implies doing things differently, in order to learn what works best. Doing things differently may imply taking some added risk,[196] particularly when working near the 'safety rails' of a system.

Adaptive management is different to 'trials' on a small area; such a focus on parts of the system can be detrimental to understanding the whole.[197] The goal is to optimise the system, not the components.[198] Effects that may be clear at a local scale may prove to be irrelevant at the broader scale, or vice versa.[199]

In designing an adaptive management project participatory approaches are universally recommended.[200] This is best commenced at the very beginning of the project risk assessment process.[201] Risk assessments or environmental impact assessments have become a key component of environmental decision making. In some cases these assessments (or impact statements) may be a potentially mandated part of the approvals process, but all projects are obliged to make some consideration of potential impacts or risks. Besides making for better planning, "*… an assessment of the risk weighted consequences is necessary to ensure procedural fairness in decision-making where developmental interests … and conservation interests compete*".[202] Rabinovich suggests that such approaches can have positive effects on sustainability attitudes, and help to resist pressure for land use change.[203]

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[195] Michel Godet, *From anticipation to action: a handbook of strategic prospective* (UNESCO 1994), 1.
[196] Wildavsky, above n 41, p21),
[197] Ibid 79.
[198] Ibid 81.
[199] Rupert Seidl et al, 'Scaling issues in forest ecosystem management and how to address them with models' (2013) 132 *European Journal of Forest Research* 653.
[200] European Environment Agency, above n20, 188; Norton, above n1; Holling, above n 87; A Christine de la Vega-Leinert and Dagmar Schröter, 'Evaluation of a stakeholder dialog on European Vulnerability to global change' in Anthony G Patt et al (eds) *Assessing Vulnerability to global environmental change* (Earthscan, 2009) 195.
[201] National Research Council, above n 30.
[202] Mohr v Great Barrier Reef Marine Park Authority [1998] AATA 805, [124].
[203] Rabinovich, Jorge, 'Parrots, precaution and project Elé: Management in the face of multiple uncertainties' in Rosie Cooney and Barney Dickson (eds) Biodiversity & the Precautionary Principle (Earthscan, 2005) 171, 184.

Australian courts have deemed environmental impact assessments fundamental to demonstrate that risks have been considered.[204] Assessments at both local scale[205] and as part of broader or cumulative impacts are necessary.[206] The assessment must consider the 'environment', but what precisely constitutes the environment is a point of fact dependent on the circumstances.[207] Adaptation strategies must be local in application,[208] and aimed at Increasing resilience and adaptive capacity.[209]

2.2.2 Monitoring

System models are key to adaptive management, and increasingly sophisticated models allow for the incorporation of expected future climate scenarios. Although useful, these models and scenarios should not be taken literally as 'predictions',[210] but rather as a range of 'plausible futures' and tests of understanding. The goal of adaptive management is not to conform to a particular scenario, but to understand where models are deficient, and increase knowledge of the system. The design must be explicit about which components of the system that the planner is expecting to improve.[211] This is achieved through identifying key criteria, developing measurable indicators to meet those criteria, and monitoring the changes in those indicators.

Sensitivity studies around key processes can be useful to determine how well the initial models react to various stimuli. Key parameters[212] in models are often estimated, sometimes simply because they are the only parameters that will make the model work. Sensitivity analysis (testing how a model responds to varied inputs) is an effort to "… *be more humble about assumptions*".[213] When the most important parameters in a model have been identified, monitoring can be tailored to improve the necessary estimates. Other monitoring targets may be around issues of particular concern to stakeholders.

2.3 Barriers and responses

"…*a constant search for consensus over rules that no one ever quite specifies*".[214]

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[204] *BT Goldsmith Planning Services Pty Ltd v Blacktown City Council* [2005] NSWLEC 210.
[205] *Jarasius v Forestry Commission of New South Wales [No 1]* (1988) 71 LGRA 79.
[206] *Kivi v Forestry Commission of New South Wales* (1982) 47 LGRA 38.
[207] *Bailey v Forestry Commission of NSW* (1989) LGERA 200.
[208] Craig, above n 85, 29.
[209] Ibid 39.
[210] Botkin, above n 104, 227.
[211] Ibid
[212] Bossel, Hartmut, 'Assessing viability and sustainablilty: a systems-based approach for deriving comprehensive indicator sets' (2001) 5(2) *Conservation Ecology* 12
[213] European Environment Agency, above n 20, 187.
[214] Hood above n 137, 73.

