

Victorian Catchment Management Almanac 2019



VICTORIAN
CATCHMENT
MANAGEMENT
COUNCIL

Our approach to catchment management is continuously developing in response to many initiatives and events. This Almanac identifies key happenings and lists them in chronological order.

We welcome input to help improve the accuracy and scope of this document. Please forward suggestions to tracey.koper@delwp.vic.gov.au

Almanac: Victoria's Catchment Management Framework

Year	Event	Background	Imperative	Consequence
-100000	Climate similar to that of present			Continuing climate till about year -60000
-63000	Humans move into Australia	Humans originally migrating out of Africa. The origins of the first Australians is not clear (but presumably through SE Asia rather than Polynesia). They are believed to be amongst the earliest migrations out of Africa.	Inexorable spread of humans	Human colonisation. Timing is becoming less contentious. Recent work at Madjedbede (Northern Australia) dated grinding stones, and ground axe heads at -63,000BC. (Clarkson et al (2017) <i>Human occupation of Northern Australia by 65 000 years ago</i> . Nature 547 306-310). There is evidence of change in fire regimes occurring up to about 100 000 years ago.
-60000	Colder and dryer climate phase			Continuing climate till about year -10000. Known as the last glacial age.
-50000	Megafauna /human/climate interaction	This relationship of this interaction with megafauna extinction is fraught. Some evidence that megafauna became extinct within a rapid timeframe. Other evidence show coexistence of megafauna with humans for at least 17000 years. Other evidence that some extinctions predated the arrival of humans.	Extinction related to any, or all, of climate change, human land management methods, and predation (by humans)	Megafauna extinction but dating of when this occurred is controversial. Peak of extinctions calculated by various sources at about -45000 to -40000 years (see Van der Kaars et al (2017) Nature Communication 8 Article 14142)- intriguing as this is well after the arrival of humans. Some recent Willandra studies have a <i>Zygomaturus</i> (bull sized wombat like marsupial) present at -31000 years. Recent theory was that landscape change by burning management (supplemented by hunting) had been the reason for extinctions. But recent evidence suggests a bigger role for climate change in catalysing extinctions. Some of the lost megafauna include, giant short-faced kangaroo (230kg), sheep sized echidna, diprotodon (2500kg), and giant carnivorous goanna (1500kg)
-47000	Stone and bone tools in use.	Recent research finding in rock shelter in the Flinders Ranges	Human evolution	
-40000	Climate change to cold and dry period	Polar icecaps grow. 80km wide ice sheet over alps. Steady decline in global temperatures and sea levels concomitantly falling. Also volcanism in western Victoria.	Climate cycling	Harsh living conditions in dry and saline landscape. Rainfall decreased significantly. Tree coverage quite low. Sea levels drop to about 140 metre below present level. Land bridge between mainland and Tasmania. Humans thus were able to reach Tasmania 40 000 years ago
-20000	Peak of cold associated with Ice Age			10% of Tasmania covered by glacial ice
-18000	Grass seed harvesting	Large grasslands used (probably can be regarded as a form of 'cultivation')	Sustainable food supply	A form of agriculture
-15000	Polar ice caps melting as climate warms		Climate cycling	Sea levels start rising
-12000	Climate changes to that approximating the present. End of the Ice Age.	Polar ice-caps much reduced and sea level rose to its present levels	Climate cycling	Major trees returned to landscape. Water tables stabilised. Landscape burning keeping tree and bush cover fairly open. Tasmanian humans isolated from mainland humans.
-10000	Aboriginal population becomes relatively large	Significant demographic changes		Up till this time, aboriginal populations were relatively small.
-5000	Introduction of the dingo	Probable contact with SE Asian people	Trading contacts	
-3000	Intensification of aboriginal land management systems	Mega fauna became extinct	Need for new reliable food supplies, along with technological development.	

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0	Reference pivot point for defining time. The preceding negative year figures are BC - they are not years ago from the present, they are years ago from this reference point. The following years are (of course) specified as AD	The terms <i>anno Domini</i> (AD) and before Christ (BC) are used to label or number years in the Julian and Gregorian calendars. The term <i>anno Domini</i> is medieval Latin, which means in the year of the Lord	Setting a metric for time	
1600	Evidence of specialised tools for working animal skins	Bone tool deposits at Otway Peninsular	Efficient living	
1750	Indigenous catchment management framework in full operation with 12 000 years of experience	Land management practices developed since the end of ice age. More than 30 language groups in Victoria. The groups differed not only in language, but in "size, economy, technology, social structure, political organisation, art and religion" . Mulvaney D and White J (1987) <i>Australians: a historical library Australians to 1788</i> . Fairfax, Syme & Weldon Associates. This reference is an early part of the growing body of evidence that indigenous people managing both their landscape and 'national' economy. Land held in common, although there were specific individual responsibilities.	Survival, life and civility	Current knowledge of indigenous land management practices is not good, although some scholars are revisiting records of earlier explorers and finding descriptions of "building dams and wells, planting, irrigating, and harvesting seed, preserving the surplus, and storing them in houses and secure vessels, creating elaborate ceremonies and manipulating the landscape" Pascoe B (2014) <i>Dark emu: black seeds agriculture of accident?</i> Magabala Books. Fire stick farming has been talked of for some time, with botanical evidence of fire sensitive vegetation replaced by fire resistant vegetation, but the occurrence of hay fields, seed harvests, food storage systems, irrigation has only been poorly acknowledged. Backing these practices was an unwritten legislature "....people of a wide region could agree to a body of legitimate law without their being legislation, and in spite of the autonomy of individual and kin groups ... ancestral law had a large discretionary component ... (and) certain ritual practices tended to induce in young people a disposition to confirm to shared values and norms, and defer to people in authority." Keen I (2004) <i>Aboriginal Economy and Society</i> . OUP as quoted in Pascoe B (2014) <i>Ibid</i>
1750	Arrival of Europeans	Explorers, then the First Fleet settlement	Exploration, colonisation and economic opportunity	Europeans adopted the view that the aboriginal peoples were mere hunter-gatherers and subsequently use this as justification for aboriginal dispossession . Concept of Terra nullius applied.
1803	Collin settlement established at Sorrento	Estimated that the human population of Australia at this time was between 300 000 and 750 000 people		
1824	Hume and Hovell expedition (Gunning to Corio Bay)	There had been much exploration by Europeans about Port Jackson, the coastal strip, and just over the westward lip of the Great Dividing Range. Time to see what lay beyond to the south and to the south-west	Exploration	This expedition was instrumental in opening-up Victoria to European settlement.

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1834	Squatters move into south eastern Australia. Pastoral land use predominating. Start of grazing by hard footed animals. End of broad scale indigenous management. European settlements emerging.	European settlement of Victoria starts	Development and profit. Expansionist ethos.	And so started the setting-up of the State of Victoria. Sheep became a dominant agent of landscape and land management change. The unthinking arrogance of European settlers brought much environment instability. This arrogance also caused complete destruction of the indigenous catchment management framework.
1835	Batman's treaty with aboriginal elders	Permanent European settlement started in Port Phillip area in 1834. This treaty was an action undertaken by the Port Phillip Association to 'gain' land development rights contrary to the proclaimed policy of colonial government.	Drive for occupation	Port Phillip Association and settlers regarded as law-breakers by the British Government as no settlement had been sanctioned. But the settlement actions forced the Governors hand and settlement was sanctioned. " apart from Batman's swindle, no one sought permission to settle from the traditional owners " (source?)
1836	Captain Lonsdale appointed as Police Magistrate for infant Port Phillip settlement	Recognition from Sydney of the need: to survey, guard and allot the lands of this southern outpost of NSW; to protect its native peoples (declaring Batman's treaty invalid); and, dispense justice to all.	Law and order	Lonsdale as good administrator set 'no sale or selection before survey', giving major benefit to future. Following Surveyors-Generals also wise in reserving substantial amounts of public land for both contemporary and future use (ie towns, travelling stock, water reserves and road reserves)
1839	Charles Joseph Latrobe taking up position of Superintendent of Port Phillip Province			1839 - 1851 Superintendent. 1851-1852 Lieutenant-Governor of new colony of Victoria
1851	Victoria designated as separate colony	British parliament passed the <i>Australian Colonies' Government Act 1850</i>	Encourage antipodean government	Set-up with Governor and Legislative Council with the authority to set up districts and district councils
1851	Gold found	At Clunes	Financial gain	Stimulated major surge in population. This continuous and rapid increase in population drove the aborigines off their own territory, challenged the convict basis of the colony, forced the system of land tenure to the forefront, and strained the resources of government.
1851	Dry. Black Thursday fires (6 Feb)			
1851	Appointment of Government Botanist.	Ferdinand von Mueller	To catalogue unique flora of Victoria	
1853	Pressure for closer settlement		Supply of food	
1853	Letter from John Robertson (Portland) describing loss of perennial grasses, exposed soils and occurrence of land-slips.			Letter to Governor of Victoria Quoted in <i>Letters from Victorian Pioneers</i> edited by Currey O'Neil (1983)
1854	<i>Municipal Institutions Act 1854</i>			Set up system of municipal (local) government
1855	<i>Yarra Pollution Act 1855</i>			

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1855	Large clearing operations to support gold mining and activities of associated populations	Gold fever. "Waste land of the Crown" not husbanded	Getting access to earth for mining. Harvesting timber for mining structures and buildings. Taking fire wood for industry and domestic use.	Gold mining activities carried out at great cost to the land. Major clearing, major land disturbance, stream damage, sludge slugs in catchments
1856	First major diversion of water	From Wimmera River		
1856	First weed control legislation . <i>Thistle Act 1856</i>	336 agriculturists petitioned for government to adopt measures to control the evil of thistles in the colony.	Reduce proliferation of thistles as weeds	Landowners made responsible for control. Thistles listed were: spotted thistle; variegated thistle; blessed thistle; spear thistle, scotch thistle and Bathurst burr. Provision for "notice" (via JP) and recovery of costs if not carried out.
1857	Yan Yean reservoir constructed	Melbourne growing fast.	Reliable (in quantity and quality) water supply needed for Melbourne	Piped water supply for Melbourne underway
1859	Introduction of rabbits	Thomas Austin, Winchelsea brought in 24 English wild rabbits which "successfully" colonised (previous attempts had been unsuccessful, eg at Mt Alexander)	Desire for English conditions	In 1862 rabbits about Austin's property in the thousands. From then on spread across SE Australia was catastrophic
1859	Board of Agriculture established			Unwieldy and abolished in 1870
1859	Department of Crown Lands and Survey set-up			
1860	<i>Land Sales Act 1860</i>	Various regulations from 1833 covering grants and auctions. Squatting common	Food required for gold rush population.	First legislation covering sale and selection of Crown land. New selections (2 million acres set aside) for 80-640 acre blocks. No consideration of differing land capabilities. Hence many settlement failures. Followed by <i>Land Act 1862</i> where 10 million acres set aside for 40-640 acre blocks. Selectors required to cultivate one tenth of selection within 12 months, or erect a habitable dwelling or enclose the land with a substantial fence. Then the <i>Land Acts</i> of 1865 and 1869 changed to a grants system where land initial leased for 5 - 10 years and after that leasees could get Crown grant on paying 1 pound per acre.
1861	Acclimatisation Society of Victoria established to foster the introduction of foreign floras and faunas			
1865	Early signs of public concern over land clearing rates	<i>Argus</i> article "Over and over again we have urged that steps should be taken to protect our forest lands."	Clearing leading to timber scarcity, soil erosion and stream damage	Initially these calls for reservation of public lands were based on protecting timber, water and soil, but over time they became more and more calls for areas of nature conservation, habitat protection, education, research and recreation.
1865	First main line railways			Tramways linked to these to aid in harvesting and selling timber from lands being cleared for Agriculture.
1870	Local Forest Boards established to protect remaining tree cover and replace lost tree cover	"Waste land of the Crown" concept found to be inappropriate	to get action and devolve responsibility to locals	Failed. Local self-interests let the system down.
1872	Department of Agriculture			

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1876	First <i>Forests Act 1876</i>			
1877	Dry period to 1881			Sheep numbers fell from 11m - 3m as a consequence of this dry period
1878	40% of Victoria's land area now alienated			
1880	Retaining Crown land strips along the margins of water bodies becoming standard (as water frontage reserves)	Lot of angst between pastoralists and closer settlers who were both trying to get or maintain control of access to water sources.	Water not a private asset	A major advance in development of land. In retrospect seen as a considerable historic advantage to the state. Perhaps an advantage we are still to properly use. Locked-in with 1981 and 1983 legislation.
1880	First commercial pine plantation in Victoria			
1880	<i>Rabbit Suppression Act 1880</i>	Rabbit numbers exploding. First major pest animal problem formally acknowledged		
1880	Field Naturalists Club of Victoria established	Interest in natural environment amongst a small part of new society	Consolidate interested parties	Objectives to stimulate interest in the natural environment and preserve and protect native flora and fauna. The <i>Victorian Naturalist</i> has been published 4 times a year since 1884.
1881	Water Conservation and Distribution Act 1881 & 1883	Drought of 1887 - 1981 resulted in many squatters running out of water in northern Victoria.	Need to improve stock and domestic water supplies in northern Victoria	1881 Act enabling Urban and Rural Waterworks Trusts relying on decentralised control, initiative and efficiency. Full control of surface water given to Trusts in their specific territories. Riparian zones also designated and reserved (effectively declared a national asset). 1883 Act enabled Irrigation Trusts.
1886	<i>Irrigation Act 1886</i>	Deakin Royal Commission of 1884 - 1887 got a lot of information from overseas visits on how to deliver irrigation systems	Implement the result of Deakin Royal Commission	Effectively nationalised water use rights, set aqueduct easements, state construction of irrigation facilities, and authorisation of government loans to irrigation trusts. Many headwaters were instituted soon after the Act: Laanecoorie weir, Goulburn Weir, Waranga basin and canal. BUT by 1899 about 90 Irrigation and waterworks districts with most in grave financial difficulties. Eventually 75% of liabilities written off by government! In 50 years from 1885, crown land reservoirs steadily increased from 4.5% to 20%
1888	Dry			
1888	Goulburn irrigation scheme commences			
1888	Irrigation with wild flooding methods			While Irrigation seen as a major plank in land development it was unbeneficial in many cases because of : lack of knowledge; belief that the only limit to production was moisture; problem of heavy clay soils; water squandered because not properly valued.
1890	<i>Melbourne and Metropolitan Board of Works Act 1890</i>		Coordination of water supply, and the provision of sewerage	MMBW established in 1891 to be responsible for Melbourne's water supply .
1890	Subterranean clover starting to spread	White clover and ryegrass not working as pasture in northern and western Victoria		Build-up of plants numbers starting which lead to major spread (enabled by the use of superphosphate) in the late 1940s
1892	Tower Hill reserved as a National Park	The Tower Hill volcanic cone was initially reserved in 1866 as a game reserve (goats, jungle fowl and rabbits being introduced by a local acclimatisation society)	Habitat (and wildlife) protection	Short-lived with incompetent Committee of Management. Now a Wildlife Reserve.

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1893	Contour planting of orchard in Glenrowan	Early signs that need to move on from British land management practices for Australia	Need to find better land management practices	
1895	Start of long dry			1895 - 1902 (known as the Federation Drought)
1898	<i>Closer Settlement Act 1898</i>			
1900	Federation			Australia and New Zealand were regarded as a social laboratory of the world at this time with respect to women's franchise, pensions, and labour laws.
1904	<i>Closer Settlement Act 1904</i>	Squatters still ascendant. Perceived need to concentrate on resettlement of large pastoral estates for closer settlement	To get agricultural activities underway rather than just pastoral uses	First comprehensive act to encourage closer settlement. Led to closer settlement surges especially: 1904-1913 civilian schemes; post WW1 and WW2 returned soldier schemes; and 1950s and 1960s civilian schemes. Often unsuccessful because of lack of water and problem of 'land rich but cash poor' syndrome.
1905	Wilson's Promontory and Mt Buffalo gazetted as National Parks	Initially reserved in 1898	Natural asset protection with particular need to preserve habitat and	First enduring National Parks
1905	State Rivers and Water Supply Commission set-up		<i>Water Act 1905</i>	The 1905 <i>Water Act</i> also abolished those private riparian rights gained before 1886 legislation was introduced.
1907	State Forests Department set-up	Uncontrolled tree cutting occurring across the State. <i>Forests Act 1907</i>	Bring about some order into crown forest land management	Conservator of Forests appointed in 1907. Converted to a Commission in 1919.
1908	National Parks Association of Victoria established			
1908	Quarantine Act 1908 (Federal)	Some state quarantine acts from 1871	National approach needed	
1910	Creswick School of Forestry established			
1910	Dethridge wheel developed	Commissioner Dethridge designed metering system for water distribution		
1910	Standardised soil and land descriptions starting			
1914	Administration of weed legislation becomes responsibility of local government			
1914	Dry (1914/1915)			
1915	River Murray Waters Agreement	Federation drought brought realisation that a cooperative approach to water management needed		Involve Victoria, NSW, South Australia and Commonwealth. Operated up to 1987 when the Murray-Darling Basin agreement came into play

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1916	Wimmera/Mallee Stock and Domestic system underway with contribution of Lake Fyans	Wimmera Mallee a large area with no permanent water	Provide drinking and domestic water for land settlement in dry part of state	By 1929 nearly 10 000km of channels dug. Led to overgrazing in dry years, Now services an area of 6 million hectares and a population of 70,000. The system provides: * stock and domestic supplies by way of an annual dam fill for up to 22,000 dams now changing to a piped system for conserving water * rural pipeline services to 340,000 hectares * bulk supplies to 50 towns * irrigation supply to 3,000 hectares in the Horsham area.
1917	River Murray Commission	To manage the River Murray agreement of 1915		
1919	Wild fires			71 people killed
1919	Forest Commission	Moving on from Conservator of Forests structure.		
1920	Drainage of irrigation land started			
1920	Red rain (dust from the Mallee) over Melbourne			
1922	First <i>Vermin and Noxious Weeds Act 1922</i>	Weed legislative responsibility removed from local government and provided to DCL&S		
1924	Better Farming Train used for agricultural extension activity. 1st trip to Gippsland		Disseminate the science of farming	38 tours and 390 towns visited between 1924 and 1935
1925	River Murray Commission requesting action in Victoria to prevent destruction of forests in the Hume catchment to reduce sedimentation in reservoir.	Recognition of relationship between clearing, erosion and sedimentation.		Produced little practical action
1925	Dry period start			(1925/1927)
1926	Wildfires			31 people killed
1930	Irrigation induced salinity well recognised			
1930	Prescott and Trumbles P/E ratio	Concept of effective rainfall worked out		
1930	Australian biologists foresters and agriculturists coming to terms with new science of ecology	Understanding of environmental interrelationships and consequent interdependencies emerging	Need to understand consequences of our land management actions	Ecosystem concepts
1931	Public flood protection works and erosion control enabled (for smallish works) with creation of the "Rivers and Streams Fund"	SR&WSC established Erosion and Flood Protection Branch	Need to do river improvement works	
1934	Australian Agricultural Council formed			
1935	Soil conservation enters the lexicon	US set up soil conservation service in 1935	Dust-bowl antithesis	

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1937	Dry (1937-1945)	1937-1939, then intensified in 1943/1945		
1938	<i>Victorian Erosion Investigation Committee Report</i> to parliament	Erosion a discussion topic at 1936 meeting of Commonwealth and state ministers	Over-clearing, over-grazing and erosion problems	Not much action resulted
1938	Timber pulp mill			Incentive for better management methods - reinforced by 1939 fires
1939	4 week erosion control symposium	Set up by Victorian Institute of Surveyors, Institute of Engineers and Institute of Agriculture Science.	How to cope with gross erosion?	
1939	Black Friday wild fires across Victoria			71 people die. > 1m ha of forest burned
1940	Hanslow Cup competition inaugurated			
1940	Regional Planning Committees cranked-up	Under supervision of Central Planning Authority	Give focus to regional development	Kept going into the 1970's. Good at doing inventories, but not much more
1940	Victorian Soil Conservation Board set-up	Bushfire Royal Commission (Stretton inquiry) in combination with work by Victorian Institute of Surveyors (about erosion) eventually convinced government of the need to act. <i>Soil Conservation Act 1940</i>	Erosion out-of-hand	This (with new legislation) was changed to an Authority in 1950
1940	First Land Management Award	Initiated by Harold Hanslow (SR&WSC farmer representative) for the Mallee after seeing a competition in rural NSW	Providing acknowledgement and reward	Led to landcare awards system.
1941	Soil Conservation Regional Advisory Committees first established	<i>Soil Conservation Act 1940</i>	Community involvement and advice with land management programs	These (eight across the State) comprised 3 farmers, a Lands Department representative and Agriculture Department Representative and chaired by the Soil Conservation Board Chairman.
1942	First contour furrows and contour banks built.	Works undertaken on some of the Dookie Agricultural College land	Soil erosion protection	
1943	First soil conservation field day			Field Day at Avenel on property of DH Lawrence.
1944	<i>Save the Forests Campaign</i> inaugurated	Stretton inquiry into 1939 fires finds humans deliberately or accidentally caused the overwhelming majority of the fires.		Thirty seven organisations supported foundation of this campaign. Later, <i>Save the Forests</i> became the Natural Resources Conservation League.
1944	More major bushfires			49 people die
1944	Conference of (soil conservation) Regional Advisory Committees			
1944	Murray Valley Development League established	Founded by local government to promote the Murray River as a focus for planning cooperation and development rather than as a state boundary	Forum for local government, business and people in NSW, Victoria & SA.	Became Murray Darling Association in 1992. Provided community input to the MDBC
1945	Intensification of sub-and-super phase - also ley cropping	Science and technology advances	Economic 'growth' and 'development'	Much rehabilitation of land, especially in north and north east of State. BUT also the knowledge resulted in major deforestation as it made land clearing economically "viable"

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1945	Parliamentary Public Works Committee report on "efficient maintenance of river improvement and drainage works" recommend river management, drainage and flood protection should be managed as a complementary suite of functions		Need for better systems to manage rivers	Not much happened until 1963 when Dandenong Valley Authority set-up in line with these recommendations
1945	Recognition of dryland salinity on southern end of Colbinabbin range			
1946	National Standing Committee on Soil Conservation established as a sub committee of Australian Agricultural Council			
1946	Royal Commission on Forest Grazing report	Forest, soil and water as key trinity		Provided basis for new legislation dealing with land utilisation and led to <i>Soil Conservation and Land Utilisation Act</i> of 1949
1949	Catchment management approach to land utilisation and management properly recognised	Catchment management needs widely debated in debate producing <i>Soil Conservation and Land Utilisation Act 1949</i>	Realisation of need to deal with causes, not getting distracted by effects	
1949	First land appraisal type report in Victoria (<i>Soil, land-use and erosion survey around Dookie</i>)	Growing appreciation of the features of the environment that must be considered as relevant to appropriateness (and sustainability) of land-use)	Compiled and interpreted land data for making and evaluating land use decisions.	Led to the first major land system report <i>A study of the land in NW Victoria</i> (1963)
1949	First River Improvement Trusts and Land Drainage Trusts	<i>River Improvement Act 1948</i>	Setting up local responsibilities	Under general supervision of SR&WSC. Financed by rates on riparian lands and subsidised by public purse. 28 RITs and 4 Drainage Trusts existed in 1983.
1949	Land owners' reforestation movement established		To aid farmers in growing their own trees from seed	
1949	Subsidiary Ministerial portfolio for conservation set-up			Premier Henry Bolty acted initially in this role, within the Department of Premier and Cabinet. Successive Ministers (of other portfolios) held this subsidiary ministerial role until advent of the Hamer government of 1972.
1949	Land Utilisation Advisory Committee set up to recommend on use and alienation of public land	Outcome of Royal Commission into Forest Grazing. <i>Soil Conservation and Land Utilisation Act 1949</i>		Precursor of LCC, ECC and VEAC

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1950	Soil Conservation Authority came into being	<i>Soil Conservation and Land Utilisation Act 1949</i>	In introducing the legislation Henry Bolte stated "we could not have made a bigger mess of the soil of the country if its destruction had been carried out under supervision"	
1950	First commercial eucalypt plantations in Victoria	Reforestation of either abandoned farmland or land denuded of forest by repeated wildfires needed. Most were predominantly mountain ash	Renewing land use for economic benefit	Especially on land in Strzelecki ranges (APM/FCV). Slow growth in area planted up to 1990 with about 20 000 ha by then
1950	Land system surveys starting	Advances in assessing climate, soil moisture and interaction with land features		
1950	Wool boom			
1951	Natural Resources Conservation League established	Incorporation of the "Save the Forests Campaign" of 1944 on (related to Royal Commission into 1939 bushfires with aim of building a forest conscience in all Victorians)		
1951	First formal whole farm plans	SCA as agent at Ararat, Charlton and Bairnsdale. Based on surveys of soils, vegetation, existing erosion and history of use	Recognition of need for systems approach	
1952	Victorian National Parks Association established	In 1946 FNCV convened a conference about the poor state of management of National Parks, which resulted in <i>National Parks Plan for Victoria</i> 1949. VNPA formed to help carry this forward.	Need to better husband National Parks	
1952	First co-operative farm planning schemes	Based on soils, vegetation and erosion maps of whole areas rather than just individual properties	Recognition of need for catchment approach	39 co-operative projects operating by 1961
1952	Myxomatosis first released	Overgrazing by rabbits both compromising other grazing and agricultural activities causing severe land degradation.	Need for successful rabbit predators	Myxomatosis became established as an important tool in tool box for rabbit control in Australia
1953	First Proclaimed Water Supply Catchment - Upper Barwon	The <i>Soil Conservation and Land Utilisation Act 1949</i> established the process for identifying key water supply catchments, giving them a legal profile and establishing land use standards across the catchment to protect the water supply	To proclaim water supply as a primary output of this area.	Start of a relatively successful approach (134 proclaimed areas up to 1990), but activity declined after 1990.
1953	Rocklands dam built			

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1953	Victorian National Parks Association launched			
1957	Society for Growing Australian Plants formed in Melbourne			
1958	First broad appraisal of dryland salinity in Victoria	Work undertaken by the SCA		5 000ha reported (compared to 120 000 ha in 1994).
1958	<i>Forests Act 1958</i>			
1958	<i>MMBW Act 1958</i>			
1958	<i>Soil Conservation and Land Utilisation Act 1958</i>			
1958	<i>Vermin and Noxious Weeds Act 1958</i>			
1958	<i>Water Act 1958 and River Improvement Act 1958</i>			Enabling the set up and operation of River Improvement Trusts, and Drainage Trusts, SR&WSC identified as having general supervision and also enabled to carry out "river improvement " works in their own right. River 'improvement' works defined
1959	First Land Use Determination of a Proclaimed Water Supply Catchment - Rocklands	The <i>Soil Conservation and Land Utilisation Act 1958</i> enabled the determination of land use in proclaimed water supply catchments for the protection of the water supply function of the catchment.	To avoid undesirable land management activities compromising the water supply function of proclaimed catchments.	Gave the legislative power to regulate clearing, cropping, and other land use practices in water supply catchments
1959	<i>Local Government Act 1959</i>			
1960	Eppalock Catchment Project started (10 year plan)	Intention to construct Eppalock reservoir with eroding catchment. Technical solutions available included chisel seeder for pasture sowing, lime/super/molybdenum for subclover establishment, myxomatosis and 1080, and super top dressing.	Need to stop large movement of sediment from the catchment. Recognition of need for proper cost sharing arrangements.	Distinguished between "productive" (to the farmer) and "non-productive" works. Outstanding success. Three fold increase in agricultural productivity resulted on top of sedimentation control
1960	Fisheries and Game Department becomes Fisheries and Wildlife			
1960	Long wheel base land grading for irrigation			
1960	Start of land management incentives	Eppalock grants (productive vs 'unproductive' works) (SCA). Tree Growing Assistance Scheme (FCV)	Supply seeding money to try improved land management practices	Precursors of LPIS (1987) and Salinity Community Grants and even NSCP, NHT and NLP
1961	Land capability concept introduced	<i>Land-Capability Classification - USDA/SCS Agriculture Handbook 210</i>	Mechanism to interpret soil surveys	Initially introduced the concept of land classes for farm planning. Later developed in the 1970s to cover a wider range of land uses other than agriculture.
1961	Whole Farm Planning procedures documented	Soil Conservation Authority realising the need to formalise training for extension		
1962	Group Conservation Area projects commenced	Follow-on from success of Eppalock approach. Underwritten by legislation.	Spread positive benefits from Eppalock catchment	Over the next 20 years about 150 projects were planned and implemented
1962	Bushfires in Dandenongs			8 people killed

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1963	Spaceship earth concept	Buckminster Fuller produces <i>Operating manual for spaceship earth</i>	Finite (not infinite) resources	Realisation of earth as a closed system and with major consequences for survival and sustainability. Supplementary concepts of Gaia, greenhouse, lonely planet, globalisation (?)
1963	Australian Water Resources Council formed		To get Australia-wide coordination of water agenda	Ministerial forum.
1964	Dandenong Valley Authority	Legislation in 1963.	To deal with rivers and drainage on a 'whole of catchment' basis	Primarily as a flood mitigation coordination authority. Had powers to control urban land development. First authority moving towards 'complete catchment' approach.
1965	Dry period started			1965 - 1968
1965	Australian Conservation Foundation established	Ecological awareness comes of age in the late 1960s	Big potential for Non Government Organisations (NGO's)	Acceptance of ecological concepts of connectivity and inter-dependence
1965	Greater emphasis on non-timber values in forest management	Growing community appreciation that forest values are more than timber supply		
1965	Trickle irrigation			
1968	First photographic image of earth from space	Taken by Apollo 9 moon mission	Splendid isolation in the immensity of the cosmos	Locking-in concept of spaceship earth. Large impact on public consciousness
1969	Little Desert utilisation dispute	Minister for Lands announced development of 50 1600 ha for farms in area where Wimmera Regional Committee recommended against farming. LUAC report never published. Strong public agitation. Eventually proposal withdrawn.		
1969	<i>Groundwater Act 1969</i>		To get government influence on use of groundwater	To extend principle of government control of waters to ground waters. SR&WSC to look after regulation of development and extraction
1970	<i>Land Conservation Act 1970</i>	Follow on from Little Desert utilisation dispute	To make better provision in relation to the conservation of public land	Established the Land Conservation Council with Environment Conservation Council and Victorian Environment Assessment Council as successors. Twelve fold increase in area of National Parks under this process. Clearer definition of many public land categories. Significant adjustments in timber harvesting, mining, grazing and commercial fishing
1970	First Minister for the Environment	Environmental focus as rapid growth	Environmental governance	William Borthwick 1970-1979
1970	Major technical publication on catchment management : <i>Effects of land management on quality and quantity of available water</i> (Broughton - AWRC Report no 120)			
1971	<i>Environment Protection Act 1971</i>		To control discharges to land, water and air	Regulatory approach for point source pollution has been very effective in controlling discharges. State Environment Protection Policies have been developed for 9 water systems and for state-wide waters

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Year	Event	Background	Imperative	Consequence
1971	First Australian Soil Conservation Conference			Initiative of Soil Conservation Council. Conference to be held every 4 years
1972	Dry 1972/1973			
1972	First satellite images of land on earth			
1972	<i>Limits to Growth</i> publication	Club of Rome		
1972	United Nations Environment Program set-up	UN Conference on human environment in 1972 recommended creation of this Program		
1972	<i>Victorian Conservation Trust Act</i> 1972		Need to protect Australia's bush habitats	Established the Victorian Conservation Trust, and now known as Trust for Nature
1972	<i>Ministry for Conservation Act</i>	Existing statutory responsibilities (clean air, fisheries, game, EP, Port Phillip, conservation)	Coordinating action	Bringing together several government agencies into one Ministry
1973	Ministry for Conservation set-up. Also Ministry of Water Resources and Water Supply set up.	Movement across Australia for better 'corporate management' and government administration	Accountability	Water resources and water supply Ministry had hard time dealing with large entrenched organisations
1973	Soil & Water Conservation Loan Scheme set up	Administered by SCA and Rural Finance Commission.		Provided low interest (5%) loans to farmers to develop soil conservation and farm water supplies. Linked in with farm subdivision on land class boundaries.
1974	Melbourne's exclusive closed catchment policy not applied to catchment of new Thompson Reservoir	Multiple use catchments concept developing: for water supply catchments	Political and economic forces lined up against closing a large catchment	
1975	Departmental coordination underway in trying to deal with natural resource management. Standing Consultative Committee on River Improvement established.	Developing recognition of the need to bring together the key government players in natural resource management	Multidisciplinary approach needed to build coordination and integration	Apparently quite a lot of friction to start with but good things produced over time. Membership of: SR&WSC; FCV; Min Con; Crown Lands; SCA; F&WL; Association of River Improvement Trusts. Good outcomes included: 1979 <i>Guidelines for River Management</i> ; 1983 - <i>State of the Rivers</i> ; 1986- Setting up of RBMS; 1987- <i>Guidelines for Catchment Management</i> . It was effectively disbanded not long after creation of CF&L which tried to run it with managers, not practitioners. It lost dedication, base knowledge, working relationships and trust, and thus failed.
1975	National Population Inquiry Report	Borrie Commission set-up in early 1970's to examine desirable future population levels and to produce results that would contribute to formulation of a population policy .	A planning need	The report ranged widely. Refused to define an optimum population. Endorsed a policy of responding to trends rather than actively influencing them. Supplementary report in 1978

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Year	Event	Background	Imperative	Consequence
1975	<i>Drainage of Land Act 1975</i>	Drainage authorities needed to act to protect catchments and watercourses in terms of both drainage courses and flood plain areas	To avoid domino effect of water coming out of drained and hard surfaced areas	For floodplains outside of MMBW and DVA jurisdictions. Allowed drainage authorities to act to protect catchments and drainage courses and control areas liable to flooding. Drainage tribunal created.
1975	Environmental Weed concept applied	In KTRI publication referring to boneseed		
1975	<i>National Parks Act 1975</i>		To provide for new public park categories	
1975	Roadside Conservation Advisory Committee established	160 000km (0.5 mha) of roadside areas	Need to recognise, marshal and coordinate management of roadside values	Advisory committee to Government on roadside management issues and encouraging local government, utilities and the community to recognise the conservation and landscape values of Victoria's linear reserves.
1975	<i>Wildlife Act 1975</i>			Regulates the utilisation of Victoria's native wildlife and sets a framework for establishing reserves
1976	Laser levelling/grading and electronic support systems for irrigation lands			Great at reducing farm productivity and farm costs BUT not good for local watercourses as often more runoff, and often used to leech surface salt through to watercourse
1977	Garden State era starts.	Garden State' phrase first uttered in Government publications in the 1920s (eg 1925 <i>Victoria: the speedway to rural prosperity - Handbook for intending settlers</i>). But in 1970s it became more of a political mantra with recognition of Victoria as the more "ecologically" productive of Australia's states. However, the focus was on cultivated lands, pastures and gardens rather than natural bushlands or grasslands	Selling State productivity values relative to the rest of Australia. Better environmental management within the State.	Complemented environmental appreciation rather than embraced it.
1977	Garden State Committee established	Lots of 'Garden State' activities underway and peak body needed to coordinate and encourage	Coordination	A consultative body bringing groups together to use plants to improve landscape. Up till 1989 (when it was subsumed by Greening Australia Victoria) it used exotic as well as native plants. It set up activities which brought about community push for revegetation projects eg Potter Demonstration Farm, initiation of Farm Tree Groups and coordination of the National Tree Program.
1978	<i>Environment Effects Act</i>	Regulation of major construction projects	Reduce negative environmental impacts	
1978	Amendment to <i>Victorian Conservation Trust Act 1972</i> to enable covenants	Perception of need to protect significant areas of natural bush on private properties		
1978	<i>Reference Areas Act 1978</i>		Need areas to help evaluate land uses	
1978	<i>Crown Land Reserve Act 1978</i>	Crown land needs to be reserved in many situations for a variety of public purposes	Provide for management of Special Purpose Reserves	For running ports, roads, waterways, public buildings, cemeteries, gardens, zoos, alpine resorts, etc.

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Year	Event	Background	Imperative	Consequence
1978	Salt Action liaison team set itself up in the Loddon-Campaspe catchment	Local landholders and community groups recognise the need to facilitate action	Increasing salinity problem in Loddon-Campaspe	Produced revegetation guidelines and then became Project Branchout in 1984. Received major funding from National Tree Program in the period 1984 - 1990
1978	Widespread recognition that landowners not fully "owning" projects in GCA form	Maintenance of soil conservation works not done reliably by landowners	Works programs seen as "the Government's project"	
1979	Second Minister for the Environment			Vasey Houghton (1979-1982)
1979	Gaia	Concept enunciated by Lovelock in <i>Quest for Gaia</i>	Earth is a closed system and feedback systems may enable living matter of the planet to function like a single organism	
1980	Focus on Farm Trees Conference	Effects of age, disease, clearing salinity, erosion and fire of tree health and survival a concern	Trees as key environmental assets	Led to formation of Australian Farm Trees Regeneration Committee.
1980	Interest in direct seeding of eucalypts takes-off	Direct seeding had been used as far back as 1880s (sugar gums) but article in Landscape Australia renewed interest.	Looking for better ways of getting big numbers of trees and shrubs (native!?) in the ground	
1980	Public Bodies Review Committee (on water sector) commenced operations. Parliament interested in review of entire water sector. Trust board members mainly frontage owners.	River Improvement Trusts only dealing with very short reaches, poorly funded, legislation out-dated, knowledge base poor and little recognition of total catchment values.	Get some order into river management systems across Victoria	Final report (1983) recommended all River Improvement Trusts be disbanded and functions undertaken by 23 different agencies, 9 catchment boards and 5 municipalities. But, not enthusiastically received as RIT's did not want catchment responsibilities. So this led to setting up of Regional Drainage and Stream Management Task Force for a short term to review and respond to the recommendations of the Final Report.
1980	World Conservation Strategy published	Prepared by the International Union for the Conservation of Nature and Natural Resources in association with WWF, UNEP, FAO and UNESCO	Argument that development is essential for conservation	Set up concept of Living resource conservation for sustainable development
1981	Farm Tree Groups started	VFF initiated		
1981	Integrated approach to catchment management articulated	"Catchment-stream relationships are dynamic.. Without an integrated approach to catchment land use and stream management the correction of stream problems is unlikely to be achieved" SCA publication		Precursor of Integrated Catchment Management
1981	Land for Wildlife program set-up	Strong awareness by a large group of landowners of the importance of remnant vegetation as wildlife habitat on private properties	Encourage and support conserving landowners	By year 2005 nearly 6000 landowners involved
1982	Australian Trust for Conservation Volunteers established		To enable voluntary conservation brigades	Set up system to coordinate and supply volunteers for environmental conservation programs
1982	Dry period started			1982/83. Short. but severe