2.3.1 Institutional

In New South Wales most forests are either the responsibility of the National Parks and Wildlife Service (NPWS), NSW Crown Lands or the Forestry Corporation of NSW (FCNSW). NPWS and Crown Lands are regular government departments, under the Minister for the Environment and the Minister for Water, Property and Housing respectively. FCNSW is a State Owned Corporation, with shareholders being the Treasurer and the Minister for Finance. The Chief Executive Officer of the Corporation holds delegated authority from the Minister administering the *Forestry Act 2012* (NSW), currently the Deputy Premier.

Policy issues relevant to public forests reside with the Department of Primary Industries and the Environmental Protection Authority.[215] The responsibilities of Forestry Corporation (despite being the land manager) are limited to 'Forestry Operations and Plantations' and managing that part of the reserve system that remains State Forest (flora reserves).[216] Regulation of environmental matters relevant to FCNSW is the province of the Environmental Protection Authority.

If a more flexible, adaptable approach to forest planning and management were to be desired, it is not immediately apparent where the impetus for this change would come from, who would champion the changes, who would be responsible for its implementation, or who would monitor its effectiveness.

2.3.2 Legal/regulatory

"In an era in which the legitimacy and accountability of risk regulation has been subject to heated debate the [precautionary] *principle promotes a model of public administration whose power cannot be easily contained within defined boundaries. Nor can the 'correctness' of its decisions be easily assessed. The precautionary principle thus may provide a guide for good decision-making but it also provides a number of challenges for how we understand accountability*".[217]

Weiner points to the adversarial nature of the US court system as a reason that US negotiators are resistant to the incorporation of concepts such as the precautionary principle into binding legislation, fearing the risk of never-ending challenge.[218] Such fears are perhaps not misplaced, with the experience of the US Forest service being one of

[215] NSW Government above n 166, 62.
[216] Ibid.
[217] Fisher above n 59, 320.
[218] Weiner, above n 44, 247.

"*…a costly procedural quagmire…*",[219] where ''*Statutory, regulatory, and administrative requirements impede the efficient, effective management of the National Forest System*".[220] Weiner has pointed to "*…the difficulty of some regulatory systems, such as that of the US, in accommodating broad, generally applicable principles that allow wide discretion in decision making*.[221] The Service now plans with the expectation that they will face legal challenge.[222]

Litigation against U.S. Forest Service decisions has made managers risk-averse. This has had real results in the avoidance of important management actions in areas that may provoke challenge.[223] The 'analysis paralysis' that results from trying to head off all and any criticism before it is made leads to an unimaginative focus on short term goals.[224] The scientific 'dynamic, long-term plan' originally designed for forest areas becomes a static, precautionary strategy,[225] because regulatory hurdles are too demanding and difficult to complete.[226] Mealey gives the example of fire fuel reduction strategies, where "*Problems arise when the regulatory agencies require the Forest Service to focus on the short term consequences of a proposed plan or project instead of the long term health of the landscape in question*".[227]

The goal of 'preserving ecosystem functions and services'[228] without reflection assumes that ecosystems are or should be stable. New goals must acknowledge and allow for ecosystem change. Craig points out that "*…existing environmental and natural resources laws are preservationist, grounded in the old stationarity framework that no longer reflects ecological realities*",[229] and that "*Legal institutions need to begin to address adaptation challenges, and the sooner they do so, on a reasoned basis, the more proactive, rational and cost-effective climate change adaptation measures can be*."[230]

Conversely, decisions brought for review have been assessed as having appropriately applied the precautionary principle.[231] At times the Court has seen fit to add conditions,

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[219] USDA Forest Service, *The process predicament: how statutory, regulatory and administrative factors affect National Forest management* (USDA Forest Service, 2002), 5.
[220] Ibid, 10.
[221] Cooney, above n 127, 5.
[222] USDA above n 219, 19.
[223] Mealey above n 124, 193.
[224] USDA above n 219.
[225] (Meally above n 124, 199.
[226] Ibid 194.
[227] Ibid 194.
[227] Ibid 194
[228] Craig above n 85, 34.
[229] Ibid 17.
[230] Ibid 27.
[231] *Alumino (Aust) Pty Ltd v Minister Administering the Environmental Planning and Assessment Act 1979* [1996] NSWLEC 102; *Northcompass Inc v Hornsby Shire Council [1996] NSWLEC 213; Optus v Corporation of the City of Kensington and Norwood* [1998] SAEDRC 480; *R v Resource Planning and Development Commission ex parte Aquatas Pty Ltd* (1998) 100 LGERA 1; *Lend Lease Development Pty Ltd v Manly Council* [1998] NSWLEC 136.