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Year	Event	Background	Imperative	Consequence
1982	First Labor government for many years	Election 1982		Ministers: Evan Walker (1982-1983); Rod McKenzie (1983-1985); Joan Kirner (1985-1988); Kay Setches (1988-1990); Steve Crabb (2990-2992); and, Barry Pullen (1992)
1982	Australian Year of the Tree	Serious decline in tree cover in Australia. Link with Decade of Trees Greening Australia		
1982	National Tree Program. Announced in the International Year of the Tree	Announced by Prime Minister Fraser	To cope with tree decline	Aiming to reverse tree decline throughout Australia. Greening Australia set up (1983) by the United nations Association of Australia as a consequence, as a non-government non profit organisation. The Garden State Committee was the Victorian Representative.
1982	<i>Trunkline</i> newsletter first published	VFF tool for communication with Farm Tree Group members		Published for over 14 years before moved into <i>Victorian Landcare</i>
1983	<i>State of the Rivers</i> report	Standing Consultative Committee on River Improvement had been working away (since 1975) on natural resource management following general concern about work of River Improvement Trusts (aka river destruction trusts) and this was their most important work outcome.	Need to get focus on river degradation and catchment decline	Highlighted degradation of many of Victoria's rivers, and made recommendations to start reversing the trend. Endorsed by government. Led to setting up of State of the Rivers Task Force (1984) River Basin Management Society (Nov1986)
1983	Ash Wednesday fires			
1983	Department of Conservation Forests and Lands set-up	Apparent requirement to depower the monoliths of PWD, CL&S, FCV and CRB	Provided a structural basis to integrate land protection issues.	Soil Conservation was linked with pest plant and pest animal control, and farm tree control and called land protection
1984	Dramatic dust storm over Melbourne	1982/83 Drought		8-Feb-83
1984	Introduction of the Land Protection Incentive Scheme (LPIS)			Amalgamation and updating of various grants- to- individuals schemes for soil conservation, pests and weed control, and farm tree-growing.
1984	Department of Water Resources and the Rural Water Commission set-up		Restructure of central management	Abolishing of SR&WSC, Ministry for Water Resources and Water Supply and Water Resources Council. Rural Water Commission became the Rural Water Corporation in 1992. Department of Water Resources absorbed into Department of Conservation and Natural Resources in 1992
1984	Australian Water Resources Advisory Committee		To provide independent advice to Federal Minister	Also approved research proposals consistent with approved government strategy. Role concluded in 1991 with establishment of Land and Water Resources Research and Development Corporation.
1984	Project Branchout	The child of Salt Action Liaison team for Loddon Campaspe (started in 1978)	Extend the advantages of revegetation	Established many revegetation sites 1984 - 1990
1984	NSW announces its Total Catchment Management Policy			
1984	Regional Drainage and Stream Management Task Force report	Task force established in 1984 to review and report-on the public bodies review committee report on the water sector. RITs did not want catchment responsibilities.	Catchment management system angst	Recommended setting up of catchment based river management authorities

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Year	Event	Background	Imperative	Consequence
1984	State of the Rivers Task Force set up			
1985	Australian Soil Conservation Council established	Had been Standing Committee on Soil Conservation reporting to AAC since 1946		
1985	Best management practices	Salinity program development led to the strong dependence on this approach	Imperative to act on best available knowledge	
1985	Ministerial task force on salinity established. Salinity Program	Parliamentary Joint Select Committee on Salinity (established in 1982) produced <i>Salt of the Earth: Final Report on the Causes, Effects and Control of Land and River Salinity in Victoria</i> (1984). 50 major recommendations	Get on top of causes of, and solutions for salinity.	Salinity Program effected. Interdepartmental (ie coordinated budget) and community driven. Salinity bureau established to oversee. Led to the production of 19 salinity management plans.
1985	Land Protection Council		To provide advice to the Minister on land protection issues - especially as they relate to agriculture	Made up of eight elected representatives from LPRAC plus representative of CCV, VFF, THC and MAV,
1985	National Soil Conservation Program set-up	From 1978 quite a bit of work done across Australia on the status of our land and soil resources. Found 51% of land used for agricultural and pastoral purposes. <i>National Soil Conservation Strategy</i> prepared. Clear then that funding for major treatment needed. <i>The National Soil Conservation (financial assistance) Act</i> 1985 resulted	Get funding into the system to fight land degradation	Initially funded state government run programs then set up community sub-program (1989) and opened up way for approaches of NLP and NHT. NSC Strategy provided guidelines but did not address location specific issues, milestones or timetables. The Decade of Landcare Plan followed these up.
1985	Potter Farmland Plan starts in south-west Victoria			1984 - 1988
1985	Role and value of stubble burning under review			
1985	Organic Farming becoming recognised as an alternative farming approach	Some farmers electing to use natural methods, not synthetic or unnatural methods to produce their foods for consumers.	Desire to cut down on synthetic inputs (and consequences) to ecosystem agriculture.	1988: Registration of the Biological Farming Association as a Co-operative
1986	Community Salinity Grants	Salinity studies identified the need to help combat salinity through education and control projects undertaken by schools, farmers and other community groups		eg 1987 \$140 000. 1988 \$210 000 1992 \$196 000.

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Year	Event	Background	Imperative	Consequence
1986	Victorian LandCare Group Program launched	First LandCare group formally launched at Winjallock near St Arnaud by Joan Kirner, Minister for Conservation and Heather Mitchell President of VFF. The LandCare concept evolved as an integrated community approach to soil erosion, salinity, and pest control.	Recognised need for an integrated program to address land protection issues using a community basis.	Initial allocation of \$200 000 for grants under the Landcare program, mainly to group activities. In 12 years, survey showed (Alan Curtis) that 890 Landcare groups had formed with 27 500 members, constructed 4540 km of protective fencing and planting of over 3 million 'trees'
1986	Murray-Darling Ministerial Council (and Commission in 1987) established		Need for coordinated, inter-governmental approach to management of the water, land and environmental resources of the entire Murray-Darling Basin	Murray Darling Basin Commission subsequently replaced River Murray Commission
1986	NRCL joins GA (national body)			
1986	Rural Women's Network established		Recognition of key role of women in sustaining and maintaining families from businesses and communities.	Make links between women in rural Victoria (up to 16 000) to give more active and influential role in public life and across the board decisions made which affects rural communities
1986	Murray Darling Basin Community Advisory Committee - first meeting	MDBC Ministerial Council identified need for such a group		Under the Chairmanship of John Burton
1986	<i>Salt Force News</i> starts up	A lot of people now involved in salinity control activities across Victoria	Need for a communication tool for people actively involved with salinity management in Victoria	Published for nearly 12 years before translating into the <i>Victorian Landcare</i> magazine
1986	Timber Industry Strategy			
1987	Greening Australia Victoria established	Greening Australia set up in 1983. A Garden State Committee initiative to set up GAV		Evolved from Garden State Committee and became branch of Greening Australia Limited. Became an incorporated association with a board of directors on 18 June 1991.
1987	<i>Conservation Forests and Lands Act 1987</i>	Department of CFL operating since 1983	To give legislative base for CFL and operations	Abolished FCV, SCA and VNWDB
1987	"Sustainable development" concept firmly established	From World Commission on Environment and Development <i>Our Common Future</i> . Aka Brundtland Report. Building on World Conservation Strategy of 1980	Need for a framework to avoid profligacy	Widely embraced but widely debated. While it is vague, attracts hypocrites and fosters delusions; it can be integrative, action oriented, go beyond technical fixes, incorporate social components, and engage local communities in new ways. (Robinson, 2004)
1987	Murray-Darling basin agreement		Involve Queensland and ACT	Took over from the River Murray Waters agreement
1987	<i>Better Rivers and Catchments Report</i>	Ultimate report of the State of the Rivers Task Force		
1987	Land Protection Incentive Scheme (LPIS) set-up	SCA Incentives & TGAS incorporated	<i>Conservation, Forests and Lands Act 1987</i>	Protective fencing; tree growing; soil erosion control and salinity control

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Year	Event	Background	Imperative	Consequence
1987	Mitchell River Management Authority. First catchment based Waterway Management Authority .			Over forty percent of Victoria covered by WMAs by 1997. Incorporated into Catchment Management Authorities in 1997
1987	Saltwatch - pilot program	Interest in harnessing collective energies of schools, and other communities in salt affected areas. (via Sarah Ewing and Terry White)	Educational need	Has grown into a large and effective educational and monitoring system
1987	Go Green		To encourage urban interest in revegetation	Program initiated and funded by state Government of urban revegetation programs.
1987	<i>Planning and Environment Act 1987</i>		To introduce environmental considerations into 'planning' systems	Provided a planning system through which environmental implications of development projects can be considered.
1987	State Conservation Strategy (<i>Protecting the Environment. A conservation strategy for Victoria</i>)	First state-wide conservation strategy in Australia	To involve the whole community.	Committed the government to arresting degradation of the State's waterways, catchments and environment and to get a lasting improvement by the year 2000. 174 actions listed
1988	Victorian Private Forestry Council established			To oversee implementation of <i>Private Forestry Strategy</i> (seeking to get private plantations in Victoria to go from 250 000ha to 750 000ha by 2002)
1988	<i>Salt Action - Joint Action</i> Salinity Strategy for Victoria	Salinity Program underway since work of Parliamentary Joint Select Committee on Salinity	Document Salinity Program	Salinity management plans and strategies developed for 22 areas of the State
1988	Greenhouse' awareness locked-in	Atmospheric CO ₂ levels clearly growing.	To prepare for probable undesirable consequences	Further study strongly indicates global warming and significant climate change coming as a consequence of fossil fuel use and loss of dense vegetative cover. At 2005 the CO ₂ level was 372 ppm - a 420 000yr high. There is an over the world average 0.6 degree Celsius rise in temperature over past 100 years due to human activities.
1988	Integrated catchment management' phrase locked-in.	National Workshop on Integrated Catchment Management held in Melbourne in May 1988 (AWRC Conference Series publication no 16)	Need for cooperation, integration and sequencing framework for catchment management	A concept whose time had arrived.
1988	Catchment Coordinating Groups	Regional initiatives to get informal working towards common catchment management purpose. Encouraged by Standing Committee on Rivers and Catchments	Still seeking integration	A couple formed. Mid-Goulburn, Mid-Gippsland, Lal Lal and Upper Snowy Interstate. But declined in activity by 1992. Perhaps specific purpose was somewhat unclear. Coup de grace with C&LPBoards set-up in 1994
1988	First reliable information of extent of clearing in Victoria <i>Forest cover changes in Victoria</i>	Satellite imagery comes of age	Need to have measure of intensity of deforestation and debilitation	88% cover in 1869 was reduced to 35% by 1987. Highest rate of clearing of any Australian state. Landscape stress levels relatively high as a consequence.
1988	First State Landcare conference	First opportunity to assess Landcare acceptance and impacts		Enthusiastic response. Federal Resources Minister Senator Peter Cook present and formally accepted invitation to take Landcare federally.

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Year	Event	Background	Imperative	Consequence
1988	First Victorian public manual on property planning - <i>Whole Farm Planning: principles and options</i>			
1988	<i>Flora and Fauna Guarantee Act 1988</i>		Native species need umbrella of protection	Provides a legislative foundation to guarantee that all taxa of Victoria's flora and fauna can survive, flourish and retain their potential for evolutionary development in the wild.
1988	<i>The State Environment Protection Policy: Waters of Victoria</i> (1st Edition)			
1989	First channelised water flows to the southern Mallee			
1989	Tree Project set-up	Urban volunteers wanting to propagate trees	Getting trees into rural lands	Urban based NGO with retree scheme for propagating in the city and planting out in rural areas (1.3 million trees by 2003)
1989	One Billion Trees Program			1989 - 1997 . Delivered by Greening Australia
1989	<i>Water Act 1989</i>	Need for major overhaul of all water legislation to govern the management of water resources in Victoria	Streamlining, water conservation and catchment co-ordinating groups	Promotes the orderly, equitable and efficient use of water resources in a sustainable manner
1989	Tree Victoria program started	State Conservation Strategy and Salinity program exposed need for revegetation program	Get trees back in critical parts of the landscape.	Aim to get 5 million trees per year planted up till year 2010. <i>Tree Victoria Action Plan</i> 1990 (DSE). In 10 years of operation had funded 1237 projects planting some 3 million trees.
1989	Landcare Australia Limited incorporated	As part of the trio of Federal Government initiatives, the other two being resourcing of Greening Australia to establish the 1 billion trees program, and the launch of Decade of Landcare	To change broader community attitudes, encourage participation, and be entrepreneurial	
1989	Amendment to <i>Victorian Conservation Trust Act 1972</i> to enable Revolving Fund	Need for revenue generating capacity for strategic land purchases		
1989	Bulk entitlements		<i>Water Act 1989</i>	Established for both Urban Water Authorities and Rural Water Authorities. Now has become pertinent for environmental flows
1989	Clearing controls introduced across Victoria	Clearing before controls estimated at about 13 000 ha/year.	To stop inexorable loss of vegetative assets	Controversial - built into the planning system. No compensation payable. Exemptions incorporated. Clearing rates reduced to 2 500 ha/year
1989	Greening Australia Victoria incorporated	Greening Australia asked the Garden State Committee (in 1983) to develop and coordinate the interests of Greening Australia in Victoria. GAV initially set up reporting to GSC.		By 2004, had supported the establishment of about 20 million plants, covering an area of more than 10 000ha with 15 000 ha of existing native vegetation either protected or enhanced. Delivered the One Billion Trees Program from 1989 - 1997

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Year	Event	Background	Imperative	Consequence
1989	National Landcare Program starts	Lobbying by ACF and NFF. The program was formed through the amalgamation of the former National Soil Conservation Program (NSCP) and the former Federal Water Resources Assistance Program (FWRAP) along with the community components of the Save The Bush and One Billion Trees programs administered by the Australian Nature Conservation Agency and the Natural Resources Management Strategy for the Murray-Darling Basin administered by the Murray-Darling Basin Commission.		
1990	<i>State of the Environment Report - Victoria's inland waters (1989)</i>			
1990	Stream Flow Management Plans		<i>Water Act 1989</i>	
1990	International Panel on Climate Change (IPCC). First assessment report	Arose from UN Framework convention on climate change	Carbon dioxide atmospheric levels inexorably rising	Following IPCC reports: (2) 1995, (3) 2001, (4) 2007 (5) 2014 (6) 2022
1990	(apparent) Significant increase in algal blooms in Victorian waters	First recorded algal bloom in 1928 (Maroondah) but recordings only low in number until the 1980s, then another rise in the 1990s		
1990	Decade of Landcare commences	Joint submission by the NFF and the ACF to the Federal Government in 1989 recognising that our land and water are precious resources which must be carefully managed. Their goal was to ensure that Australia's agriculture and pastoral lands are used within their capability by the year 2000 and that there is sustainable use of land from then on. Based on expansion of the National Soil Conservation Program	To move towards sustainable land use	Expansion of NSCP. Establishment of LAL. Increased funding for Greening Australia
1990	Muckatah Community Surface drainage Working Group Established	Muckatah depression (40km NE of Shepparton). Area of 600 km ² with 400 land managers. Salty water table had changed from 20m depth to 1m depth in 30 years)	Reduce water table and protect water quality	59km of arterial drains, wetlands used for flood mitigation, nutrients processed through wetlands. Stage 1 - 1997, Stage 2 - 2003 on.
1990	Nyah to South Australia Border Salinity Management Plan			

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1990	Latest proclamation of a Water Supply Catchment	Many water supply catchments proclaimed since the first (under the <i>Soil Conservation and Land Utilisation Act 1949 and 1958</i>) in 1953. This was the 134th.	Show water supply as priority use for this catchment.	This proclamation was for the Deep Creek and Loch River catchment- supplying domestic water to Noojee.
1990	Department of Conservation and Environment (including Water Resources)		Machinery of government changes	
1990	Alcoa commercial sponsorship for revegetation commenced			Alcoa revegetation assistance scheme (1980). Alcoa Woody Yaloak Catchment Project (1993)
1990	<i>Environmental Condition of Victorian Streams 1990</i> published	Follow-up of <i>State of the Rivers</i> Report (which was based on Task Force experience). This survey of stream condition (State of Streams survey) went more for quantitative information. Done at the time of release of the <i>State Conservation Strategy</i> .		Assessment highlights importance of land clearing as a factor contributing to stream degradation
1990	Native seedbanks	Growth in demand for locally indigenous plants		eg GAV Melbourne Indigenous Seedbank and Alcoa Portland Seedbank
1990	Farm Advance			Wound-up June 1997
1990	Latrobe Region Water Authority. First multifunctional water authority			
1990	Murray-Darling Basin Natural Resource Management Strategy Launched	Murray-Darling Ministerial Council	Declining basin health	Led to major change in approach to basin management of natural resources based on principles of ICM
1991	Salinity Bureau transferred from DPC to DoA			Landcare responsibility remaining with DSE
1991	Slow down in rate of softwood plantation development	About 200 000ha of softwood plantation developed in Victoria with about 50% in private hands.		Softwood estate now about 215 000ha. In 1998 government sold its plantations (softwood and hardwood) to Hancock's Plantations.
1991	National Population Council			
1991	Speed up in rate of hardwood plantation development	About 20 000ha of hardwood plantation developed in Victoria by this time. Mainly mountain ash	International demand for hardwood fibre	Total area of hardwood plantations in Victoria grew to 142 000 ha by 2003 (<i>National Forest Inventory</i>). Blue Gum has been the preferred species for most of the plantings undertaken since 1990 and most hardwood plantations are located within an economic transport distance from either the ports of Portland and Geelong or Australian Paper's pulp and paper mill at Maryvale near Morwell.
1991	Start of another dry period			1991 - 1995
1991	Standardisation of land systems categorisation of the State	Regional land resources data of the past 40 years compiled	Consistent statewide approach for efficiency and quality control	Basis for land evaluation, land capability assessment and used as primary layer in electronic Geographic Information System for Victoria.
1991	Australia New Zealand Environment and Conservation Council	Formed with the amalgamation of Australian Environment Council and the Council of Nature Conservation Ministers		

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Year	Event	Background	Imperative	Consequence
1991	Water trading commenced in Victoria	Unofficial trades occurring previously but regulations under the <i>Water Act</i> (1989) now allowed permanent trades		A lot of water licences were traded into Nyah to South Australia border (7050ML between 1991 and 2001), with much more money invested in new irrigation (>\$200m) . Must be bringing about reduction in mobilisation and drainage of salinity from northern Victoria(!).
1991	First Australian Landcare Conference	5 national soil conservation conferences held since 1971. Transformed into national landcare conference		To be held every 4 years
1991	Private forestry profile raised		Commercial opportunities to give environmental benefits	Farm forestry demonstrations. Regional plantation committees. Regional agroforestry networks established. Land capability database for private forestry prepared. Statewide planning amendment to support timber production on private land. Led to <i>Forestry Rights Act</i> 1996.
1991	Report on population issues and Australia's future	Based on work by Committee of the National Population Council		Again the group considered it inappropriate to enunciate an optimum although concluded that population numbers could be determined to reflect the 'sustainable carrying capacity' of the country. The group recommended that the Commonwealth Government develop a population policy as a matter of priority
1991	<i>State of the environment report 1991- agriculture and Victoria's environment</i>			
1992	Wimmera River Catchment Coordination Group put out draft strategy			Led to Wimmera River Integrated Catchment Management Strategy
1992	CRC for Soil and Land Management	Federal government wanting to fund research in a more integrated way and concept of cooperative research centres developed	Integrating research	Established in July 1991, the CRC for Soil and Land Management was amongst the first group of CRCs to be funded. The CRC's research areas included rain fed farming systems, fertility and structure in soils, soil acidity and sodicity, contaminated industrial and agricultural land, water quality and catchment health. In 1998 the CRC ceased operations.
1992	<i>Victoria's Decade of Landcare Plan</i> released	Recognition that landcare could be Victoria's major focus for achieving sustainable land management	Locking-in catchment goals with landcare movement	28 Specific actions listed. Most ambitious in retrospect. Key ones were to: prepare Regional Landcare Action Plans; promote farm planning; set up State Landcare Committee to oversee Plan. Three review times proposed: 1995, 1998 and 2000.
1992	National Landcare Advisory Committee			Group to make recommendation to two Federal Ministers on NRM. Became the Australian Landcare Council in 1997
1992	State Landcare Committee established	Decade of Landcare needing overseeing group. Run in tandem with the LPC	A group with responsibility for overseeing implementation of Decade of Landcare Plan. To provide advice to the Minister on statewide priorities to implement the decade of landcare plan and associated issues.	Comprising an independent chair and 12 representatives: VFF; CCV; LAL; Dryland Salinity Irrigation Salinity; LPC; RWC Advisory System; DFA Advisory System; RMA; ACF; GAV. Role taken over by Catchment and Land Protection Council in 1995.