specifically to further an adaptive management function.[232] The Courts have generally resisted taking an absolutist approach; i.e. "*The application of the precautionary principle dictates that a cautious approach should be adopted in evaluating the various relevant factors in determining whether or not to grant consent; it does not require that the greenhouse issue should outweigh all other issues*".[233]

In assessing and responding to risk Ravetz argues for a principle of reasonableness: "*…risks are conceptually uncontrollable; one can never know whether one is doing enough to prevent a hazard from occurring. Even after a hazard has occurred, one is still left with the question of how much more action would have been necessary to have prevented it, and whether such action would have been within the bounds of 'reasonable' behaviour'*.[234] Legal precedent suggests that it is not necessary that all risk be removed from development proposals,[235] and that responses must be proportionate to risk.[236] Conditions can be applied to proposals rather than simply refusing them.[237]

2.3.3 Precaution and obligation

Generally, legal actions invoking the precautionary principle are brought with the allegation that a decision-maker is not applying the principle in cases where they are legally required to. Cause for consideration must include 'all sources of information' not just science,[238] but public apprehension does not overcome scientific evidence, particularly on matters measurable.[239] In some examples the Court has found fault with the decision-making process, pointing to an inadequacy of environmental survey work or contradictory evidence[240] as reason to refuse a development. A lack of scientific knowledge has been held to be a reason to postpone a decision.[241]

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[232] *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; *Newcatle and Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Ltd* [2010] NSWLEC 48, [183-187].
[233] *Greenpeace Australia Ltd v Redbank Power Company Pty Ltd* (1994) 86 LGERA 143, 154.
[234] Jerome R Ravetz, 'Pubic perceptions of acceptable risks as evidence for their cognitive, technical and social structure; 46-47 in Meinolf, Dierkes, Sam Edwards and Rob Coppock (eds) Technogical risk: its perception and handling in the European Community (Oelgesclager, 1980) 46 47.
[235] *Shannon v Dalby Town Council* [2004] QPEC 62.
[236] *Hamilton v Sutherland Shire Council* [2012] NSWLEC 1015; *Hunter Environment Lobby Inc v Minister for Planning and Infrastructure (No 2)* [2014] NSWLEC 129.
[237] *Heavenly Queen Temple Society Inc v Maribyrnong City Council* [2005] VCAT 2005.
[238] *De Brett Investments Pty Ltd and Lamason v Australian Fisheries Management Authority* [2004] AATA 704, [162].
[239] Peel above n 11, 120; *Telstra Corporation v Pine Rivers Sire Council* [2001] QPELR 350; *Optus v Corporation of the City of Kensington and Norwood* [1998] SAEDRC 480.
[240] *Planning Workshop Ltd v Pittwater Council* [1996] NSWLEC 211; *Davfast v Ballina Shire Council* [2000] NSWLEC 128; *Price v Water Administration Ministerial Corporation of New South Wales* [2002] NSWLEC 147; *Brunsdon v Council of the City of Wagga Wagga* [2003] NSWLEC 168 [131].
[241] *Leatch v Director-General of National Parks and Wildlife Service* (1993) 91 LGERA 270 [287]; *Grishin v Conservator of Flora and Fauna* [1998] ACTAAT 250.

At other times, the Courts have been satisfied that the original decision-maker has been appropriately precautious. Mobile phone companies have successfully argued that precaution is satisfied by safety factors in national standards.[242] In Western Australia, a court agreed that precaution had already been applied as part of forest management plan.[243] Courts have found that adequate protection or mitigation measures are in place or have not been postposed[244] or imposed monitoring conditions.[245] In the well known series of Australian fisheries cases,[246] the responsible authority found themselves defending against accusations of being over precautious.[247]

The framing of the passage defining the precautionary principle in Agenda 21 (see 1.1.4) suggests an imperative for action, at odds with Preston J's impression of environmental legislation to date. Preston J has noted the rarity of positive duties to achieve some outcome, or negative duties to ensure that some standard is not compromised.[248] He references however the Philippines Supreme Court case, *Metropolitan Manila Development Authority v Concerned Residents of Manila Bay*. A case was brought against fourteen "…*government agencies and their officers who, by the nature of their respective offices or by direct statutory command, are tasked to protect and preserve, at the first instance, our internal waters, rivers, shores, and seas polluted by human activities.*".[249] The court ruled that the agencies did not have discretion over whether or not they should restore the waterways to an acceptable environmental condition, but rather they were bound to. With an order mandamus, the government agencies are now required to "*to make* [the waters of Manilla Bay] *fit for swimming, skin-diving, and other forms of contact recreation*".[250]