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Year	Event	Background	Imperative	Consequence
1992	Terra nullius abolished in Australia	High Court's Mabo judgement		The High Court's judgment overturned the terra nullius fiction. In the same judgment, however, the High Court accepted the British assertion of sovereignty in 1788, and held that from that time there was only one sovereign power and one system of law in Australia.
1992	Rural Water Corporation	Future management review carried out		Successor body to Rural Water Commission. 9 regions consolidated into 5. Corporatisation of internal business units and consultancies.
1992	Department of Conservation and Natural Resources (which incorporated an Office of Water Resources).	Election 3 October 1992	Machinery of government changes	Minister for Conservation and Environment: Mark Birrell. Minister for Agriculture: Bill McGrath.
1992	National Landcare Program (NLP)	Lots to do to repair land degradation	<i>NRM(Financial Assistance) Act 1992</i>	Supply resources to supplement state activity to encourage community to work towards prevention and control of degradation.
1992	"Break-of-slope" plantings underway in Warrenbayne	From saline groundwater studies hypothesis that plantations located in key topographic positions will impact on discharge of salt.	Test robustness of hypothesis	Impact reasonably good, fine tuning of specific location of plantation continuing.
1992	Landmate program initiated	Initiated by the Department of Correction and Department of Conservation and Environment to deploy inmates of the Loddon Prison as labour source for catchment management works, and education program for participants	Cross fertilization with multiple benefits	An ongoing success
1992	CRC for Catchment Hydrology			The CRC aimed to deliver the capability to manage catchments in a totally new way. Their central goal was to produce a decision support system able to predict the movement of water, particulates, and solutes from land to rivers, linking the impact of climate variability, vegetation, soil and water management together in an integrated package. Funding concluded in 2005. Transferred to CRC for e-Water
1992	Salinity Bureau transfers from Department of Premier and Cabinet to Department of Food and Agriculture	Government decision to have Minister of Food and Agriculture responsible for the Salinity Program and the Minister for Conservation and Environment to be responsible for the Landcare Program.	Need for unequivocal program responsibilities	
1992	Rural Adjustment Scheme			
1992	Glenthompson Catchment Group established	5 landcare groups coming together - centred about the township of Glenthompson	Implement and improve productivity	54 000 ha with 73 mixed cropping families. Success stories are Hopkins River to Grampians biolink; 260 km of waterways fenced, 420 km direct seeded, and 160 000 trees planted
1992	<i>Melbourne Water Corporation Act 1992</i>			
1992	<i>National Strategy for Ecologically Sustainable Development</i>			Provides the key direction for the concept of "ecologically sustainable development". Agreed to by COAG

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Year	Event	Background	Imperative	Consequence
1992	National Drought Policy agreed to based on principles of risk management and self reliance .	Complex and messy approach to dealing with low rainfall periods across Australia. Reform needed.	Logic and equity	Exceptional circumstances provisions of the Rural Adjustment Scheme used for partnership between Commonwealth and States to share cost of interest rate subsidies for "drought"-affected farmers. It also included additional social welfare measures. Drought amelioration funds used to develop a National Property Management Program as part of the NLP program. This was rolled out as Farm\$mart in Victoria and later became FarmBiz.
1992	Water Watch launched	Activity by community groups in water quality monitoring, and also rationalising Saltwatch and Watertable Watch	Coordination of community action for health waterways	Commonwealth funding obtained. Eight hundred waterwatch groups in Victoria by year 2000. Website established in 1996.
1993	Woody Yalock group formed	Seven landcare groups seeing value in consortium. Alcoa sponsorship.		Focussing on: trees; pastures; rabbits and erosion. 120 000ha of local plans
1993	Agriculture and Resource Management Council of Australia and NZ	Amalgamation of Australian Agriculture Council, Australian Soil Conservation Council and the Australian Water Resource Council	Seeking efficiency and integration	
1993	Dry (1993/1994)			
1993	Government recognition of need for better sustainability indicators	Publication of <i>Sustainable Agriculture: tracking the indicators for Australia and New Zealand</i> (published by SCARM)	Practical indicators of sustainability.	Still not there
1993	Ministerial Council on Forestry, Fisheries and Aquaculture	Amalgamation of Australian Forestry Council and the Australia and New Zealand Fisheries and Aquaculture Council		
1993	Nine Regional Landcare Plans released		Requirement of Victoria's Decade of Landcare Plan	Government response on all 9 plans released in November 1993
1993	Native Title Act	Following Mabo decision of the high court	Need to recognise unique ties some Aboriginal groups have to land	The Native Title Act 1993 ("NTA") is a law passed by the Australian Parliament the purpose of which is "to provide a national system for the recognition and protection of native title and for its co-existence with the national land management system".
1993	Labour market programs	Federal Government establishing employment and training programs to help alleviate unemployment	Providing jobs in the NRM field for program candidates	
1993	CRC for Freshwater Ecology			The CRC for Freshwater Ecology provided ecological understanding to improve inland waters by collaborative research, education and resource management. It concluded in June 2005 and was succeeded by the CRC for e-Water
1993	Murray Darling Basin Agreement	States actions affecting each other	Defining the rights and responsibilities of states.	

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Year	Event	Background	Imperative	Consequence
1993	National Dryland Salinity Project (NSDP) set up	Lots of independent research work carried-out across Australia in previous 15 years.	Need for coordinated approach to finding ways of dealing and coping with dryland salinity.	Phase1: (1993-1997) Remote sensing, satellites, and information on management tools. Review at end of Phase 1 found salinity cost are significant and rising. Profitable options are still being sought. One salinity problem which needs to transcend traditional interests. Some of problems are cross catchment (ie outside ICM). Vegetation management is the key. Lack of capacity is important but secondary. Phase 2: (1998-2003) emphasis on communication and extension.
1993	<i>Reforming Victoria's Water Industry: a Competitive Future</i> released		Seeking institutional reform and better management of water	Overhaul of States property rights framework, determination of pricing principles, establishment of 5 regional water authorities, establishment of RMA's, ending of separate roles of water resource management, standard setting and regulatory enforcement.
1993	Native title	Growing recognition that native title to Australian land and water does have validity and utility. Commonwealth <i>Native Title Act 1993</i> .	Justice	Public land as the key source of surviving title
1993	Farm\$mart	Property Planning Management related initiative associated with new approach to 'drought' preparedness and management. Launched at VFF annual conference.	To roll-out national drought reform initiative in Victoria (but to concentrate on assessment, risk and planning)	Stage1: 1993 - 1996 (module development and group learning). Stage 2: 1996 - 2000 (strategic planning workshops for self reliance, risk management and partnerships). Funded jointly by State and Federal Governments.
1993	Sustainable Agriculture Strategy (Stage 1)	1993-1996. Department of Agriculture moving to lock-in their environmental credentials	To integrate resource management with farm business development	Over 20000 landholders participated in property management planning courses
1993	Victorian Plantations Corporation			
1994	<i>Reforming Victoria's Water Industry - a Plan for Reform of Non-metropolitan Urban Water Authorities</i>		Better management of the water sector	Provided the framework for 17 regional authorities (down from 83) for better commercial management.
1994	Australian submission to International conference on population and development			
1994	Catchment and Land Protection Act 1994	Desire to amalgamate soil conservation, salinity control, pest control and landcare approaches under the land protection and integrated catchment management banner	Government commitment	Rescinds previous legislation. Sets up Contemporary Catchment Management Framework . This constituted a statewide Council and 10 Regional Catchment and Land Protection Boards. The Boards are responsible (in conjunction with government) for producing Regional Catchment Strategies. These Strategies build on extensive planning already underway for landcare, salinity, soil conservation, pest management and water quality and provide strategic direction for catchment management into the future.
1994	Priorities project set-up	Economic, social and environmental priorities for land and water management.	Need for consistent and comprehensive methods for developing priorities	
1994	Australian submission made to UN International Conference on Population and Development			"The Australian Government has not specified optimum population levels as no clear formula for a developed country of low fertility - and a diversity of community views".

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Year	Event	Background	Imperative	Consequence
1994	Effectiveness Monitoring Strategy - for Salinity Program	\$30m annual spending in Salinity Program. How effective is it?	To demonstrate effectiveness of management actions	
1994	Victorian Catchment and Land Protection Council established	Land Protection Council and State Landcare Committee had role in providing advice to government on the operation of programs operating in rural areas	C&LPAct proclamation	
1994	Catchment and Land Protection Boards established	Lot of regional community work in salinity, landcare, soil conservation, pest control and water quality management.	Local decisions, locally made	10 Advisory Boards established. Strategic and coordinated planning started via the Boards through focus on Regional Catchment Strategies. Boards relatively short lived as advisory bodies (apart from PP&WP Board) and were soon restructured to have stronger overseeing role to improve implementation of the Regional Catchment Strategy.
1994	City Landcare Program underway		Landcare needs to be more than a rural program	
1994	Department of Agriculture Energy and Minerals		Machinery of government changes	
1994	Department of Conservation Forests and Lands established		Machinery of government changes	Merging of FCV, DCLS, MinCon and F&W
1994	Good Neighbour Program commenced	Weed, rabbit, fox and wild dog issues on public/private land boundaries		
1995	LandCare becomes landcare		Less regulation of landcare approach	
1995	Water sector reform : separation of commercial and public good functions. Rural Water Authorities established		Commercial focus. To administer the extraction and diversion of water from waterways and the ground	Strong commercial focus for new regional water authorities caused them to steer clear of public good activities. Role of RWC in supplying water for irrigation handed over to 4 separate businesses: Wimmera-Mallee; Sunraysia; Goulburn-Murray; and, Gippsland & Southern (eventually becoming just Southern). Breaking up of corporatised business units of RWC and sold.
1995	<i>Nutrient Management Strategy for Victorian Inland Waters</i>	Rise in number of blue-green algae blooms across the state and awareness of the role that the nutrients, phosphorus and nitrogen play in causing these blooms	Need to reduce incidence of algal blooms	Focussed effort and clarified government and community roles. Community based groups developed regional plans
1995	Regional Management Plans	Relevant Catchment legislation, policy frameworks and approved Regional Catchment Strategies and associated Plans	To align and implement government investment for sustainable and integrated catchment management	Each year each regional catchment board prepares a Regional Management Plan to align and implement government investment. Implementation involving a number of regional players particularly CMAs, appropriate government departments, water authorities.
1995	International Panel on Climate Change (IPCC) Second assessment report.	IPPC report 1 in 1980	Discernible human influence on change	(3) in 2001. (4) in 2007 (5) 2014 (6) 2022.

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Year	Event	Background	Imperative	Consequence
1995	<i>Environment Strategy - VicRoads</i> released	Recognition that protection of the environment is a benefit, not a cost	To be sensitive to the environment through responsible management of the road network	Eight key directions enunciated with particular emphasis on Roadside Management Plans and acceptable environmental standards
1995	Topcrop	MEY-check cropping extension program rolled into Topcrop which was the National initiative	Improve water use efficiency	
1995	Coastal and Bay Management Council Formed		Coastal Management Act 1995	Provides for planning, managing and use of Victoria's coastal resources sustainably for conservation, recreation, tourism and commerce.
1995	Directions for Waterway Management in Victoria policy			
1995	National competition agreement	Changing role of Government from service provider of first resort to competitive provider with increased emphasis on partner/regulator		
1995	Ongoing talk of a Catchment Research and Investigation Strategy for Victoria	Limited funds available for R&I	Tackle gross inefficiency	
1995	Prime Ministers Land Management Task Force report			
1996	Victorian Planning Provisions introduced			Enabled Local Government preparation of new format planning schemes. Municipal Strategic Statements and local policies built in as part of the planning schemes. Prepared concurrently with RCS (edition 1) but pretty well independently.
1996	Landcare group networking starting		Efficiencies from common needs and issues	Quite a lot of working networks at the start of the 2000's
1996	CRC for Weed Management Systems			The CRC conducted research in areas such as weed biology and ecology, population dynamics, herbicide management and resistance, pasture management and biological control. In July 2001 the CRC was replaced by the CRC for Australian Weed Management.
1996	Accidental release of rabbit calicivirus spreads into Victoria	Escape from CSIRO research trials in South Australia (Wardang Island)	Serendipity, or just bad luck	Rapid spread. High kill rates in many areas. Not so effective in low population densities. Seasonal and not that persistent
1996	Minister for Agriculture and Resources: Pat McNamara. Minister for Conservation and Land Management: Marie Tehan	Election 30 March 1996		Portfolio now called Conservation and Land Management
1996	Update of control of chemical use legislation			Use of a specific group of dangerous chemicals now require Agriculture Chemical Users Permit and keeping of adequate records
1996	<i>Victorian Landcare</i> magazine - first edition	10 year anniversary of Landcare. Amalgamation and refocussing of "Trunkline" and "Salt Force News". Jointly published by NRE, VFF and Alcoa Australia		And still going in 2019, and with Carrie Tiffany still editing after 23years.

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Year	Event	Background	Imperative	Consequence
1996	Rabbit calicivirus approved for national release			Rabbit Buster program rolled out to use rabbit control operations of poisoning and ripping to take advantage of Calicivirus caused reduction in rabbit numbers.
1996	Review of catchment management arrangements commenced	Farmers and regional communities confused with the various operations of regional land and water organisations	Drive for administrative reform. Desire for coordination and efficiency gains.	Review group report February 1997
1996	State Landcare Conference (Uni of Ballarat)			
1996	Murray Darling Basin Commission introducing catchment caps		Over allocation of surface water from many catchments	Limit any further allocation of surface waters
1996	C&LP Conference. Pinnacle Valley (near Mansfield)			
1996	<i>Report of Task Group on Catchment Planning and Strategic Statutory Planning</i>			
1996	Victorian Catchment and Land Protection Council Second Business Plan			
1996	Project Platypus			
1996	Agriculture and Food in the Classroom project launched		To raise awareness of the importance of agriculture and food sectors to Victoria	
1996	Broad Vegetation Type mapping completed for the state			BUT moving towards implementation of Ecological Vegetation Class mapping for more detail and utility
1996	<i>Cost sharing for on-ground works</i> MDBC Discussion paper	Much debate on line between "public good" and "private good"	Equity	
1996	Economic and health benefits of preventing stock access to creeks , dams and rivers documented	Kondinin Group study for LWRRDC	Reducing stock damage to waterways	
1996	<i>Forestry Rights Act 1996</i>			
1996	Habitat corridor projects come of age			Became biolinks with onset of biodiversity awareness
1996	Department of Natural Resources and Environment	Following election of 30 March 1996	Machinery of government changes	
1996	Parks Victoria		Machinery of government changes	
1996	Regional Coastal Boards established			
1997	<i>State of the Environment Report</i> (First National)			
1997	Start of > 10 year dry period in Victoria			10 year average across Victoria (1997-2007) = 563mm compared to long term average from 1900 of 631mm

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Year	Event	Background	Imperative	Consequence
1997	Kyoto climate change conference (Kyoto protocol)	Intergovernmental Panel on Climate Change predicted an average global rise in temperature of 1.4o C - 5.8o C between 1990 and 2100	To prevent "dangerous anthropomorphic interference with the climate system"	On ratification, establishes legally binding commitment for the reduction of four greenhouse gasses (CO2, NH4, NO2 and SF6) plus the hydrofluorocarbons and perfluorocarbons. Target agreed upon was an average reduction of 5.2% from 1990 levels by the year 2012. Agreement eventually came into force on 16 February 2005
1997	National Heritage Trust established	Sale of Telstra 1. <i>The National Heritage Trust of Australia Act 1997.</i>	To help restore and conserve Australia's environment and natural resources	5 year program initially 1997-2002. Comprising: Landcare Program, Bushcare Program, Rivercare Program and Coastcare Program. Known now as NHT 1. Augmented as NHT 2 in 2001 (and an additional boost in 2004) extending in to @2007/2008 as a \$3b program
1997	Sustainable Agriculture Strategy (2nd edition)	1996-1999		
1997	<i>The National Strategy for the conservation of Australia's Biodiversity</i> published	The Australian Government ratified the Convention on Biological diversity in June 1993. The National strategy prepared by ANZECC in consultation with ARMCANZ, AFC ANZMEC, ANZFAC and the Industry, Technology and Regional Development Council	To bridge gap between current activities and effective identification, conservation and management of Australia's biological diversity.	
1997	<i>Review of Catchment Management Structures in Victoria</i> report	Report of the Catchment Management Structures Working Party. Membership was: Jeremy Gaylard (CALPCouncil); David Clark (CALP Council); Brian Learmonth (Chair, Glenelg SPIG); Wally Shaw (President VFF); Eda Ritchie (Chair - Western Coastal Board); Peter Ross-Edwards (local government); Deane Runge (Chair Broken River Management Board); and Peter Sutherland (NRE-CMSA)	To give more "grunt" to local catchment management organisation and sort out some of the competing interests	Conclusion of review that contemporary CaLP Boards not the best arrangement for implementing Catchment Management Strategies. With funding commitments of over \$100m per year the review also concluded that higher business standards needed, and business and administrative reforms were required to fit in with Government policy. Arguments also presented for: greater community involvement in determining service delivery; more integrated service delivery; comprising floodplain management, rural drainage, waterway management in western Victoria, and management of crown frontages
1997	<i>Future Arrangements for Catchment Management in Victoria: Response by the Victorian Government to the Catchment Management Structures Review.</i>		Policy and action required after formal review	In principle support to recommendations made by Review group. Implementation resulted in CMAs being set up. CMAs to: provide service for waterway and floodplain management (with river health focus); control rural drainage; monitor; have rating powers (transferred from pre-existing WMAs); use implementation committees to deal with detailed work programs (ie take over WMA, Salinity Committees and Sustainable Development Committees). Statewide Council (VCMC) no longer to monitor effectiveness of CMAs
1997	<i>Towards 2000: Caring for Landcare in Victoria</i>	Council Statement	Sort issues critical to future of landcare in Victoria	Published as appendix in VCMC 1997/98 Annual Report
1997	Completion of 1st edition of all Regional Catchment Strategies			
1997	Grapecheck			

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Year	Event	Background	Imperative	Consequence
1997	Regional Catchment Management Authorities replacing C&LP Boards. (except for PP&WP C&LPB). Waterway Management Authorities are absorbed into CMA's.	Future Arrangements for Catchment Management in Victoria: Response by the Victorian Government to the Catchment Management Structures Review.	Implement government response to <i>Review of Catchment Management Structures in Victoria</i>	1. The CMA Board - who are directly responsible for the development of strategic direction for land and water management in the Region. They set priorities, evaluate the effectiveness of outcomes, monitor the external and internal environment and identify opportunities. 2. The Implementation Committees (ICs) are the conduits for local community input, and are responsible for the development of detailed work programs and the oversight of on-ground program delivery for specific issues or sub-catchments. 3. The CMA staff are there to support the Board and ICs, oversee development and implementation of programs and liaise with the community, government and other catchment-focused organisations.
1997	<i>Agriculture - Advancing Australia</i> package	Rural Adjustment Scheme review made a range of recommendations	To better deal with key issues of rural adjustment, drought and farm business risk.	Federal funding provided for: Farm Business Management Program (Farmbis); Farm Management Deposit Scheme (review of Income Equalisation Deposit Scheme and the Farm Management Bonds arrangements); and provide farmers with access to the aged pension.
1997	VCMC Communications Office established			
1997	CCR1 (<i>Know your catchments: an assessment of catchment condition using interim indicators</i>)		<i>C&LP Act 1994</i>	
1997	Ministers McNamara & Tehan commit to a natural resource monitoring and assessment strategy for Victoria.			
1997	VCM Council appointed (VC&LPC concludes)			
1997	Victorian Biodiversity Strategy			
1997	Ecological footprint concept	Introduced by Rels and Wakemagel	Need to realise level of human impact on the earth	Popularised by WWF at the Johannesburg Summit on Sustainability in 2002. EPA is a key proponent in Victoria
1997	Commonwealth/State agreement to treble the total area of plantations in Australia by the year 2020 by fostering the expansion of private forestry.	(<i>Plantations for Australia: the 2020 Vision 1997</i>)		Much of private forestry is industrial with "farm forestry" still only playing a minor role. Led to <i>Private Forestry in Victoria: Strategy towards 2020</i> .
1997	<i>Wimmera 2020</i> established. One of the first Sustainable Regional Development Committee .	CMAs wanting to promote business development and sustainable natural resource management.	Communication and bringing together.	
1997	CRC for Catchment Hydrology 2			
1997	Environment Conservation Council	Development on from LCC. Membership reduced from 14 to 3		