[242] *Telstra Corporation v Pine Rivers Sire Council* [2001] QPELR 350 381; *Optus v Corporation of the City of Kensington and Norwood* [1998] SAEDRC 480.
[243] Brid*getown Greenbushes Friends of the Forest Inc v Executive Director of the Department of Conservation and Land Management* (1997) WAR 102.
[244] *Lend Lease Development Pty Ltd v Manly Council* [1998] NSWLEC 136 [27, 28]; *Friends of Hinchinbrook Society Inc v Ministry for the Environment* (1997) 142 ALR 632 79.
[245] *St Ives Development Pty Ltd v City of Mandurah* (2003) 31 SR (WA) 313; *New South Wales Glass and Ceramic Silica Sand Users Association Ltd v Port Stephens Council* [2000] NSWLEC 149.
[246] Peel, above n 11, 98
[247] Ibid 85; *Re Dixon and Australian Fisheries Management Authority* [2000] AATA 442; *Re Justice and Australian Fisheries Management Authority* (2002) 67 ALD 443; *Re Latitude Fisheries Pty Ltd and Australian Fisheries Management Authority* (2000) 63 ALD 502; *Latitude Fisheries Pty Ltd v AFMA* (2002) 68 ALD 365; *Re Ajka Pty Ltd and Australian Fisheries Management Authority* (2001) 63 ALD 261; *Ajka Pty Ltd v Australian Fisheries Management Authority* (2003) 74 ALD 21; *De Brett Investments Pty Ltd and Lamason v Australian Fisheries Management Authority* [2004] AATA 704.
[248] Justice B J Preston, 'Enforcement of environmental and planning laws in New South Wales' The Law and Sustainability Symposium USQ Law School 11 March 2011, 9.
[249] *Metropolitan Manila Development Authority v Concerned Residents of Manila Bay* (Supreme Court of the Philippines, GR Nos 171947–48, 18 December 2008).
[250] Ibid.

2.3.4 Authority

Responsibility for the management of State Forests is granted to Forestry Corporation via the *Forestry Act 2012* s11 and s57. The first of three multiple (but equally important objectives) in that Act obliges the Corporation to be an 'efficient' producer of timber, implying a requirement to maximise productivity proportional to fixed expenses. This must be balanced against other objectives (see above section 1.3.2)**.** Within these objectives, the Corporation is bound to operate within a detailed and highly prescriptive set of operational regulations in the applicable Integrated Forest Operations Agreement. The result is that the range of management options for the Corporation is severely curtailed, and they are obliged to work as closely as possible to the constraints of the IFOA. Effectively, the IFOA makes the management decisions, not the land manager. This is the very antithesis of what was once a guiding principle of forest management or what would in other contexts be described as the principle of subsidiary.[251] Decentralisation was key to the traditional United States Forest Service philosophy. "*… because it is a fundamental national policy that the forest take its place locally as a contributor to community prosperity, the Chief of the Forest Service ensures that the Rangers' authority is protected and that no one above him sabotages his planning or action*".[252]

The loss of independence and dissolution of the Forestry Commission was part of a broader global trend aimed at increasing public accountability, improving economic efficiency and 'debureaucratising' institutions. In the United Kingdom, this process became known as the 'New Public Management'.[253] Hood has pointed what he calls 'mirror-image regulation', where the inefficiencies and unaccountability of 'old' service delivery organisations has simply been transferred from the managers to the regulators. Quoting a senior UK civil servant; "*We thought we were empowering people who manage things, but ended up empowering people who count things*".[254]

It is unlikely that the challenges of the future will be successfully met without having a single organisation with the authority, technical competence and managerial experience to develop, implement, monitor and adapt plans at all levels.

2.4 Summary of Part 2

[251] European Environment Agency, above n 20, 188.
[252] Kaufman, above n 134, 83.
[253] Hood, above n 151; Victor Lapuente, and Stephen Van de Walle, 'The effects of new public management on the quality of public services' (2020) 33(3) *Governance: an International Journal of Policy, Administration and Institutions* 461.
[254] Hood above n 137, 194-195.