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Year	Event	Background	Imperative	Consequence
1997	Floodplain management reform	Outlined in <i>Future Arrangements for Catchment Management in Victoria: Response by the Victorian Government to the Catchment Management Structures Review</i> .		CMAs to preside over. Includes management of Crown Frontages. To sort out lack of waterway management systems in west of State.
1997	<i>Managing Victoria's Catchments - Partnerships in Action</i> policy statement released	Increasing appreciation of the value of, and dependence on government/community partnerships, for getting action	To outline government commitment to implementation of Regional Catchment Strategies. To meet NHT challenges and to recognise entry to new phase of catchment management	Describes roles and responsibilities, outline arrangement for implementation of RCSs and sets put government policies relating to catchment management. \$m100 deployed to the CMF system.
1997	National Workshop on Integrated Catchment Management (2nd)	Organised by River Basin Management Society		
1997	Natural Heritage Trust funding program commenced	From Sale of Telstra 1		Bushcare, NLP, Murray-Darling 2001, Farm Forestry, National Rivercare Initiative, National Wetlands, Fisheries Action Plan, Endangered species, Waterwatch
1997	Regional Catchment Strategies (1st edition) publication			
1998	VC&LPC report on NRE Catchment Management Research	History of diverse and unrelated priorities for research work	Need for logical and coherent approach	No strategy forthcoming
1998	Victorian Farm Management Awards initiated by Council as reinstating of Hanslow, Hughes, Gilmore and Plowman Farm Management Awards	Various long established awards had been suspended for many years following establishment of CFL	Need to acknowledge and reward good operators.	Harold Hanslow Award for Sustainable Land Management; John F Hughes award for outstanding group work in pest plant and animal work; Jack Gilmore Award for outstanding individual or group activity in water management; Sidney Plowman Travel Study Award to departmental staff who demonstrate outstanding contribution to repairing land degradation on farms.
1998	Future Harvest exhibition on tour	Science museum initiative	To illustrate issues and innovations in Agriculture associated with farming	
1998	<i>Weeds in Victoria</i> (ENRC Report)			
1998	East Gippsland floods			
1998	Inaugural Victorian Catchment Management Conference		To provide information on the changes in catchment structures and consequent management to catchment community	Held at Shepparton and Mooroopna. 270 delegates.
1998	Victoria Flood Management Strategy	Prepared by State Flood Policy Committee	To enable effective flood management	Regional flood plain management sit under this. Looked after by Catchment Management Authorities
1998	State Water Resources Data Warehouse set-up			

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Year	Event	Background	Imperative	Consequence
1998	Greenfleet program set-up	On average each car provides 4.3 tonnes of carbon dioxide to the atmosphere each year	Start focussing on causes of greenhouse effects	Car owners given opportunity to contribute \$25 per year for the planting of 7 trees to help offset their carbon dioxide contribution. A not-for-profit organisation. 5.4m trees planted by June 2009.
1998	Introduction of catchment management tariffs			
1998	Privatisation of Victorian Plantations Corporation			
1998	Strong publicity from community that NHT is a convoluted process			
1998	<i>The Catchment and Land Protection (Amendment) Act 1998</i>	Head of power to implement Catchment Management Structures Review		
1999	<i>Towards 2000 - Caring for Landcare in Victoria</i>			
1999	Victorian Resources on Line (VRO)		To make available detailed information on soil, land, water, vegetation and climate	Growing into a powerful knowledge bank for management of natural resources in Victoria. (www.dpi.vic.gov.au/vro)
1999	Victorian Greenhouse Action Statement <i>Replanting Victoria 2020</i>			For revegetation; reforestation; plantations and carbon tracking
1999	<i>Strategic review of the Sustainable Dryland and Agriculture and Land Management key project in Victoria</i> report			Reports need for better vision, better information, clearer response, increasing landholder skills, clarify institutional arrangements and go for integrated planning
1999	Victorian Weeds Strategy			
1999	Suspension of catchment management tariffs	Election policy of new Government	Politics	Government agreement to fund CMF from consolidated revenue. Changed relationship between CMAs, government and regional communities.
1999	Minister for Environment and Conservation: Sherryl Garbutt. Minister for Agriculture: Keith Hamilton	Election 18 September 1999	Ecologically sustainable development	
1999	CRC for Freshwater Ecology	Ecology of rivers and wetlands		On conclusion of funding in 2005, work was taken over by CRC for eWater
1999	Benchmark index of stream condition report	Index combines information on biota, flow regime, water quality and physical condition of the channel	To assist the assessment of river condition on a rational and routine basis.	Utilises and integrates information on: flow regime; water quality; channel condition; riparian condition and invertebrate communities. Victorian River Health Strategy developed from this
1999	<i>Environment Protection and Biodiversity Act 1999</i> (Commonwealth)			Protects matters of national environmental significance
1999	Forests Victoria			

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Year	Event	Background	Imperative	Consequence
2000	GAV contracted to provide executive support and project support to Roadside Conservation Advisory Committee			
2000	Inaugural Victorian Floodplain Management Conference			Wangaratta
2000	Acid sulphate soils identified as potential problem for some coastal developments	Massive fish kills in Tweed River in Northern NSW in 1987 started the focus on these soils in Australia.	Development causes acid production and mobilisation	<i>Acid sulphate soil hazard maps - guidelines for coastal Victoria</i> (Rampant et al DPI 2003). Draft Victorian Strategy for coastal acid sulphate soils produced in 2008
2000	International Landcare 2000 Conference		Lock in Landcare as a Victorian development by running first international conference	
2000	Launch of Greater Glenelg Biolink	15 landcare indigenous and community groups combining with agencies to develop a series of habitat corridors		
2000	Victoria's urban stormwater program	EPA developed as part of Victorian Governments " Greener Cities " policy		
2000	New CMA Boards appointed			
2000	Roadside Conservation Advisory Committee return from Greening Australia outsourcing contract and made administratively responsible to VCMC			
2000	Draft Native vegetation management framework released	CMA's started working on Regional Native Vegetation Plans as a component part of their RCS. Over-arching state framework required for standard setting and development of consistencies	To update and clarify policy associated with retention and utilisation of native vegetation	Public consultation phase undertaken and final Framework released in 2002.
2000	10 Regional draft native vegetation management plans released			
2000	Willow reduction programs	Willows reducing stream flow capacity, compromising riparian habitat values and modifying environmental quality of water	Renew riparian habitat values	
2000	<i>Victoria's Salinity Management framework. Restoring our Catchments</i>	Salinity threat still growing	To update 1988 Salt Action: Joint Action	Establishes directions and targets to guide action for the future
2000	<i>Natural Advantage: A blueprint for a sustainable Australia</i> . ACF report		Need for leadership	

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Year	Event	Background	Imperative	Consequence
2000	Victorian Catchment Management Conference <i>Healthy landscapes - restoring our catchments</i>			Held in Ballarat
2000	New VCMC appointed			
2000	Electronic data storage capacity now immense		Inexorable technology	Allegedly the data stored in the 2000-2005 period is as great as all that recorded before 2000
2000	Catchment Activities Management System (CAMS) introduced			
2000	<i>Coordinating Catchment Management: report on inquiry into catchment management</i> House of Representatives Standing Committee on Environment and Heritage			
2000	Ecosystem Services concept gaining traction	Growing profile for a range of ecosystem services being identifiable as products of land management.	Need to apply a value system to the fundamental base of rural productivity	
2000	Environmental Management System for agriculture	Based on ISO 14001 (International Standard for Environmental Management which emerged from 1992 Rio Earth Summit) and ISO 9000 (International Standard for Quality Assurance)	Desire for voluntary, industry led environmental standards	Led to production in June 2003 of the paper <i>The way forward: an action plan for adoption of EMS in Victorian Agriculture</i> . And also <i>Incorporating Biodiversity into Environmental Management Systems for Victorian Agriculture: A discussion paper on developing a methodology for linking performance standards and management systems</i> in 2001
2000	Living systems project (<i>Biodiversity and Agriculture: looking for natural synergy</i>)			
2000	Natural Resources Management Ministerial Council formed along with Primary Industries Ministerial Council	Amalgamation of ANZECC, ARMCANZ and MCFFA. Natural resource management issues to NRMMC and industry related issues to PIMC		
2000	Pivot irrigators proliferate. Blue gum plantation clamour.			
2000	' Triple Bottom Line ' becomes mantra			Ongoing discussion about what TBL means in natural resource management
2001	Snowy River 'rescue' package formulated	Much of the Snowy River flow arising from NSW diverted to Murrumbidgee with construction of the Snowy Mountains Hydro Scheme	To rehabilitate the Snowy River by returning a significant proportion of the flow	Commitment of \$375m (over 10 years) to restore 21% of average natural flows (212GL). Also commitment to an extra 7% if major capital works water saving program in Murray-Darling basin is successful.
2001	Water Sensitive Urban Design arises	Follow-on from CSIRO publication (1999) <i>Best Practice Environmental Guidelines for Urban Stormwater</i>		

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Year	Event	Background	Imperative	Consequence
2001	Review of Regional Catchment Strategies commenced		Statutory requirement for review every 3 years.	
2001	National Heritage Trust extended for another 5 years	Budget announcement	To ensure future of many important ongoing activities in NHT 1	An additional \$1b - to run as NHT 2 2002/03 - 2006/07
2001	<i>Managing Victoria's growing salinity problem</i> . Report of the Auditor General Victoria	Victoria had invested \$275m since 1990 and had contributed to improvements in irrigation areas but not in dryland areas	Don't know how to manage the salinity problem	
2001	Statement of commitment <i>Integrated catchment management in the Murray-Darling Basin 2001-2010 - Delivering a sustainable future</i>			
2001	VEAC marine, coastal and estuarine investigation outcomes	Government decisions in response to investigation by VEAC		
2001	BushTender	Traditional ways of directing government money to the improvement of native habitat not making much overall difference. New economic models now available	Test a new way of seeking tenders and pay for provision of management services to improve quality and extent of native vegetation	Successful trials 2001 - 2003 (NE and central Victoria). An additional \$m3.2 provided through Provincial Victoria Statement - Moving Forward. A further \$m2.7 in Victoria's Environmental Sustainability Action Strategy (Our Environment - Our Future) - to expand to other parts of Victoria
2001	Environmental best management practices on farms, method set up	Self assessment and action planning workbooks produced	Self assessment of sustainability	Over 700 landholders had benchmarked their farming practices against current sustainable land management practices in Victoria's southwest by 2006
2001	Voluntary neighbourhood environmental improvement plans		Enabled in <i>Environment Protection Act 1970</i>	By 2007 6 Plans being implemented - all with a water focus (viz: Morwell River; Edwardes Lake; Eskdale/Little Snowy Creek; Stony Creek, Maribyrnong; and, Traralgon)
2001	FarmBis program	Follow on from Farm\$mart for PMP training	Build self reliance in property management and to manage change.	A \$12m joint program between commonwealth and the state to achieve: - Profitable, competitive and sustainable farm and fishing business enterprises. - Self-reliant primary producers who are equipped to handle change through adoption of a culture of continuous learning and skills development. - Enhance sustainability of Australia's natural resources. FarmBis1: Rural Finance Corporation managed. FarmBis2: 2001-2004 NRE managed. FarmBis3: 2005 DPI managed. CONCLUDED 2007
2001	Integrating Regional Catchment Planning and Local Government Planning project commences	VCMC workshop in July 2001 identified poor alignment between RCSs and MSSs	Need to align CMA and Local Government planning activities	Identified natural resource/catchment management issues that are appropriate for inclusion in municipal planning schemes, examined the performance of the existing planning schemes in giving effect to RCSs, identified opportunities, gave models, and developed plan for getting integration.

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Year	Event	Background	Imperative	Consequence
2001	National Action Plan for Salinity and Water Quality (NAP) underway in Victoria		Bilateral Agreement (State/Commonwealth)	New impetus and potential access to investment for 6 of 10 CMA regions. Focus on investment at a regional level against accredited and accountable strategies plans outcomes and targets
2001	<i>Victorian Catchment Indicators: our commitment to reporting on catchment condition</i> booklet released	VCMC CCR1 (1976) illustrated the lack of pertinent information for routine and reliable condition reporting.		Project: fencing and rehabilitation on private lands; cultural heritage assessment; biodiversity management, and pest control.
2001	Federal Renewable Energy Target set	Target legislated to get Australia to increase proportion of energy coming from renewable sources	Need to reduce emissions of carbon dioxide	Controversial and politically fraught with coal mining lobby active
2001	Borrell-a-kandelop wetlands rehabilitation project initiated	9 lakes (near Colac) (some RAMSAR) important in indigenous history and for wildlife habitat.	Rehabilitation and protection of heritage	
2001	International Panel on Climate Change - third assessment report		Global warming 66-90% human caused	IPCC reports: (1) 1990, (2) 1995, (3) 2001, (4) 2007, (5) 2014, (6) 2022
2001	Catchment Indicators Online	Follow on from release of <i>Victorian Catchment Indicators</i> booklet		
2001	<i>Inquiry into allocation of water resources</i> . ENRC report	Allocations between agriculture, urban and environment fraught	Water savings required	
2001	Victorian Catchment Forum 2001: linkages with local government			Hamilton
2001	Catchment Management Activity System (CAMS) started	Multiple systems for tracking project expenditure.	Single amalgable system for the State	Records and reports catchment management activities and on-ground works
2001	Healthy Landscapes: a vision for a sustainable future from the VCMC	A common vision and set of goals for ecologically sustainable land and water resources do not exist to shape State Catchment Management Strategy	Common vision essential for progress	Contentious. Did not get past draft stage
2001	Indigenous Protocols Project	Flow-on from VCMC Sponsored meeting of Aboriginal Nations in November 2000	Need to involve indigenous peoples and their cultural approaches in land and water management issues	
2001	Indigenous Land Management Facilitator	Federal government initiative		Hosted by GAV
2001	The concept of soil health gains traction	Arising out of VCMC 2002 Catchment Condition Report and growing community interest in "biological farming"	Soil as the life support platform, must not become sickly - for all our benefit	More integrated view of soil and their inherent strengths and weaknesses. Stronger recognition of the planetary role of soil addition too, and even over and above human food production
2001	Victoria's agriculture and manufactured food exports (peak) at \$8.1 billion			

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Year	Event	Background	Imperative	Consequence
2001	Review of roadside management and conservation in Victoria	Some vacillation about future role and operation of RCAC	Need to have formal decision on role and funding of roadside conservation advisory group.	
2001	Agri-Business Forums	Linked with sustainable regional development committees eg <i>Wimmera 2020</i> established in 1997		
2001	VCMC Catchment Stakeholder Forum	Non-Government organisations forum working for a couple of years but recognition of need to broaden membership.	Need to expand membership from just NGOs	Local government organisations included
2001	<i>Victorian Environmental Assessment Council Act 2001</i>			Enables VEAC as organisation to make recommendations on the protection and ecologically sustainable management of the environment and natural resources of public land
2002	CRC for Australian Weed Management			Replacing the CRC for Weed Management Systems. Research areas covered by the CRC include weed biology and ecology, weed risk assessment, pasture management, and crop agronomy
2002	Grow West landscape change project underway	Problem area west of Bacchus Marsh with serrated tussocks, rabbits, erosion, salinity and nutrient run-off.	Implement integrated approach	Grow West business plan for getting revegetation of 10 000 with massive mosaic of native vegetation, farm forestry and so on.
2002	CRC for Plant-based Management of Dryland Salinity			The CRC aims to develop plant-based methods of reducing environmental, economic and social impacts of dryland salinity
2002	Water savings from the Northern Mallee Pipeline project allocated to stressed rivers in Wimmera and Glenelg catchments	34 700ML identified as savings at completion of stage 7 of the pipeline project. Inter Catchment Advisory Group (set up by Minister in 1995) determines sharing arrangements.		
2002	State Water Quality Monitoring and Assessment Committee established		Minister's request for a group to formulate a statewide position on the monitoring and assessment of environmental quality on Victoria's aquatic environment	
2002	<i>Victorian Coastal Strategy</i>	First coastal strategy was in 1997.	Need to link catchments, coasts and oceans	Contains important subjects for Regional Catchment Strategies. The Coastal Strategy led to development and implementation of Coastal Action Plans, establishment of a system of Marine National Parks, implementation of stormwater plans, improved coordination of coastal Crown land management.
2002	End of valley targets	Arising from implantation of Murray Darling Basin Salinity Strategy	Needing real targets for the reduction of salt loads from particular catchments into the Murray River.	