"*A paradox is a statement that appears contradictory or unsupported by common sense but is nevertheless true. The common sense underlying most management actions related to the American Endangered Species Act is (1) that preserving habitat for listed species is critical, and (2) that the best or only way to preserve habitat is to preserve the ecosystem(s) on which the species depends. It may seem contradictory to say that altering the habitat is essential to its long-term maintenance. However, it seems that alteration may be exactly what is indicated by at least some assessments of relative risk. In such cases, managers must be prepared to accept the paradox and act*".[255]

Rigid interpretations of environmental principles blocks acceptance of Mealey's paradox,[256] and leads to short term, risk averse policies.[257]

Definitions and concepts that derive from a time before the truly dynamic nature of the environment was fully realised block the flexibility needed to face urgent environmental challenges. The old ways of thinking are no longer sufficient. Often, when looking at system holistically, better outcomes can be achieved through resource use rather than bans.[258]

3. Part 3 Solution outline

> "*Although it may not be possible for us to predict exactly what the needs of the future will be, we can respond by developing procedures for making robust and flexible decisions*"[259]

The discussions above could be broadly classified into two themes; the imperatives for and approaches to necessary changes in environmental management, and the governance and legal structures that have evolved to date responsible for meeting the challenges. The required responses have been shown to require understanding, involvement of all stakeholders, imagination, and flexibility. Perversely, the spirit of these initiatives has flowed from international fora down through a series of increasingly complex and fragmented levels to become, from the perspective of practitioners, a

[255] Mealey, above n 125.
[256] Meally, above n 124, 189.
[257] Ibid 190.
[258] Jorge Rabinovich, 'Parrots, precaution and project Elé: Management in the face of multiple uncertainties' in Rosie Cooney and Barney Dickson (eds) *Biodiversity & the Precautionary Principle* (Earthscan, 2005) 171.
[259] Martin Krayer von Kraus and Paul Harremoës, 'MTBE in petrol as a substitute for lead' in European Environment Agency *Late Lessons from early warnings: the precautionary principle 1896-2000* (Office for Official Publications of the European Communities, 2001) 110.

highly prescriptive command and control regulatory system driven by organisations far from the operational coal face.

Stupak has recently pointed out that " … *infexible or mandatory policies applied to situations that are complex and site dependent may … lead to unintended undesired impacts or incentives*." and noted the example of forest administration in Sweden, where "*a shift in regulatory focus from few simple to more complex policy goals … was followed by a shift from … mandated, prescriptive rules to flexible approaches relying upon the competences of the local forest managers and owners for judgement of methods needed to achieve the goals*".[260]

3.1 Legal and Governance structures

3.1.1 Precaution and risk

Most environmental legislation and regulation requires that the precautionary principle be applied. Australian courts have ruled that the 'bare possibility' of damage is insufficient to trigger the principle[261] and that the proof or certainty of absence of possibility of harm is not required.[262] Courts "*do not understand the principles of ecologically sustainable development and in particular the precautionary principle to mean that development should not proceed simply because the full consequences for ecological consequences upon which life depends are unknown*".[263]

The holistic nature of sustainability was recognised in *Blue Wedges Inc v Minister for Environment, Heritage and the Arts*, with the court holding that "*The Minister is not obliged … to take into account each of the principles of ecologically sustainable development when considering each of the protected, economic and social matters. The Minister is entitled to consider the matters together and to take the principles of ecologically sustainable development globally*".[264] Courts have seemingly avoided the trap of a checklist approach to interpretation, without true understanding of interactions between species and their environment.[265]

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[260] Inge Stupak, Maha Mansoor and C Tattersall Smith, 'Conceptual framework for increasing legitimacy and trust of sustainability governance ' (2021) 11(5) *Energy, Sustainability and Society* 1, 33.
[261] *Theo v Caboolture Shire Council* [2001] QPELR 101, 109.
[262] *Histpark Pty Ltd v Maroochy Shire Council* [2002] QPELR 134, 141.
[263] *Port Vincent Progress Association v Development Assessment Commission* [1999] SAERDC 7, [26].
[264] *Blue Wedges Inc v Minister for Environment, Heritage and the Arts* (2008) 165 FCR 211, [76, 78].
[265] Martin Denny, 'Struggling with the Act – some observations by ecological consultants' in eds Pat Hutchings, Daniel Lunney and Chris Dickerman (eds) *Threatened Species legislation: is it just an Act?* (Royal Zoologival Society of New South Wales, 2004) 164, 166.