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Year	Event	Background	Imperative	Consequence
2002	Victorian Greenhouse Strategy		Perception of need to take action to respond to climate change	Commenced a three year program to reduce Victoria's greenhouse emissions across a range of industry sectors
2002	<i>Our Forests - Our Future Balancing communities, jobs and the environment</i>	Need for Policy statement on role and management of forests	Current level of logging in Victoria's forests is unsustainable. To ensure a long term future for our forests and regional communities	
2002	<i>Victorian Action Plan for 2nd generation landcare</i>		Ministerial commitment from International Landcare Conference	
2002	GAV change to a regional management structure	Recognition of regional funding for planning, funding and implementation by regional catchment framework	To maintain relevance in new arrangements	
2002	<i>Water Act (Irrigation Farm Dams) 2002</i>		Need to license all irrigation or commercial use of water - not just that collected from waterways and groundwater	
2002	<i>Bayside Environmental Sustainability Framework</i> . First urban local government environmental sustainability framework			
2002	<i>Growing the future in forestry - growing private forests. Focussing on 2002 - 2005</i>		To expand forestry on private land	
2002	Roadside Conservation Advisory Committee expired	Review recommended changes in responsibility and funding	Responsibility and funding issues could not be resolved	
2002	<i>Victorian Pest Management: A Framework for Action</i>		Need to realign pest management priorities	Comprising Weed Management Strategy, Wild Dog Management Strategy, Fox Management Strategy, Rabbit Management Strategy and Public Land Pest Management Strategy.
2002	Weed Alert Rapid Response Plan	Imperative recognised in Pest Management Framework	To deal with new and emerging weeds	
2002	Victorian River Health Strategy	VCMC/NRE produces a vision for Victoria's rivers <i>Rivers - 2050: The future of rivers in Victoria</i>	To provide for the long term integrated management and restoration of Victorian Rivers	Community driven regional river health strategies being brokered by the Catchment Management Authorities
2002	Environmental Water Reserve	Increasing awareness that health of river and groundwater systems require a reserve allocation of water. See Victorian River Health Strategy	River and groundwater sustainability	Concept becomes part of Victoria's water management system. This becomes a significant issues as the drought continues to bite into the quantities of available water

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Year	Event	Background	Imperative	Consequence
2002	Victoria's native vegetation management. A framework for action			
2002	CCR2 (The health of our catchments : a Victorian report card)	Follow on from Catchment Condition Report 1(1997)	C&LPAct 1994	Well received and widely used
2002	Melbourne 2030 Planning for sustainable growth - policy released		Melbourne projected to grow by 1m people and desire to keep it liveable, attractive and prosperous	30 year plan emphasises the city's interdependence with rural Victoria. A principle coming out in subsequent documentation stated as "Integrated water management that conserves our drinking water, reuses and recycles water, and locally manages the quality as well as quantity of urban run-off".
2002	Box Ironbark investigation outcomes	Government decisions in response to investigation by VEAC		
2002	Vision for healthy landscapes (incorporated in CCR2003) used to inform DSE development of <i>Integrated Framework for Natural Resource Management</i>			
2002	Wimmera Waterway Management District declared			
2002	Integrated Natural Resource Management Framework underway	DSE desire to be a leader in environmental sustainability	Need to guide strategic policy, planning, management and investment in land, water and biodiversity	<i>Towards more integrated natural resource management in Victoria: possible elements of an integrated state-wide policy framework.</i> (2005) Paper in Australian Journal of Environmental Management
2002	Healthy Landscapes	Concept needed to describe the need to match land capability with land use. CCR2002 outlined concept.		
2002	<i>A Watershed in Catchment Management</i> . Victorian Catchment Management Conference (Bendigo)			
2002	<i>Blueprint for a living continent</i> . A way forward from the Wentworth Group of Concerned scientists		Based on need to live sustainably in the environment	
2002	Signing of Model Indigenous Protocol between traditional owner groups (Yorta Yorta and North West Nations) and North Central CMA	VCMC project and pilot study led to development of model protocol	To document basis for a relationship between indigenous tradition owners and CMAs	<i>Protocols, Principles and Strategies Agreement for indigenous Involvement in Land and Water Management, North Central Region - Victoria</i> (2003) VCMC Publication
2002	Department of Sustainability and Environment. Department of Primary Industries. Department of Victorian Communities	Election 30 November 2002	Political issue - Machinery of government changes	Minister for Environment & Minister for Water: John Thwaites (up to 2007). Minister for Agriculture: Bob Cameron

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Year	Event	Background	Imperative	Consequence
2002	CMF governance Improvement Project initiated			
2002	Start of major dry period			Broken by wet spring/summer in 2010
2002	Growing Victoria's Greenhouse Sinks program		To initiate plantings for both native vegetation cover and plantation cover	
2002	<i>Healthy landscapes - sustainable communities. Victoria's Action Plan for 2nd generation landcare</i>			
2002	Land stewardship Project Commenced	Ecosystem Services Approach rattling about.	Focus of ways of implementing an ecosystem services approach needed	Project produced a range of key reports. These were: <i>Land stewardship - market like policy options; Environmental management systems; Duty of care; Private investor needs; Stewards of the land: landholder perspectives on sustainable land management: current legislative arrangements for Victoria</i> . A sub project was also set up to test possible approaches.
2002	Catchment Community Forums			Feed into Implementation Committees and Implementation Committee work
2002	Marine parks			
2002	Native seed orchards	Rapidly growing demand for local provenance plants	Satisfy market without decimating remnants	
2002	Publication of the outcomes of the National Land and Water Audit -Australian Natural Resources Atlas and Data Library			Many Victorian ecosystems shown to be under serious stress
2003	<i>Roadside Management Strategy</i> published by Vic Roads			
2003	Weedman project		To give a basis for group tackling of weed problems	Three aspects - knowledge audit; integrated management requirements; and learning from others
2003	Sustainability covenants developed by EPA			
2003	Bushfires in NE Victoria			Jan. fires burnt for over 2 months heading Gippsland way. 1.1 million ha burnt. Considerable sediment generated. Quite a lot of effort put into recovery to stabilize mobilised sediment stores - and linked work with weed control programs. Big Desert fire in same season (200 000ha burnt)
2003	Regional Catchment Strategies (2nd edition) Publication commenced with Glenelg Hopkins region	RCSs have to be reviewed at least every 5 years. Guidelines produced in December 2001	Statutory requirement for 5 yearly review	First integrated natural resource management plan in Australia to be accredited by both State and Commonwealth Governments.

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Year	Event	Background	Imperative	Consequence
2003	The State environment protection policy Waters of Victoria (Edition 2)		To protect Victoria's rivers and streams, lakes and wetlands, and estuaries, bays and coasts	Acknowledges the key role that CMAs play in improving the quality of Victoria's water environments.
2003	New CMA Boards appointed			
2003	GPS cultivation and guidance systems with auto steer become practically available to enable very accurate placement of rows, seed, fertilizer and wheels			Enabling controlled traffic farming , inter-row seeding and side banding of fertilisers
2003	Gippsland Integrated Natural Resource Forum	Set up to get collaboration between natural resource managers in Gippsland	Raise catchment health	Producing natural resource status report cards. http://www.ginrf.org.au/index.asp
2003	Regional Catchment Investment Planning (RCIP) process introduced to the CMF	Range of government investments from different funding sources. In accordance with the NAP Bilateral any further Regional Investment by NAP will only occur through jointly agreed Regional Investment Plans	Planned, targeted and focussed investment plan at the regional and local level. Need for a single 'investment' process	RCIPs inform regional investment for NAP, NHT and State Programs. They act as a single investment vehicle for gaining natural resource management outcomes. The CMAs coordinate the plans with the engagement of all stakeholders and firmly linked to RCSs. (in 2005/2006 - 4th iteration - the 10 RCIP investment plans summed to \$120m). Regional Business Cases use to detail the investment required for each catchment region to address the agreed RCS priorities and achieve the RCS outcomes. They will also build on the rationale contained in the RCS, consider all costs of associated RCS implementation in any given year and be the link between the RCS and the RMP program of activities and associated budgets. The RBCs will address the requirement under NAP Victoria for an Investment Plan and provide for a more transparent, defensible and flexible funding model.
2003	VAGO performance audit <i>Catchment Management in Victoria</i>	Victorian Auditor General investigation	Routine evaluation of executive government performance	Provides good background evaluation. Recommended; a statewide integrated catchment management strategy to link various issue based strategies; revisit funding of CMA's; better monitoring and evaluation (financial and technical); more attention to risk management; and clearer operational protocols
2003	VCMC Review commenced	Review foreshadowed in Victorian Government Response to the Infrastructure Planning Council report of August 2002. Comment in this response that Government does not want to lose the flexibility and responsiveness of the current system by re-centralising catchment management	Catchment reforms require resetting of statewide Council role	Review concludes need for strengthened Council focussed on Statewide Catchment Framework issues. Ministerial response in May 2005.
2003	Victoria's agricultural sector still resilient	Over the past decade Victoria's agriculture and manufactured food exported growing at an average of 4.5%. It peaked in 2001 at \$8.1 billion		

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Year	Event	Background	Imperative	Consequence
2003	Our Rural Landscapes Project	DPI recognising that to keep market share there is a need to capture production efficiencies, seek product differentiation strategies, and manage a range of natural resource and community issues	To grow productivity and use natural resources more efficiently and sustainably and to better position Victorian agriculture	4 year (2003-2007)r \$50 million science based project to seek new opportunities for Victorian farmers and food manufacturers. Two key objectives of the project are to develop sustainable farming strategies and improve water use efficiencies.
2003	Victorian Water Trust established	2002 election commitment made for long term investment in water and environmental security	To secure sustainable water supplies into the future	A fund (\$92m over 4 years) to build on existing effort to ensure greater protection and better management of our water resources. Aim to get better security, improved conservation, enhanced health, sustainability, and improved reuse.
2003	<i>Carbon Tender</i> stage 1 bids called for	Trial of tendering approach to the use of Greenhouse Initiative funding	Get landowners to create carbon sinks	
2003	Commissioner for Environmental Sustainability appointed	<i>Commissioner for Environmental Sustainability Act 2003</i>	Election commitment to quantifying environmental status	Independent government organisation responsible for promoting, and auditing environmental sustainability
2003	Environmental flows	Well enunciated in the River Health Strategy	Help deal with stressed rivers	Stage 1 defining and protecting existing environmental flows through water entitlement agreements. Stage 2: aiming to rehabilitate stressed rivers via stream restoration plans.
2003	Forest reforms - <i>Our forests - our future</i>	Recognition that much of the previous harvesting rates of timber from public lands is unsustainable	Get timber production of timber from public lands sustainability.	Setting out an average reduction of 30% in regional sustainable timber yields.
2004	Port Phillip and Westernport Catchment Management Authority formed	Sorting of issues with Melbourne Water conclude	Consistency across State	
2004	Revamp of pest control powers in <i>CaLP Act</i>	Criticism of pest control part of <i>CaLP Act 1994</i> as outlined by 1998 <i>ENRC Inquiry into Weeds in Victoria</i> .	<i>Strategy Victorian Pest Management - A Framework for Action 2002</i>	Penalties increased, powers increased (enter, monitor, seize, collect and retain), administrative processes streamlined, and new penalties introduced
2004	National Water Initiative	Desire to get nationally compatible water market	Better national water resource management	COAG signed the NWI
2004	<i>Inquiry on the impact and trends in soil acidity</i> ENRC	Renewed interest in soil quality and condition arising from National Land and Water Audits		Government commitment to develop a state-wide soil health framework
2004	Review of noxious weeds	Strategic action proposed in the Victorian Pest Management Framework to review and revise list of declared noxious weeds		Three phase process. 1st stage assessment of existing those currently declared.
2004	National Heritage Trust extended by a further year	Budget announcement	Ensure completion of key activities under NHT2	Extended into 2007/08. \$300 million allocated. Making total NHT investment \$3b.
2004	Landcare gateway established	Information technology enabling efficient servicing of landcare communications	Need for a web based information for landcare groups	

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Year	Event	Background	Imperative	Consequence
2004	<i>Our water our future</i> . Victorian Government White Paper	Growing awareness of looming water crisis. Green Paper released in August 2003	Water Industry reform needed to deal with forecast rainfall reduction, population growth, and inadequate stream baseflows.	Proposed 50 year plan for water. Outlined 110 actions. Set up many of 2005 Water Act amendments. Required environmental flow contributions from rural and urban water corporations
2004	Environmental Water Reserve management responsibility assigned to CMAs	The Victorian River Health Strategy established the concept of an environmental water reserve.	Policy	Strengthen CMA role as caretaker of river health . Challenging responsibility, compounded by drought and high existing non-environmental allocations. CMAs thus with a consequent role in contributing to development of irrigation development guidelines (on the basis of optimum water use).
2004	<i>Government Response to the Victorian Parliamentary Inquiry into Soil Acidity</i>			
2004	<i>Carbon Tender</i> stage 2 bids called for		Need to have landowners creating carbon sinks	
2004	Negotiation commencing on preparation of statement of obligation (SoO) between Government and CMA's		Need to establish funding basis for the range of CMA responsibilities	
2004	Bush Broker	Native Vegetation Management Framework requires vegetation offsets when land development interferes with existing native vegetation	Desire to develop a market for native vegetation offsets	Market set up. Register established
2004	CRC for Spatial Information established			
2004	Indigenous co-management	Yorta Yorta Cooperative Management Agreement established		Giving Yorta Yorta community formal joint management of public land. First such agreement in Victoria
2004	Natural Resource Knowledge Management Committee established	Developed out of CMF-R&D Committee and the imperatives listed in CCR2002	need knowledge strategy to underpin work of the CMF for adaptive management	Strong collaboration between DSE, DPI, CMA's and research institutes
2004	River Tender	NE regional interest to meet river health obligations		3 year project (\$400 000) assigned to Ovens River
2004	Rekindling of interest in use of Special Area Plans			
2004	Victorian Farmers Federation Native Vegetation Strategy			
2004	Large Scale River Restoration program	Program funded through the environmental contribution levy		The 4 year project achieved: revegetation(672 ha); fencing (of 511ha) pest control; and off-stream watering points
2004	Managing weeds and pests on public land initiative		Protect high value assets and minimise pest movement	4 year project. Grants to CoM's, guidelines produced (<i>Managing the environmental impact of weeds</i> 2007), and expanding "Eden" model of weed management

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Year	Event	Background	Imperative	Consequence
2004	VicSuper commenced a rural Australian portfolio	The not for profit superannuation company VicSuper developing and ethical and local investment strategy	Ethics and investment	Kilter Rural became a specialist managing company, dedicated to investment in real assets of farmland through the improvement in natural capital, the fostering of resilience and sustainability of ecosystem services and simultaneously and economic return. By 2015 Kilter (for Vic Super) had purchased 9000 ha of semi-contiguous properties in the area south east of Swan Hill and are using ecosystem knowledge and modern technologies to optimise land utilisation for both the environment and for economic profit.
2004	Watermark Australia launched	Vic Women's Trust wanting to bring people together to examine water fundamentals	Awaken public debate	Application of the purple sage model. A model developed in Victoria in the late 1990's to give the community a voice and enable them to act.
2004	Victoria's Sustainability Framework launched. ' <i>Our environment, our future</i> '		Maintain and restore our natural assets to sustain communities	Key output from this document relevant to catchment management framework is 'healthy and productive land'. Contained ecomarkets initiative (market based solutions)
2004	Ecotender	Ecomarkets initiative from Sustainability Framework	Seeking better ways of rewarding landholders to conserve and enhance the environment	Demonstrations/trials in a couple of CMA's
2004	Landscape assets approach developing for	Historically often distracted (and organised) by the problem whereas a focus on asset management to avoid the problem has a lot in its favour	Organisational elegance	
2004	Wimmera Regional Salinity Action Plan (2005-2010)			
2005	Victoria's Environmental Sustainability Action Strategy (Our Environment - Our Future) launched		Recognition that environmental sustainability is a fundamental consideration	The framework outlines: key environmental challenges; explains environmental sustainability; identifies strategic directions; sets objectives and targets; and identifies the next steps.
2005	CRC for e-Water	CRC for Catchment Hydrology and CRC for Freshwater Ecology had been successfully running for over 10 years and time for new outlook		A partnership between private and public water businesses and research groups across eastern Australia, seeking to produce practical products that bring economic, commercial and environmental benefits from the smart management of water.
2005	Catchment Condition Report NE	Wish for a new look document to report on NE RCS and stand alone report on condition of resources in NE Victoria	To deal with "are we making a difference?" question.	
2005	Big jump in rate of Artic ice cap melt	Melting measured from 1975 (at 8% per decade) and this jumped 4 fold for 2005	Accumulating evidence of global heating	

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Year	Event	Background	Imperative	Consequence
2005	Claim by Jared Diamond that Australia has been "mining" its renewable resources	Jared Diamond a widely read author (geography and environmental health sciences academic at UCLA) having previously published <i>Guns, Germs and Steel</i> . He published <i>Collapse: how societies choose to fail or survive</i> in 2005 where he used Australian agriculture of an example of resource mining.	Fragile Australian environment needing especial considerations	Strong responses from range of people decrying Jared Diamonds analysis, eg <i>Jared Diamond in Australia - critique by David Smith</i> in Agriculture Science Volume 18
2005	Melbourne Water's waterway management responsibility extended to cover a total of 13000 km2 of the PP&WP catchment			
2005	Index of Wetland Condition	For naturally-occurring wetlands without marine hydrological influence	To determine the current condition of wetlands	Review of methods published in 2007
2005	Significant amendments to <i>Water Act</i> 1989.		Providing head of power for SWS's, EWR's, the unbundling of water entitlements, and 15 year reviews	
2005	Accreditation of East Gippsland RCS			All 10 RCSs accredited across Victoria, providing goals and targets for natural resource management in both the short term and the long term.
2005	VCMC Review finalised	VCMC role lacking clarity as significant changes occurring in the structure and operation of the CMF	Clarification of role and operation of statewide catchment advisory body	VCMC to be retained and strengthened as the primary independent advisory body on catchment management in Victoria. Particular role identified as helping in the production of a statewide catchment strategy and investment plan.
2005	South east Australia Climate Institute established	MDBC seeking to get information on the causes and impacts of climate change and climate variability across Australia	The need to understand to help us cope	A 3 year \$7m project. See: http://www.mdbc.gov.au/subs/seaci/
2005	Pyrolysis (biochar) developing as a real option for sequestering carbon and improving soil fertility	Heating of organic material in the absence of oxygen produces energy and the "biochar" resulting can be used to improve soil and withdraw potential carbon dioxide from the atmosphere	Need to reduce emissions of carbon dioxide	At this stage, more a hope than a realisation
2005	Triple Bottom Line Indicators for Victorian Landscapes project underway		Review current suite of catchment indicators	Ideally this would have streamlined input to VCMC CCR system.
2005	VEAC Otways investigation outcomes	Government decisions in response to investigation by VEAC		
2005	Green cities concept establishing	Originated from 1987 Greening the cities conference in Toronto	Essential to apply ecological principles to urban areas	

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Year	Event	Background	Imperative	Consequence
2005	<i>Our water our future: the next stage</i> released. Aka State Water Plan			Include agreement to desalination plant , and NS Pipeline from Goulburn River to Melbourne
2005	Kyoto protocol came into force	Agreement negotiated in Kyoto, December 1997.	To facilitate major cuts in global emissions of greenhouse gasses	183 countries and the European Community had ratified as of January 2009
2005	International Panel on Climate Change - Fourth assessment report		Global warming now considered >90% human driven	
2005	Victorian Greenhouse Strategy Action Plan Update released	National and international developments necessitating update of the 2002 Strategy	Evidence of human induced climate change inexorably accumulating	Modelling of climate change scenarios indicate Victoria highly susceptible to negative impacts of changing climate. In 2006, the Victorian Government set a long term target to reduce greenhouse gas emissions by 60% by 2050, compared to 2000 levels
2005	North East Blackberry Action Group set-up	An innovative initiative of the Upper Murray Landcare Network	Gain regional approach and concomitant efficiencies. Overcome individually insurmountable problems in blackberry control.	A group employed project officer works with individual landholders and negotiates 3 year management plans.
2005	Formation of Environmental Farmers Network	Those farmers seeing environmental management as a key part of their agricultural production feeling poorly represented by traditional farming groups.	Need to look to future sustainability rather than the past glories	www.environmentalfarmersnetwork.net.au
2005	Local sustainability accord	Recognition that partnerships between State and local governments on environmental sustainability will produce more consistent and integrated approaches	Rolling out of sustainability policies	47 Councils joined up by end of 2006/2007. 70 by June 2009. Concentrating on whole of creek management between municipalities, land capability and biodiversity mapping, etc
2005	Celebration of 10th Anniversary of Catchment Management Framework	10 years since publication of <i>Future Arrangements for Catchment Management in Victoria</i> . BUT if proclamation of CaLP legislation was really the start of the CMF, this must be the 13th anniversary	Recognition and celebration	
2006	International Landcare Conference	Incorporated celebration of Landcare's 20th anniversary		1000 delegates including 100 international delegates Melbourne 8 - 11 October - titled <i>Landscapes Lifestyles and Livelihoods</i>
2006	Multiple outcomes approach formalised	Tendency has been to focus on single issue outcomes in dealing with catchment management. This is a development associated with landscape assets approach.	Inter-dependent solutions - and elegance	
2006	Review of volunteer programs in natural resources in Victoria			

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Year	Event	Background	Imperative	Consequence
2006	Release of eFARMER farm planning tool	On-line potential utilised to do intelligent farm planning	A tool to inform of NRM priorities of CMA's	
2006	Review of <i>Code of Practice for Fire Management on Public Land</i>			
2006	<i>Commonwealth Water Act</i> (2007)	Need for a MDB catchment wide basement plan	Water crisis	Establishes a new MDB Authority. Basin plan to be produced by 2011.
2006	Reducing the regulatory burden	A perception that too much "red-tape"	Brumby government initiative	
2006	Wildfires			
2006	Emerging paradigm of resilience	Cracks appearing in capacities of communities, ecosystems and landscapes to provide goods and services for the planet	Greater efficiency by itself cannot resolve resource management options	Much of the thinking garnered into <i>Walker and Salt (2006) Resilience Thinking. Sustaining ecosystems and people in a changing world. Island Press USA</i>
2006	Tree change trend with considerable momentum	Increasing migration from the city to the bush gaining momentum over the past 25 years Documented by people such as Neil Barr and Allan Curtis.	Opting-out from city life. Both positive and negative issues for catchment management	Curtis projecting (for example) that up to 50% of properties across the Corangamite region will change hands in the next 10 years. New settlers usually more interested in the environment than in agricultural production, have more off-property income, but have a lower level of knowledge and skills related to land management
2006	<i>Aboriginal Heritage Act</i> (2006)			
2006	<i>Central Region Sustainable Water Strategy</i> released	18 Month preparation period(including production of a draft in 2005) following its foreshadowing in 2004 <i>Our Water Our Future</i>	Equitable use of available water	First of 4 sustainable water strategies planned for Victoria. Amended with the release of the State Water Plan in response to continuing low rainfall across the state
2006	Bushbroker program established	Any clearing of native vegetation requires offsetting by a 'gain' elsewhere	For landowners to generate and trade native vegetation credits	Credits obtained by improving native vegetation quality and quantity through weed control, rabbit control, fencing, revegetation and protecting to encourage natural revegetation
2006	Northern region <u>draft</u> sustainable water strategy released	Requirements outlined in Water White Paper	A framework to "secure" water supplies of northern Victoria	
2006	EMAP (Environmental Management Action Planning)	Whole farm plans and environmental action plans linked with modern information technology		
2006	New ministers	Election 25 November 2006		Minister for Environment and Climate Change: Gavin Jennings. Water: Tim Holding. Minister for Agriculture: Joe Helper
2007	CMA focus moving to "partners" and their role in realising goals of RCS's	CMA's concentrating more on brokering than on-ground activities	Fostering integrative approaches to catchment management	
2007	Gippsland floods	June and November		
2007	Latrobe River redirection	Latrobe river captured by Yallourn open cut mine, following collapse of mine wall (Nov)		900 metre diversion route built
2007	Review of noxious weeds set-up	Regulatory list of noxious weeds has not been revised for 30 years	Improve pertinence	Cooperative effort by DSE, DPI, CMA,s and VCMC. Outcome awaited (post 2009)
2007	Lake Moakan returned to wetland status		More efficient management of water resources	

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Year	Event	Background	Imperative	Consequence
2007	Caring for Our Country program	Completion of NAP and NHT2 in 2008/2009	keeping resources flowing for local catchment activities	
2007	The possibility of producing biofuels gets lots of publicity	Victorian parliamentary enquiry into mandatory ethanol and biofuels targets (for petrol driven cars)	Thirst for more car fuel. Concern for effects of biofuel competition on food and ecosystem services	Economic crisis of 2008 mitigated the ebullience
2007	Drought adjustment activities	Accumulating "dry" since 1997	Learning to cope	Drought recovery program: stock containment areas; weed management; drought employment programs. Food bowl modernisation program (to link farm water use efficiency with improvement in the water delivery system). Wonthaggi desalination plant.
2007	Setting aside of some environmental water reserves	Priorities for use of EWR: avoid critical loss of threatened species; avoid irreversible damage or catastrophic effects: and provide drought refuges to allow recovery following drought.	Minister making a qualification for a perceived higher priority	Several river systems with temporarily reduced EWR's to enable other uses
2007	Third VCMC Catchment Condition Report	Follow on from Catchment Condition Report 1(1997) and 2 (2002).	<i>C&LPAct 1994</i>	Still a fair bit of difference to make to get sustainable management systems
2007	Estuary planning by CMA's	Fish kills occurring		Involving agencies, LGA's and local communities
2007	<i>Corangamite Soil Health Strategy</i>		Raising soil profile	Leading key production setting priorities for improving health of regional soils
2007	New chemical use in agriculture regulations	Revision of the <i>Agricultural and Veterinary Chemicals (Control of Use) Regulations 2007</i>	Better user, community and environment protection	Main changes are to do with: record keeping for all chemical products; stronger controls near schools or hospitals; and contractor responsibilities
2007	Establishment of <i>Garnaut Climate Change Review</i>	Commissioned by the Opposition Leader Kevin Rudd and Australian State and Territory Governments	What will be the impacts of climate change on the Australian economy	Final report produced 30 September 2008. The report recommended that Australia push internationally for a 450 ppm [CO2] committing Australia to a 25% reduction on 2000 levels by 2020 and 90% by 2050. Recommended also an emissions trading scheme (but it did not recommend free permits)
2007	Food security concept		Civilisation is only about seven meals away from anarchy' broadcaster Eric Sevareid (1912-1992)	
2007	<i>Review of draft Aboriginal Heritage Regulations 2007</i>			
2007	Flood and drainage strategy, and waterway water quality strategy published by Melbourne Water			<i>Flood management and drainage strategy (2007). Waterway water quality strategy (2008)</i>
2007	Food Bowl Modernisation Project	Desire to reconfigure the Goulburn Murray irrigation system to reduce water losses	Raising water use efficiency to gain more environmental water	
2007	Protection of aboriginal cultural heritage incorporated into management of bush fire		Protect aboriginal heritage	Guidelines produced in 2008:- Management of aboriginal heritage values during fire operation planning on public land; and, Management of aboriginal heritage values during bushfire suppression on public land

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Year	Event	Background	Imperative	Consequence
2007	Wild fires			
2007	Carryover (water industry) introduced	Introduced as an emergency drought measure	To limit the amount of unallocated water that individuals could carry over	The terms and conditions for carryover made in 2009
2007	Concept of unbundling of water entitlement	To allow the breaking up of the three separate entitlements a) water share b) delivery share or extraction share in a works licence and c) a water use licence.		
2007	Third International Panel on Climate Change IPCC report			Observed warming of the Earth's surface, attribution of observed warming to human activities, projected increases in future global mean temperature, rising sea levels, and increased frequency of heat waves. Future warming will have both beneficial and adverse effects, but for higher levels of warming, adverse effects will predominate. Developing countries and poor persons are most vulnerable to climate change. IPCC reports: (1) 1990 (2) 1995, (3) 2001, (4) 2007 (5) 2014 (6) 2022
2007	Strategic fuel breaks	Great Divide fires of January 2007 resulted in development of such breaks		Commitment by government to establish a network of firebreaks to assist with fire protection strategies. 600 km in 2007. An additional 89 km in 2008
2007	Guidelines for producing regional pest action plans			
2007	<i>Land and biodiversity at the time of climate change</i> green paper	Development compromising natural resources	Ongoing decline in quantity and quality of natural resources	
2007	Australia ratifies the Kyoto protocol	Kyoto conference set up international agreement in 1997	Recognition of Australia's global (planetary) responsibility	Australia ratified at the 13th Conference of the Parties to the United Nations Framework Convention on Climate Change (December 2007)
2007	VCMC <i>Indigenous Engagement</i> paper produced	Supplementary work to the production of regional indigenous engagement protocols of 2002	More effective engagement between cultures	Titled, <i>A VCMC Position/Perspective on Indigenous engagement in Victoria</i>
2007	Landcare Australia Limited celebrate 10 years in Melbourne			
2008	Carbon trading being realised	Active voluntary carbon markets emerging in Victoria. Rapid growth.	Demand for methods to trade in carbon	Formal National and State markets still being negotiated. A range of brokers currently operating in Victoria.
2008	VCMC Knowledge management project reporting			
2008	<i>State of the Environment Report</i>	From Office of Commissioner of Environmental Sustainability	Commissioner for Environmental Sustainability Act 2003	The first Report from the Office of the Commissioner. It "reflects the simple fact that most areas of the state are highly stressed. Most natural vegetation, waterways, wetlands, coasts and rivers are reported in a parlous condition"
2008	Soil health as the focus of Issue 42 of the <i>Landcare and Catchment Management Magazine</i>	Reflection of the growing interest in the community of soil as the key unit for sustainability.	Soil as life support bastion of the planet	The value of soil biology and its utility in defining soil health (and hence sustainability) steadily becoming more persuasive

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Year	Event	Background	Imperative	Consequence
2008	Production of <i>Future Farming Strategy</i>	A framework within which government is investing \$m205 over 4 years	Encourage innovation and increase productivity	Seven areas of interest and investment: boosting productivity via practice change and new technologies; skill building; coping with climate change; strengthening land and water management; helping farm families secure their futures; developing new products and markets; and, transporting products to market.
2008	Upgrading of Victorian Landcare Gateway	Utility and versatility of existing site limited for current group requirements	Desire of Landcare groups to be able to publish their own information	Website can be found at www.landcarevic.net.au . Landcare Australia Limited also have a site at www.landcareonline.com
2008	Anthropocene geologic epoch becoming widely accepted	Proposed by ecologist Stoermer in 2000. Advocated by Will Steffan and Paul Crutzen	Human activity causing major change giving justification to the start of a new geologic epoch	Crutzen, P. J., and E. F. Stoermer (2000). "The 'Anthropocene'". <i>Global Change Newsletter</i> 41: 17–18.
2008	Grassroot initiated formation of Victorian Landcare Council	Based on the claim that Landcare has always been "under the wing" of other groups and agencies.	Desire for an "independent voice"	Will be comprised of 20 members, 2 from each CMA region
2008	Government decisions announced from VEAC River Red gum Investigation	Government decisions in response to investigation by VEAC		
2008	1st Ecotender demonstration (in Corangamite) concluded		Trial of new method to address landscape decline	The demonstration resulted in 31 landowners being awarded a share of \$1.1m to be paid over 5 years (333 ha)
2008	Victorian Coastal Strategy released	First strategy released in 2002	Cope with changing environment and demographics	Major advance in addressing stratagems to deal with sea level rise
2008	Environmental water release to stressed river red gums in northern Victoria.	Continuing drought	Monash University survey in 2007 indicated 87% of river red gums in mallee region either dead or declining	This along with previous waterings has resulted in new growth and availability of aquatic habitat
2009	Black Saturday wild fires. Most intense fires on record	Juxtaposition of: 12 yrs of drought; preceding week with multiple days >43°C; and, hottest day on record (46.4°C Melbourne)	Wild fire susceptibility extreme with combination of long dry conditions and extreme hot and dry weather	173 people killed. Approximately 500 injured. Over 2200 houses destroyed. 78 Individual townships affected. Over 7500 people left homeless
2009	Fire recovery	Following black Saturday fires	Enormous recovery effort required	Using Bushfire Rapid Risk Assessment Teams. Dealing with erosion hazard, drainage maintenance, timber salvage, infrastructure repair, and weed and disease issues.
2009	CSIRO Flagships	CSIRO searching for a word to describe large-scale research activity addressing priorities in a collaborative, cooperative and intensively managed manner."	A new concept (?)	Ten research flagships established by CSIRO: energy transformed; food futures; light metals; climate adaptation; future manufacturing; preventative health; water for healthy country; wealth from oceans; minerals down under; and sustainable agriculture
2009	Big Australia and its relationship with sustainable population policy			

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Year	Event	Background	Imperative	Consequence
2009	Victorian Bushfires Royal Commission	Following the most devastating bushfire in Victoria's history	Investigate and recommend	The terms of reference for the Royal Commission were to inquire into and report on causes, circumstances, state of preparation, behaviours and responses. Final report produced July 2010. Recommendations made on: safety policy; emergency and incidence management; fireground response; firefighter safety; reducing the number of fires; reducing the damage caused by fire (including planning and building; land and fuel management; relief and recovery); building on current knowledge; research and evaluation; and, implementation
2009	Northern Region Sustainable Water Strategy released (Nov)	As a requirement under the Water White Paper		Outlines the threats to water availability and water quality over the next 50 years, and lists actions to manage the consequences of prolonged drought and climate change. Among other things it proposes the establishment of the Victorian Environmental Water Holder, and proposes to establish 'reasonable domestic and stock water right' guidelines
2009	Victorian Climate Change Green Paper released	Accumulating evidence of the influence of human activity on climate change necessitating need for greater action.	Need to set clear goals for responding to climate change	Release in June 2009. The document: outlines the climate change issues facing Victoria; identifies the role of government in dealing with these; and, proposed climate change goals and priorities for Victoria
2009	Next round of appointments to VCMC and CMA's	3 year reappointment process	Legislatively enabled under <i>C&LP Act 1994</i>	New term started 20 June
2009	EnSym (environmental systems modelling platform)	Models combined to visualise, interpret and test changes in climate land use and land management practices	Help to decide how and where to spend natural resource management funding for maximum environmental value	
2009	Planetary boundaries concept published	Planetary life support systems identified	Sustainable development a pipe dream without have safe operating space	See reference 2009 <i>Planetary boundaries: exploring the safe operating space for humanity</i> (Ecology and Society 14 (2) 32)
2009	Big Australia	Statement of belief by Prime minister Rudd	Nation Building	
2009	Victorian white paper for land and biodiversity at a time of climate change released as <i>Securing our Natural Future</i> (Dec).	Consultation paper In April 2007. Green paper in April 2008	Investigate and recommend	The white paper titled <i>Securing our Natural Future</i> . Published November 2009. 123 actions listed dealing with organisation, resilience, flagship areas and biolinks. Intention to rationalise the number of catchment management authorities and combine with coastal boards. Similarly the VCMC, VEAC and Coastal Council to be amalgamated into Natural resource and Catchment Council. All fell in a heap with election of Coalition Government in November 2010
2010	Soil health site established on the Victorian Resources Online web site		Needing effective, simple and inexpensive assessment and transactions	http://vro.depi.vic.gov.au/dpi/vro/vrosite.nsf/pages/soilhealth_home
2010	<i>Victoria's Energy Future</i> policy document released	On the edge of a major energy transformation.	Need to shift to a low carbon economy	Released in May 2010 and outlines the short, medium and long term action needed to generate energy. Four planks for action: working with the community; driving energy innovation; attracting and facilitating investment; and leading further market reform

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2010	Nature Print	Developed following need to integrate and analyse our best statewide information on ecosystem function	Need to integrate complex information to help make decisions	Users able to access spatial biodiversity information with respect to conservation needs
2010	Victorian white paper for climate change	Green paper released in June 2009	Need to become more efficient and move to a low carbon economy	Titled <i>Taking action for Victoria's future</i> . Published in July 2010. It sets out a plan of actions based on 10 key approaches, viz: Legislating to cut Victoria's greenhouse pollution by at least 20%; moving towards a cleaner energy future; making Victoria the solar state; supporting cleaner and more energy efficient home's; becoming a global leader in clean technology; creating new opportunities in agriculture, food and forestry; delivering innovative transport; greening government; helping Victorians adapt to climate change and strengthening our climate communities
2010	<i>Invasive Plants and Animal Policy Framework</i>	Needed to supplement the whole of government biosecurity strategy		
2010	New river red gum parks proclaimed	Following recommendations from VEAC report		More than 100,000 ha proclaimed
2010	Victorian Biodiversity Strategy 2010-2015 (consultation draft)			Titled <i>Biodiversity is everybody's business</i> .
2010	VEAC native vegetation discussion paper		Identify opportunities for ecological linkages	
2010	The 2009 Victorian Bushfires Royal Commission final report released.	Royal Commission set up February 2009 after Black Saturday conflagration	Investigate and recommend	Released in late July 2010. Implications for policy reform dealt with in terms of : the rural-urban interface; and, climate change; A weighty set of tomes
2010	Strategic Framework for Integrated Natural Resource Knowledge Management			A set of guiding principles for the development of an NRM knowledge framework in Victoria
2010	Guidelines for Regional Catchment Strategies (May)		Next version of RCS's due October 2012	
2010	Establishment of the Victorian Environmental Water Holder (July)	As foreshadowed in the Northern Region Sustainable Water Strategy	Facilitation of the most efficient use of available environmental water	In 2012/2013 over 430,000ML delivered to 46 rivers and 17 wetlands. In 2013/2014 over 800,000ML delivered to 66 rivers and 77 wetlands.
2010	Auditor General reporting on Victoria's soil health management		Declining soil health would have substantial implications	Finding of no whole-of-government approach to guide planning, implementation and investment
2010	<i>Guide to the proposed (MD) basin plan: overview</i> - released			Highly controversial - politically that is. Fears of cuts to irrigation 'entitlements' drive negative rural response. <i>Guide</i> effectively castrated. Plan eventually released in November 2012 following Parliamentary Inquiry
2010	New suite of ministers	27 November 2010 Election replacing Labor government with Liberal-National coalition government		Minister for Environment and Climate Change: Ryan Smith. Water: Peter Walsh. Agriculture: Peter Walsh
2011	DSE Guide to Good Governance for board members released (Jun)	Sub titled: <i>An introduction to duties and standards of conduct</i>	Victorian public sector relies heavily on separately incorporated public entities to deliver the bulk of Victorian Government's services	The Guide covers: roles; governance framework; duties and accountabilities; standards of conduct; and procedural requirements.

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Year	Event	Background	Imperative	Consequence
2011	Sustainable Australia - Sustainable Communities (A sustainable population strategy for Australia): Public Policy and implementation challenges			Outlined the Gillard Governments vision for a sustainable Australia. Proposed to plan for likely scenarios. Five fundamental areas recognised. 1) labour 2) skilled immigration 3) settlement strategies 4) equitable communities 5) environmental management.
2011	Cattle grazing trials established in the Alpine national park	Cattle grazing previously stopped with establishment of the Alpine National Park	Election commitment of incoming Coalition government	Much controversy. Graziers claiming that cattle reduce fire hazard. Others claim many previous experiments show more damage than benefit.
2011	Flooding in northern and western Victoria	Heavy rainfalls, December 2010, January, February and March 2011 resulting in significant flash and riverine flooding		More than 51 communities and 1700 properties affected. Review of 'flood warnings and response' released report in December 2011. 93 recommendations made. Government response made in Nov 2012. Flood gauging to be improved. Mapping, risk assessment and "flood intelligence platform" underway..
2011	<i>Strategic Framework for Knowledge Management</i> produced by VCMC	The VCMC has advocated for improved knowledge management in natural resources management for many years, primarily through the development of the Catchment Condition Reports in 2002 and 2007.	Knowledge management in NRM is inefficient	The paper concentrates on the key principles and objectives, rather than the operational detail.
2011	Gippsland Region Sustainable Water Strategy released (Nov)	As a requirement under the Water White Paper		Lists the challenges for water management in this region for the next 50 years. Subsequently outlines policies and actions to ensure sustainability over this period
2011	<i>Murray Darling Draft Basin Plan</i> released (Nov)	Released following review of the reaction to release of the 2010 <i>Guide</i>	Water reform to improve health of 'living dynamic system'	Aim to keep the mouth of the Murray River open for 90% of the time. Technical reaction to <i>Plan</i> cool. A lot of focus on volumes of water
2011	Remnant Native Vegetation report (VEAC April)	VEAC investigating remnant native vegetation on Crown and public authority land - those outside largely intact landscapes	The need for information to evaluate condition of RNV and recommend improvements	Government accepted 19 of 20 recommendations stating that it will "continue to make biodiversity enhancement and ecological connectivity in our landscape a priority".
2011	Metropolitan Melbourne Investigation report (VEAC August)	VEAC investigating Crown and public authority land in metropolitan Melbourne and recommend appropriate future use	Better use of Melbourne's stock of public lands	"Government will ensure that VEAC's recommendations are implemented as detailed in the response in association with work on the planning strategy".
2011	Our Cities , our future. A National urban policy for a productive, sustainable and liveable future.	A national approach to planning and managing our cities		Based on the 4 planks of 1) productivity 2)sustainability 3) liveability and 4) governance
2012	Appointment of Federal Advocate for Soil Health	Inaugural advocate is former Governor-General Jeffery	Need to raise public awareness of the critical role that soil plays	Advocate also to drive the development of cross sectoral soil research and development priorities
2012	"Soils for Life" organisation established	Principal purpose to enhance the natural environment through the provision of information and education	Seek to speed rate of progress of regenerative landscapes	Focus on rural landscapes. Phase 1: Identify leading practice and promote. 2:Tackle impediments to adoption. 3: Encourage adoption. Some controversy with clash between an evidence based approach and a belief based approach.