The courts are willing to agree that some activities are environmentally positive. In *Northcompass Inc v Hornsby Shire Council*, the court agreed that the establishment of a bioremediation facility was a positive development for ecological sustainability, but in this case was not satisfied that the attendant risks had been adequately considered.[266] Conversely, in *Taralga Landscape Guardians Inc v Minister for Planning* the court deemed that the benefits of a wind farm for environmental sustainability outweighed the local impacts.[267]

Although the precautionary principle is central to many environmental acts[268] it appears that the courts are willing to rule based on the principles of ESD, not any particular narrow interpretation. That said, an adequate consideration of environmental impacts is legally crucial. In *Bentley*, "*Requiring prior environmental impact assessment and approval is a key means of achieving ecologically sustainable development*".[269]

Legal precedent suggests that it is not necessary that all risk be removed from development proposals,[270] and that responses must be proportionate to risk.[271] In some cases, conditions can be applied to proposals rather than simply refusing them.[272]

A risk assessment should be judged on its content, rather than on its title. In *Shannon v Dalby Town Council*, Council successfully argued that *"… the issues which would have been addressed in an EIS were, nevertheless, properly raised and considered through the IDAS* (Queensland's Integrated Development Assessment System) *process and the involvement of the Environmental Protection Agency*…".[273]

Compliance with standards can support the contention that issues have been properly considered. In *Histpark Pty Ltd v Maroochy Shire Council*, the project proponents chose not to follow non-binding guideline on water quality produced by the Australian and New Zealand Environmental Council. Robertson J was unimpressed: "*I am not satisfied … that … the present design will … avoid serious or irreversible environmental harm… … given the extremely sensitive nature of the surrounding environment, the ANZECC guidelines should be seen as a minimum standard for water quality purposes*".[274]

The Courts have shown themselves to be capable of negotiating statute with an understanding of the true intent that underlies the words. In the absence of other

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[266] *Northcompass Inc v Hornsby Shire Council* [1996] NSWLEC 213.
[267] *Taralga Landscape Guardians Inc v Minister for Planning* (2007) 161 LGERA 1
[268] *Murrumbidgee Groundwater Preservation Association Inc v Minister for Natural Resources* [2005] NSWCA 10.
[269] *Bentley v BGP Properties Pty Ltd* (2006) 145 LGERA 234, [67].
[270] *Shannon v Dalby Town Council* [2004] QPEC 62, 25; *Histpark Pty Ltd v Maroochy Shire Council* [2002] QPELR 134, 141, 21.
[271] *Hamilton v Sutherland Shire Council* [2012] NSWLEC 1015; *Hunter Environment Lobby Inc v Minister for Planning and Infrastructure (No 2)* [2014] NSWLEC 129, 261.
[272] *Heavenly Queen Temple Society Inc v Maribyrnong City Council* [2005] VCAT 2005.; *Hunter Environment Lobby Inc v Minister for Planning and Infrastructure (No 2)* [2014] NSWLEC 129.
[273] *Shannon v Dalby Town Council* [2004] QPEC 62, 15.
[274] *Histpark Pty Ltd v Maroochy Shire Council* [2002] QPELR 134, 141, 66.

prescriptive requirements, it is open to the court to take a broad view of sustainability, incorporating modern understandings of ecosystem change and the need for flexibility.

3.1.2 Separation of powers

A basic principle of the separation of powers is that some decisions are for the judicial branch, and some for the executive. Where discretion is conferred on a Minister, the court's role is only "to set limits on the exercise of that discretion, and a decision made within those boundaries cannot be impugned".[275] Decision -makers may be required to exercise judgement balancing environmental, economic and social goals, or balancing competing risks. In the appeal case *Murrumbidgee Groundwater Preservation Association Inc v Minister for Natural Resources*, Spigelman CJ reproduced McClellan CJ's comments in the original judgement to the effect that "*It was for the Minister, and not the Court to balance the desired environmental outcome, and the chosen method of achieving it, with the beneficial and adverse social and economic consequences*".[276]

The Land and Environment Court of NSW is, in some cases, a court of merit review. Part 3 of the *Land and Environment Court Act 1979* (NSW) outlines the circumstances where merit review may be made, and where the court is limited to judicial review. Although the line between merit and judicial review can be rather blurred,[277] in general if legal requirements are followed the courts will be deferential to decision makers unless the court is specifically empowered to "stand in the shoes" and replace the decision. In *Bailey v Forestry Commission of NSW*, Hemmings J said it was for to Forestry Corporation to decide on the extent of the relevant 'environment',[278] but that it was not open to them to not properly consider relevant factors.[279] In such cases, it is necessary for the decision-maker to apply 'real'[280] rather than 'sham'[281] consideration.