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2012	Caring for Our Country 5 year review released		To answer the question: Is the program making a difference?	Deemed valuable and successful. Thus moving onto Caring for our Country Phase Two. \$2.2 billion over 5 years (starting at 2013-14)
2012	Publication of <i>Monitoring and Evaluation Framework</i>	Recognition over many years of the need for a set of standards (with common language) for plans and strategies in Victoria's natural resource management	To understand and evaluate outcomes of NR policies and program	Still to be shown, but with underlying principles of 1.consistence 2.accountability 3.performance 4.collaboration 5.knowledge & access 6.adaptive 7.integrated management
2012	<i>Soil Health Strategy</i>	Victoria-wide strategy developed in conjunction with CMA's		Sub titled: <i>Protecting soil health for environmental values on public and private land.</i>
2012	Carbon pricing become operational in Australia	Australian Federal Government introduced this on 1 July 2012. \$23 per tonne of emitted CO2 on selected fossil fuels, by major emitters only. Compensation introduced for some affected industries	Need to have a cost effective means of reducing greenhouse gas emissions	Politically controversial with media focus on climate change recalitrants. Coalition decides to oppose it as an unacceptable tax. Makes its removal a pre election commitment.
2012	Environmental partnerships	Government, business, industry, community and individuals formally grouped to work together	Cooperation for better results	
2012	Office of Living Victoria	Established in May "to drive reform by coordinating urban and water planning"	Desire to improve "urban water performance"	Administering a living water fund; developing integrated water cycle plans; preparing RIS's for water performance of new buildings; improving stormwater management. Dismantled in 2014 following financial irregularities. Policy responsibility transferred back to DEPI
2012	Major flooding in March and June	Floods affecting 33 local government areas		
2012	Basin Plan (Murray Darling) released	<i>Guide to the Proposed Murray Darling Basin Plan</i> released in 2010 to	Improvement in the health of the Darling and Murray	Plan proposes 2750 gigalitres per year be cut from water allocations over a period of 7 years. Use of groundwater still controversial, as any allowance for the
2012	Fourth VCMC Catchment Condition Report	Follow on from Catchment Condition Report 1(1997), 2 (2002) and 3 (2007)	<i>C&LPAct 1994</i>	Still a lot of work to get sustainable management systems
2013	Launch of 3rd edition of Regional Catchment Strategies	Follows on from 1st edition in 1997 and 2nd edition in 2003	Legislative requirement to identify current state of the environment and set actions to improve	Trying to" balance natural resource management priorities with the needs of agricultural production, manufacturing and other regional economies" is not easy
2013	Victorian Climate Change Adaption Plan	The future is made by those wo understand the social and scientific significance of what is happening and act wisely on this intelligence	Imperative to be ready for change in climate and mechanisms for societal adaptation to it	Informed decision-making requires research tailored to Victorian settings, needs, accessible information, and available tools for dealing with uncertainty and optimising adaptation. Victorian Centre for climate change adaption research set-up.
2013	Victorian Waterway Management Strategy	Aiming to maintain or improve the condition of our waterways so they can support environmental, social, cultural and economic values		Providing direction for regional decision-making, investment and management issues for waterways, as well as the roles and responsibility of management agencies

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Year	Event	Background	Imperative	Consequence
2013	Reformed natural resource management department to be known as Environment and Primary Industries (DEPI)	DSE and DPI were created from NRE as two separate departments in 2002. Now they rejoin.	Machinery of Government change	
2013	Native vegetation regulations changed (May) to Permitted clearing regulations.	Review foreshadowed in September 2012 with release of the consultation paper: <i>Future directions for native vegetation in Victoria: Review of Victoria's native vegetation permitted clearing regulations.</i>	Angst amongst various parts of community directed towards the manifestation of native vegetation retention policy	
2013	State of Environment Report	Follow on from 2008 report	Legislative requirement. Report to be produced every 5 years	5 goals incorporated into the report: Resilient ecosystems; Sustainable natural resources; Sustainable energy; Sustainable communities; and, understanding the environment
2013	Hottest year on record for Australia (Now replaced by 2019)		Global warming	
2014	Victorian Government Data Directory	Establishment of a specialised website to help find datasets and data tools existing on other government websites - and take seekers directly to those sites	Demand from the community that government should publish the data that it collects in the course of its work	See: https://www.data.vic.gov.au/ As of mid 2015 the portal accessed 3800 datasets. 136 are environmental
2014	Federal government in seeking the streamlining of regulation in Australia introduce " green tape " as a derogatory term to pair with the negatives of red tape		National coalition government wanting to minimise the so-called 'regulatory burden'	
2014	VAGO Report: <i>Effectiveness of Catchment Management Authorities</i>	Inquiry by Victorian Auditor General	Routine checking of effectiveness of executive Government performance	Concluded that the existing approaches to catchment management, while delivering some gains, are inadequate to meet challenges. Statewide approach needed. Improve information collected about catchment condition. Better regional and local strategies needed. Seven recommendations made. See: www.audit.vic.gov.au
2014	Publication of The National Soil Research, Development and Extension Strategy	Soil perceived as a non-renewable resource but following considerable past investment, poor return on investment	Desire to increase effectiveness, and efficiency of effort.	Sub titled: SECURING AUSTRALIA'S SOIL For profitable industries and healthy landscapes. Outlines: vision; goals; outcomes; and actions
2014	Next iteration of Flood Management Strategy drafted	Floods 2010-2011. Parliamentary inquiry into rural drainage		Moves away from previous approach of focussing on flood response and now focusses on prevention and mitigation. It supports the setting of priorities at the regional level
2014	Victoria's Groundwater Management Framework	Rural water corporations (on behalf of the Minister) manage the groundwater resource and licence use.	Statutory management plans, or local management plans required	Review of monitoring network. Specification of groundwater catchments. Management areas modified to align with groundwater catchments. Guidelines for the production of local management plans

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Year	Event	Background	Imperative	Consequence
2014	Regenerative Agriculture	The Rhodale Institute published "Regenerative organic agriculture and climate change" (but origins of the term and the approach go back to the 1980's)	Need to improve the sustainability of agriculture and farming	Regenerative agriculture is based on various agricultural and agroecologic practices, and a particular emphasis is on minimal soil disturbance. See examples in Massy C (2017) <i>Call of the Reed Warbler: a new agriculture - a new earth</i> ,
2014	Carbon pricing system dismantled by National coalition government	National coalition got to power convincing voters that this was an unfair tax		Instead coalition put "Direct Action" program in place
2014	4th International Panel on Climate Change IPCC assessment report			Warming of the atmosphere and ocean system is unequivocal. Many of the associated impacts such as sea level change (among other metrics) have occurred since 1950 at rates unprecedented in the historical record. There is a clear human influence on the climate. It is extremely likely that human influence has been the dominant cause of observed warming since 1950, with the level of confidence having increased since the fourth report. IPCC pointed out that the longer we wait to reduce our emissions, the more expensive it will become. IPCC reports: (1) 1990 (2) 1995, (3) 2001, (4) 2007 (5) 2014 (6) 2022
2014	Hottest year on record (on a global basis)	NASA information	Inexorable global warming	Immediately followed by 2015 as new record hot
2014	New suite of Ministers in Victoria	November 2014 election replacing Liberal/National Coalition government with Labor government		Environment, water and climate change: Lisa Neville (to October 2015). Water: Lisa Neville (October 2015 - November 2018). Energy, Environment and Climate Change: Lily D'Ambrosio (October 2015 - November 2018). Agriculture: Jaala Pulford
2014	Technologic tools aiding catchment management			Drones , hand held GPS receivers, smart phones and crowd sourcing , trail-cams,
2015	International year of soils	Declared such by the 68th UN General Assembly	To increase awareness and understanding of the importance of soil for food security and essential ecosystem function	Soil Science Australia working strongly to have improved community focus on the value of soil to our progress and economy
2015	Re-formation of natural resource department. Environment and climate change roles included with planning. Agriculture moved to an economic development cabal		The current governments preference for departmental organisation	The two departments involved: Department of Environment, Land, Water and Planning. Department of Economic Development, Jobs, Training and Resources
2015	Prohibition on alpine cattle grazing reintroduced	Initial grazing stopped with establishment of Alpine National Park, but restarted in 2011 to arguably evaluate it as a bush fire fuel reduction tool	Pre-election commitment of Labor party	

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Year	Event	Background	Imperative	Consequence
2015	Discussion paper: <i>Modernising Australia's approach to managing established pests and diseases of national significance</i>	National Biosecurity Commission authorised this paper	Little traction with contemporary approaches. Cost cutting.	Federal Government wanting to make involvement conditional on action led by industry or community
2015	<i>Biosecurity Act</i> (2015)	Federal bill 7 years in making and brings about major changes to the approaches used in the <i>Quarantine Act</i> (1908)	"Modernisation"	Shift to risk based biosecurity regulations (ie as distinct from goal of zero risk). Biosecurity is more than border control. Intelligence led and evidence based. Aiming to reduce "red tape".
2015	Federal renewable energy target cut from 41 000GWh to 33 000GWh	2001: target set at 9 500GWh. 2009: target increased to 45 000 GWh (~20%)		The legislation, also allows native wood waste to be burned and included in the target, and introduces a "wind commissioner" to deal with complaints from nearby residents,
2015	Managing Victoria's Biodiversity symposium (October 2015)	Concern with inexorable climate change lead professionals (private and public sector) to set up this forum	What 10 things might we do to help with biodiversity cope climate change	Results published on 1 February 2016 on web site vicnature2050.org . The ten 'things' were: 1. Listening, engaging and working with people 2. Accepting that natural areas will change 3. Protecting reserves and looking after nature on private land 4. Removing threats such as weeds and feral animals 5. Using natural processes like fires and floods to promote diversity 6. Connecting landscapes and using "climate-ready" plants 7. Welcoming nature into our cities 8. Recording changes in our local areas 9. Promoting diversity in all that we do 10. Keeping positive, informed and engaged.
2015	Release of Draft <i>Our Catchments Our Communities</i> Strategies	Stimulus to produce this was the Victorian Auditor General's performance report of CMA's released in 2014 AND the Catchment Condition Report of 2012	Improving collaboration to improve environmental outcomes.	5 challenges identified in the draft of November. 1) Ensure local communities are engaged and involved; 2) Alignment and complementarity at all levels of planning; 3) Planning schedules implemented; 4) Clarity given to roles ,and responsibilities and accountabilities set; and, 5)Monitoring and reporting properly done to enable true adaptive management.
2015	Paris Agreement on climate change	UN Climate Change Conference (November/December) to negotiate a global agreement on reduction of climate change	Inexorable climate change	Agreement stipulates: "(a) Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change; (b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; (c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development." Countries furthermore aim to reach "global peaking of greenhouse gas emissions as soon as possible".

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Year	Event	Background	Imperative	Consequence
2015	United Nations Sustainable Development Goals	United Nations initiative	As stated by UN General Secretary at the time: "We don't have plan B because there is no planet B"	The SDGs are part of Resolution 70/1 of the United Nations General Assembly: "Transforming our World: the 2030 Agenda for Sustainable Development". That has been shortened to "2030 Agenda". There are 17 goals, broad and interdependent, yet each has a separate list of targets (169) to achieve. The Goals are: Goal 1: No poverty Goal 2: Zero hunger Goal 3: Good health and well-being for people Goal 4: Quality education Goal 5: Gender equality Goal 6: Clean water and sanitation Goal 7: Affordable and clean energy Goal 8: Decent work and economic growth Goal 9: Industry, Innovation, and Infrastructure Goal 10: Reducing inequalities Goal 11: Sustainable cities and communities Goal 12: Responsible consumption and production Goal 13: Climate action Goal 14: Life below water Goal 15: Life on land Goal 16: Peace, justice and strong institutions Goal 17: Partnerships for the goals
2015	Hottest year on record (on global basis)	2014 was, up till this year, also the hottest on record	Inexorable global warming	CSIRO report that every month since February 1985 has been warmer than average. Global average temperature for 2015 was 0.9 degrees above the 20th century average. Immediately followed by 2016 as new record hot
2015	National ecological restoration standards produced	Prepared by Society for Ecological Restoration Australasia	All-pervasive human influence causing much degradation	http://www.seraustralasia.com/pages/SERARestorationStandards_15dec2015.pdf
2015	Ruling that the 'polluter pays' principle under the state <i>Environment Protection Act</i> can be applied retrospectively	Victorian Supreme Court Justice Peter Riordan on December 24 ruled the Council (formerly Richmond Council) could be ordered to compensate Vic's Metropolitan Fire and Emergency Services Board (MFB) for the costs of remediating contaminated land the board bought in 2004.	Defining reclamation responsibilities	Decision currently under appeal
2015	Renewable Energy Roadmap	Discussion paper	Developing away from burning coal	Led to Renewable Energy Plan

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Year	Event	Background	Imperative	Consequence
2016	Hottest year on record on a global basis (NASA information)	Beating previous record hot (2015)	Inexorable global warming	Turns out 2016 hotter than 2017 and 2018. Global heirachy of hottest: 2016; 2017; 2015; 2018. Australian heirachy of hottest: 2013; 2005; 2018.
2016	Water for Victoria plan	Discussion paper put out earlier in year	Needing to prepare system of water management for growing population and impending climate change.	Planks of a) working together and b)investing strategically to get results , based on tacking climate change; investing in a healthy environment; maximising the value of agricultural production; water supporting liveability and recreation; Indigenous peoples benefiting; strong entitlements and planning; making best use of water grid, and markets.
2016	Investment in irrigation efficiency	Original infrastructure is out dated and unable to cope with the demands of modern irrigation	Water use efficiency through modernisation	\$2.4 billion being invested in water infrastructure projects to modernise irrigation systems and expand the water grid to increase water security for rural communities.
2017	<i>Our Catchments, Our Communities: integrated catchment management in Victoria 2016 - 2019</i>	Following on from release of a consultation paper in 2015	A catchment strategy for all of Victoria	Implementation plan to come
2017	Australian Weeds Strategy 2017-2027	Produced by the Invasive Plants and Animals Committee. Following 1997 National Weeds Strategy, and its subsequent revision in 2017	Negative environmental, social and economic impacts, needing smart and coordinated approaches	This strategy outlines the principles underlying weed management and includes recent biodiversity and biosecurity thinking.
2017	Review of <i>Flora and fauna Guarantee Act 1988</i>		Election commitment to review.	Consultation paper out. Amendment to legislation in 2018
2017	<i>Biodiversity Plan: protecting Victoria's environmental biodiversity 2037.</i>		ongoing need to stop the decline of native plants, native animals, and natural resources	Aim to have a healthy environment, which is valued and actively cared for
2017	Independent Review of the Future Security of the National Energy Market	The Finkel Report. The Federal Chief Scientist trying to built the imperative, and the case for bipartisan agreement on future energy use and coal retirement	Climate change. Energy reliability	
2017	Victoria's Renewable Energy Plan			On 3 planks, a) affordable energy b)safe and secure supply, and c) job creation and economic growth.
2017	Yarra River Protection Bill	In recognition of the importance of public parklands and open spaces along the Yarra River	Protection of Yarra River quality	Coordination of the public entities (>10) operating along the Yarra River corridor
2017	Catchment Condition and management Report		Ensuring catchment partners work better together	
2017	Fifth VCMC Catchment Condition Report	Follow-on from Catchment Condition report 1 (1997), 2 (2002), 3 (2007), and 4 (2012)	<i>C&LP Act 1994</i>	4 recommendations: 1) Improve the quality of reporting; 2) Implement mandatory monitoring; 3) Involve catchment communities; and 4) provide a five year funding cycle.
2017	Plastic pollution	Eventual acceptance of plastic discarded to environment adversely qffecting wildlife, wildlife habitat, as well as humans	Need to decontaminate	As of 2018, about 380 million tons of plastic is produced worldwide each year

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2017	Climate Change Act	Upgrading the 2010 Act	To drive change on climate change across government and economy	
2018	Victorian Rural Drainage Strategy	Degraded rural drainage systems identified in 2016 as key environmental issue	Sort complex regulation	Clarification of roles responsibilities and obligations. Rebuild capability, and support agricultural productivity. Simplify. Manage priority waterways
2018	State Environment protection Policy (waters)	need to update and combine SEPP (Waters of Victoria) and SEPP (Ground Waters of Victoria)	Update approach to water quality management	Guiding water quality management and improve the protection of waterways, coastal waters and ground waters
2018	Draft Deer Management Strategy	Deer well established in Victoria, but increasing rapidly and spreading undesirably.	Need to prevent damage to the environment (but keep hunting lobby happy!)	Proposes deer management zones. Wish to keep deer 'available' for hunters
2018	Target 155	Residential water use in Melbourne in excess of 160 litres per person per day	To avoid potential water crisis associated with growth rate of the city	Implemented by each urban water corporation. Key is "smart water advice"
2018	State Government (Labor) re-elected	Election on 24 November 2018		Ministers: Water: Lisa Neville (October 2015 - November 2018). Energy, Environment and Climate Change: Lily D'Ambrosio. Agriculture, Regional Development and Resources: Jaclyn Symes. The Department with responsibilities for agriculture changed to Department of Jobs, Precincts and Regions
2018	Senate inquiry into Australia's faunal extinction crisis	Referred by Senate in June	Crisis	Report due May 2019
2018	Next round of appointments to VCMC	3 year reappointment	Legislatively enabled under the C&LP Act 1994	New term started September. In effect the 8th Council.
2019	Published summary of the evolution of Victoria's environment portfolio	Parliamentary Library research paper	Clarification of history	Coffey B (2019) Towards good environmental governance? Assessing the evolution of Victoria's environmental portfolio.
2019	Murray - Darling Basin Royal Commission Report	Set up by South Australian Government in 2018 to investigate the operations and effectiveness of the Murray-Darling Basin system following allegations of water theft in NSW		Recommended a complete overhaul of the scheme, including reallocating more water from irrigation to the environment. The Commission found the original plan ignored potentially "catastrophic" risks of climate change
2019	Mass fish deaths in the Darling river system near Menindee	Drought and over-extraction, leading to an environmental disaster.	Fish death due to severe depletion of oxygen in the waters	
2019	Office of the Conservation Regulator	Set-up to oversee and discharge regulator functions in conservation and environment in the state of Victoria	Responsibility and efficiency	Within DELWP
2019	Forecasting of a post capitalist society	The underlying hypothesis for this forecast is that capitalism is locked into an economics of growth that is undermining the environmental foundations of life on Earth	Protecting the future for the diversity of life, and the planet	The "growth imperative" alongside our own planet's limits is likely to bring capitalism to an end in coming decades. See Alexander A and Gleeson B (2019) Post-capitalism: life within environmental limits. <i>Pursuit</i> . UoM

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2019	Nomination of the 10 worst invasive species in Australia	Research published from the Threatened Species Recovery Hub	Impact on threatened species	1)European rabbit 2)Phytophthora plant disease 3)Feral pig 4)Feral cat 5)Feral goat 6)European red fox 7)Lantana 8)Blackberry 9)Black rat 10)Feral cattle
2019	Native timber logging to be phased out by 2030.	Announcement by Victorian Government (6 November 2019). Reform proposed in the mean time	Current logging rates deemed unsustainable	Environment-Justice-Australia and Friends-of-leadbeaters-possum have an outstanding case in the Federal Court against DELWP and Fprests Victoria which challenges logging exemptionjs to the requirements of the EPBC act via Regional Forestry Agreements.
2019	Hottest year on record for Australia	Bureau of Meterology assessed the year as 1.52 degrees above the long term average. Replaces 2013	Careering towards calamity	In the sequence for Australia, second hottest was 2013, followed by 2005, 2018 and then 2017. And Wednesday 18 December 2019 was the hottest Australian day on record with average maximum temperature of 41.9 degrees Celcius
2019	Water utilisation compliance in Murray Darling Basin to be investigated	Office of Inspector General to do so. Drought and water harvesting causing much angst	Survival	State Water Miisters declinepassing State powers to the Commonwealth
2019	United Nations Climate Change Conference, also known as COP25 - Madrid			News during the conference included: Greenland's ice sheet melting seven times faster than in 1990s; Oxygen in the oceans is decreasing; a quarter of the worlds population are at risk of water supply problems as mountain glaciers, snow packs and alpine lakes are run down by global warming and increasing demand.
2020	Calamitous bushfires	Long dry period in large parts of SE Australia. Then hot and very dry weather in December 2019 January 2020	More such events likely as consequence of climate change	Approximately 1m hectare burnt in Victoria in 1st week of January. Six day 'State of disaster' declared on 3 January for 6 local government areas.