3.2 Management plans

"*Planning which is ecologically rational needs a measure of flexibility simply because ecosystems are dynamic, evolving all the time and at varying rates … Once we have*

[275] *Minister for Aboriginal Affairs v Peko-Wallsend Ltd* [1986] CLR 24, Mason J at 40-41.
[276] *Murrumbidgee Groundwater Preservation Association Inc v Minister for Natural Resources* [2005] NSWCA 10, 126.
[277] Douglass, above n 40, 57.
[278] *Bailey v Forestry Commission of NSW* (1989) LGERA 200, 200.
[279] *Bailey v Forestry Commission of NSW* (1989) LGERA 200, 215.
[280] *Parramatta City Council v Hale* (1982) 47 LGRA 319
[281] *Prineas v Forestry Commission of New South Wales* (1984) 53 LGRA 160.

determined our aims, we must look forward to the need for continuous management to achieve and maintain them".[282]

The current Forestry Corporation Environmentally Sustainable Forest Management (ESFM) Plans may meet the requirements specified in the *Forestry Act 2012* s21-24, but they are not a 'management plan' in the way that (for example) the U.S. Forest Service Management plans are.[283] To the extent that the NSW plans go beyond mere statistics and lists of external regulatory requirements they could be best described perhaps as 'philosophical' plans, outlining a general approach to management. The U.S. plans, in contrast, are detailed and site-specific descriptions of the forests in question, the aims and objectives of management of each part, and an outline and timeframe of activities planned for implementation at particular locations. In NSW operational plans are produced for specific activities, but the pattern of how operations serve to advance the goals of the ESFM plan is nowhere documented. The gap between the ESFM plans and operational plans is filled by the IFOAs, which offer no guidance and serve only to regulate and restrict. The result is that operations are conducted how and where they are possible, not necessarily how or where they may be needed.

Fortunately, improvements could be made with relatively minor legislative reform. Change is needed in two interconnected areas; firstly the land manager must be given authority to manage, and secondly the land manager must be required to manage well. Comprehensive and authorative management plans are central to both of these issues.

Part 5 of the *EPBC Act* allows for the Commonwealth accreditation of State practices, procedures and management plans, under bilateral agreements. The accreditation of genuine forest management plans would negate the need for the regional forest agreement process and have the advantage of being conducted at a local scale where meaningful public engagement in the plan can be achieved. An adequate level of detail in the plans, coupled with a requirement to conform to a 'code of practice' for specific operation types, would remove the need for IFOAs with respect to EPBC requirements. Newton suggests that appropriate planning standards represent precautionary measures,[284] and there is precedent for forest management plans in Australia to being assessed as meeting that standard.[285]

The content of management plans is controllable via the *Forestry Regulation 2012.*[286] Although at present there appears to be no requirement for the Minister to approve any

[282] Daniel Walker, 'The changing vegetation of the montane forests' (1970) 1(5) Search 217, 217, 220.
[283] i.e. United States Department of Agriculture, *Final revised Land Management Plan: Francis Marion National Forest* (USDA Forest Service, 2017).
[284] Newton, above n 61, 26.
[285] *Bridgetown Greenbushes Friends of the Forest Inc v Executive Director of the Department of Conservation and Land Management* (1997) WAR 102.
[286] *Forestry Act 2012* (NSW) s21(3)).

plans other than working plans for flora reserves,[287] this could easily be amended to make local-scale management plans also subject to approval.

The object is a "principled flexibility model",[288] with the aims and objectives of the ESFM Plan actioned via local management plans, with operational plans guiding the detail of operations in progress. Once approved, forest managers must have authority to conduct the plan in accordance with the scope of approved operational methods. Complying operations must be considered 'licenced' under the *Biodiversity Conservation Act 2016* (NSW) s2.11 and the *Fisheries Management Act 1994* (NSW) s220ZW

The scheme thus provides for assessment and authorisation at several levels; the overall ESFM strategy of the land manager approving operations at the State or Regional scale consistent with government policy, local-scale (across NSW, perhaps in the order of 10-20 plans) in consultation with stakeholders, and operational plans subject to internal regulatory conditions. The local-scale management plans offer the opportunity to incorporate local requirements for ecosystem adaptation, at present effectively impossible within the straightjacket of IFOA conditions. Stakeholder engagement within a local planning process will reduce many of the difficulties with such processes,[289] and improve perceptions of management legitimacy.[290]

Adaptive management schemes must be developed at this level of planning, small enough to incorporate local knowledge, experience and concerns while wide enough to warrant the attention of experts and other relevant agencies.

3.3 Enforcement, control and oversight

Fisher discussed the tension between accountability and administrative flexibility,[291] and this is no small concern. The multilayered approach above allows for the objectives, direction and broad constraints on forest management to be assessed and conditioned, while allowing for both more detailed assessment and administrative flexibility at successively lower levels. Craig noted the importance of such multi-level planning, where "… *the specific means of adaptation can reflect local circumstances and needs, but the fact of adaptation and the general goals and policies climate change adaption law seeks to effectuate should not be subject to local veto or avoidance*".[292] Conversely, local necessity and flexibility should be controlled and accountable at local levels, not subject to external veto.

[287] *Forestry Act 2012* (NSW) s25(3))
[288] Craig, above n 85, 17.
[289] Stupak, above n 260, 26.
[290] Ibid 25.
[291] Fisher, above n 59, 333.
[292] Craig, above n 85, 17.

3.3.1 Role of Courts

Much of this report has not distinguished between the roles of land managers and the roles of the courts. This is intentional, if courts are to 'stand in the shoes' of decision-making agencies then the perspective should be the same. Conversely, in the case of judicial review, decision-makers should have the same understandings of their 'obligation to consider relevant matters' that a court would take.

While judicial oversight of public administration is a necessary protection, juridification risks "*the intrusion of law into fields that it is ill-fitted to regulate*".[293] Institutional norms of behaviour are powerful determinants, and Hood points out that "*Such a process of juridification or legalisation represents the displacement of non-legal governing values with legal rules, and the creeping involvement of lawyers and courts in determining outcomes, in a way that both tends to damage the activity being regulated and also to undermine the general claims of law to underpin public and private activity*".[294]

While the involvement in the courts in any process suggests some failure, non-compliance or inadequacy of a system, such things do occur. Where an agency operates outside the bounds of authority given it through approved plans, the court exists to clarify and enforce the limits. Instances where an agency breaches its codes of practice should be subject to internal review, with the option of an external agency bringing an action for legal sanction.

3.3.2 Accreditation, monitoring and enforcement

Plans must be formally accredited at Commonwealth level. Commonwealth authorities may depend heavily on advice from state environmental agencies and other department. Authorisation of the Plan at state level could be the responsibility of the relevant Minister, with an obligation to consult.

Monitoring of parameters specified in the plan is the role of the managing agency, as are the local adaptations (with bounds set by the Plan). Oversight of compliance with the correct functioning of the plan could appropriately be given to an independent agency such as the Environmental Protection Authority. If significant breaches were to occur, an order of continuing mandamus[295] would be a suitable remedy. Reporting requirements within the Plan could also allow for oversight by local stakeholders, with the option of their requesting attention from the EPA. Martin has pointed out the importance of such

[293] Hood, above n 137, 203
[294] Ibid.
[295] Preston, above n 16, 18.

monitoring progress towards sustainability outcomes.[296] The United States Forest Service Monitoring and Evaluation Framework[297] may provide a useful template.

Conclusion

"*Policy is enunciated in rhetoric; it is realised in action*".[298]

Responsible public land management requires a recognition that systems are fluid. A focus on 'preserving' particular instances of a developing system is inimical to ecosystem health, often for unexpected reasons. Management must have the flexibility, adaptability and knowledge-building capacity to deal with change. A requirement to comply with the 'precautionary principle' serves to focus attention on risk and consequences of action or inaction.

Australia's courts have demonstrated the necessary flexibility to deal with these changing perceptions and understandings of the environment. They will however insist that managers and project proponents demonstrate that due regard for risk has been given. This is best demonstrated through comprehensive management plans, developed at suitably local scales in the context of a broader state-wide management philosophy and overarching goals of ecologically sustainable management. Local planning requires local input, flexibility requires that managers have the authority to act.

[296] Martin, Rhett, *Understanding sustainability law* (LexisNexus Butterworth, 2018), 379.
[297] USDA Forest Service, *LMP Monitoring and Evaluation A Monitoring Framework to Support Land Management Planning* (United States Department of Agriculture, 2007)
[298] Kaufman, above n 134, 3.

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